MOOREBANK INTERMODAL COMPANY

Moorebank Intermodal Terminal Response to Submissions Report

Volume 1

May 2015

PARSONS BRINCKERHOFF

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Certified to ISO 9001, ISO 14001, AS/NZS 4801
A+ GRI Rating: Sustainability Report 2010

Revision	Details	Date	Amended By
00	Draft Issued for DP&E Adequacy	16 February 2015	G Diwell/E Lichkus
01	2nd Draft Issued for DP&E Adequacy	8 March 2015	A Sargeant
02	Draft post adequacy	28 April 2015	A Sargeant
03	Draft for exhibition	12 May 2015	A Sargeant

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Approved by: Anthea Sargeant

Signed: Sargeant

Date: 12 May 2015

Distribution:

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Glossary and abbreviations

Glossary and abbreviations

$\mu g/m^3$	micrograms per cubic metre
ABB	Asea Brown Boveri (ABB) Australia Medium Voltage Production Facility is a neighbouring industrial and manufacturing business to the north of the IMT site.
Aboriginal place	Places of special cultural significance to the Aboriginal people in NSW because of their spiritual, ceremonial, historical, social or educational values.
ADG	Australian Dangerous Goods Code
AEP	annual exceedance probability
AERMOD	AMS/US EPA regulatory model
ARTC	Australian Rail Track Corporation
ASS	acid sulfate soil
BBAM	NSW BioBanking Assessment Methodology
BITRE	Bureau of Infrastructure, Transport and Regional Economics
Casual Powerhouse Arts Centre	Located within the suburb of Casula, this is a former industrial facility converted to a multi-purpose contemporary arts facility.
CCC	Campbelltown City Council
CEMP	construction environmental management plan
CEP	community engagement plan
CLM Act	NSW *Contaminated Land Management Act 1997*
CO	carbon monoxide
CO_2	carbon dioxide
CO_{2}-e	Carbon dioxide equivalent values
CPTED	crime prevention through environmental design
CTMP	Construction Traffic Management Plan
CUST	Cullen Universal Steel Truss
dB(A)	A-weighted decibels
DECC	Form NSW Department of Climate Change

DECCW	Former Department of the Environment, Climate Change and Water (now OEH)
Decibel [dB]	Unit of measurement of sound pressure level
Defence	Department of Defence
DNSDC	Defence National Storage Distribution
DoE	Commonwealth Department of the Environment
DoF	Commonwealth Department of Finance
DoFD	Department of Finance and Deregulation
DoIRD	Department of Infrastructure and Regional Development
BOS	biodiversity offset strategy
DP&I	NSW Department of Planning and Infrastructure
DPI	NSW Department of Primary Industries
DUAP	Department of Urban Affairs and Planning
Early Works	Project phase prior to construction. Commences mid-2015 and is expected to continue for approximately six months.
EEC	endangered ecological community
EIS	Environmental Impact Statement
EnHealth	Environmental Health Council of Australia
EPA	NSW Environment Protection Agency
EP&A Act	NSW *Environmental Planning and Assessment Act 1979*
EP&A Regulation	NSW *Environmental Planning and Assessment Regulation 2000*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
ERA	environmental risk assessment
FBA	NSW *Framework for Biodiversity Assessment 2014*
GBE	Government Business Enterprise
Glenfield Landfill	A large waste facility and refuse disposal site, located south-west of the IMT Project site
GPs	General Practitioners
HCC	Hurstville City Council

HHRA	Human Health Risk Assessment (Technical Paper 15 of the EIS)
HIA	Human Health Risks (Technical Paper 16 of the EIS)
IMEX	Import export
IMT	Intermodal terminal
km	kilometres
km/h	kilometres per hour
LAQIA	Local Air Quality Impact Assessment (Technical Paper 7 of the EIS)
LCC	Liverpool City Council
LLEP	*Liverpool Local Environmental Plan 2008*
LNG	Liquefied natural gas
LPG	Liquefied petroleum gas
LoS	Level of service
m	metres(s)
m^2	square metres
m^3	cubic metres
M5 Motorway	South Western Motorway forming part of the Metroad 5, the main arterial route linking Sydney's city centre to south-western suburbs and beyond.
M7 Motorway	Motorway 7 is part of the Sydney Orbital Network consisting of a tolled ring-road around Sydney, connecting the M5 Motorway, M4 Motorway and M2 Motorway between south-west and north-west Sydney.
MA	Moorebank Aboriginal recording
MIC	Moorebank Intermodal Company
MIKE-11	A hydraulic modelling software package
MRSAR	Moorebank Representative Sample Area
MUR	Moorebank Unit Relocation
MUSIC	Model for Urban Stormwater Improvement Conceptualisation (software)
IMT	Moorebank Intermodal Terminal
NEPM	National Environment Protection Measure
NO_2	nitrogen dioxide
NOHC	Navin Officer Heritage Consultants

Northern Commonwealth Land	Located north of Bapaume Road and west of Moorebank Avenue
NML	Noise Mitigation Level
NSW DP&E	NSW Department of Planning and Environment
OEH	NSW Office of Environment and Heritage
OEMP	operational environmental management plan
Offset Policy 2014	NSW *Biodiversity Offset Policy for Major Projects 2014*
ORT	Over the road vehicles which travel outside the IMT site on the public road network
PAC	Planning Assessment Commission
PAHs	polycyclic aromatic hydrocarbons
PCU	passenger car unit
RAP	remediation action plan
PM_{10}	particulate matter less than or equal to 10 μm in aerodynamic diameter
$PM_{2.5}$	particulate matter less than or equal to 2.5 μm in aerodynamic diameter
PRA	Preliminary Risk Assessment
RAAF	Royal Australian Air Force
RAE	Royal Australian Engineers
RAP	Registered Aboriginal Parties
RMS	NSW Roads and Maritime Services
SEARs	Secretary for NSW DP&E's Environmental Assessment Requirements
SEWPaC	Department of Sustainability, Environment, Water Population and Communities (now the DoE)
SIDRA	Signalised and unsignalised Intersection Design and Research Aid
SME	School of Military Engineering
SIMTA	Sydney Intermodal Terminal Alliance
SO_2	sulfur dioxide
SPC	Sydney Ports Corporation
sq.m	Square metres

SSFL	Southern Sydney Freight Line
SSD	State Significant Development
TEU	twenty-foot equivalent units
TfNSW	Transport for NSW
TSC Act	*Threatened Species Conservation Act 1995*
TSP	total suspended particulates
UDIA	Urban Development Industry of Australia
VKT	vehicle kilometres travelled
WHO	World Health Organisation

Executive Summary

Executive summary

This Response to Submissions Report (incorporating proposed amendments to the development and associated impact assessment) has been prepared in response to the issues raised in community and stakeholder submissions received during the public exhibition of the Moorebank Intermodal Terminal (IMT) Project (the Project) Environmental Impact Statement (EIS).

This Response to Submissions Report (this report) relates to the Project approvals sought under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and development consent under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

Overview of the Proposal

Forecast growth in international and interstate freight movements through Sydney and increased industrial and commercial development in west and south-west Sydney have prompted government and industry to consider new strategies for alleviating constraints on freight. Insufficient intermodal rail freight capacity is recognised as a key barrier to the future development of Sydney and improvements in national productivity.

The Project involves the development of intermodal freight terminal facilities at Moorebank, in south-west Sydney that facilitates the reduction of road traffic along key road freight corridors supporting the movement of freight by train. This is consistent with NSW Government objectives towards increasing the mode share from trucks to trains.

Key features of the development as presented in the EIS (at Full Build in 2030) include the following:

- *An import/export (IMEX) freight terminal* designed with a maximum capacity of 1.05 million twenty-foot equivalent units (TEU) a year (525,000 TEU inbound and 525,000 TEU outbound) servicing international IMEX freight movement between Port Botany and the Project site.
- *An interstate freight terminal* designed to handle up to 500,000 TEU a year (250,000 TEU inbound and 250,000 TEU outbound) of interstate freight, servicing trains travelling to, from and between Sydney and regional and interstate destinations.
- *Warehousing facilities* with capacity for up to 300,000 square metres (sq. m) of gross floor area to provide an interface between the IMEX and interstate terminals and commercial users of the facilities such as freight forwarders, logistics facilities and retail distribution centres.
- *A rail access connection (rail link) between the main IMT site and the Southern Sydney Freight Line (SSFL)* via a bridge crossing the Georges River to the west of the main IMT site.
- *Establishment of a conservation area* to maintain and enhance the riparian vegetation between the Georges River and the 1% annual exceedance probability (AEP) flood level.
- *An upgrade of Moorebank Avenue* including widening of the road to a four-lane carriageway between the M5 Motorway and the East Hills Railway Line, upgrades to intersections to accommodate the widening and additional traffic, and traffic control measures.

The Project is proposed to be developed on an area of land owned by the Australian Government and currently occupied by the Department of Defence (Defence). The site is adjacent to the SSFL, the East Hills Rail Line and the M5 Motorway.

The Moorebank Intermodal Company (MIC) is currently seeking approval for the proposal ‘concept’ (i.e. the broad parameters of the Project to operate at maximum capacity of 1.55 million TEU) to satisfy both:

- a staged State significant development (SSD) consent under the NSW EP&A Act (including a Stage 1 development consent for Early Works); and
- the requirements of the Commonwealth EPBC Act in relation to impacts of the proposed action on matters protected under the Act (which, in the case of this Project, comprise listed threatened species and communities) and impacts on the environment by a Commonwealth agency.

The approval processes under the EPBC Act and the EP&A Act are being undertaken in parallel and the EIS addressed both the Commonwealth’s EIS guidelines as well as the Secretary for NSW Department of Planning and Environment’s (DP&E) Environmental Assessment Requirements (SEARs) for the Project.

The development of the Project is proposed to be phased, with an initial IMEX terminal and warehousing facilities planned to commence operations around 2018 (subject to approval). Subsequent development of interstate IMT facilities, followed by ‘ramp-up’ of IMEX capacity and warehousing is then expected to occur in line with the expected freight demand.

Future Stage 2 SSD approval applications will be linked to the proposed development phases presented below and may be subject to further change in light of changing economic conditions in future years. As such, the proposed phasing is a best estimate for the purposes of assessing environmental impacts at key stages of development. Each SSD stage of development will be subject to its own detailed EIS which will provide an opportunity for the (slightly revised compared to the EIS) Project stages and timing to be determined in detail. A summary of the revised phasing comprises the following:

1. Early Works (2015), including Rehabilitation Works – subject to the current concept approval application.
2. Phase A – construction of 250,000 TEU IMEX terminal, 100,000 sq. m of warehousing and construction of the southern rail link (in 2015–2016).
3. Phase B – the phase would commence with the operation of a 250,000 TEU IMEX terminal and 100,000 sq. m of warehousing, as well as the construction of a 250,000 TEU interstate rail terminal, which would become operational in mid-2019. Construction of an additional 250,000 TEU IMEX terminal would occur in mid-late 2020.
4. Phase C – the phase would commence with operation of a 500,000 TEU IMEX terminal, 100,000 TEU warehousing and a 250,000 TEU interstate terminal. Additional construction activities during Phase C (which would become operational once completed) comprise the construction of 150,000 sq. m of warehousing and a 250,000 TEU IMEX (mid 2022 to end 2023 approx.), construction of an additional 255,000 TEU IMEX (in 2027); and construction of an additional 250,000 TEU interstate capacity and 50,000 sq. m of warehousing (in 2029).
5. Full Build – operation of a 1.05 million TEU IMEX terminal and a 500,000 TEU interstate terminal and 300,000 sq. m of warehousing (in 2030).

Overview of amendments to the proposal

Prior to the EIS exhibition, MIC developed the Moorebank IMT proposal as a stand-alone project. The Sydney Intermodal Terminal Alliance (SIMTA) proposal for an intermodal terminal on the site immediately east of the Project site was also being pursued separately, with its own planning and environmental approvals being sought. However, since the exhibition of the EIS, an agreement has been reached between MIC and SIMTA for an integrated precinct-wide intermodal facility and associated warehousing across both the MIC and SIMTA sites. This has resulted in a change in concept layout on the Moorebank intermodal site and the selection of the southern rail access option as the preferred rail connection from the SSFL to the site.

Under this agreement MIC will continue with its existing application for Stage 1 SSD concept approval (incorporating early works) for the Moorebank IMT site and SIMTA will be responsible for obtaining all other approvals required under the EP&A Act, to build all stages of the Project.

SIMTA has received approval under the EPBC Act for the construction and operation of an IMT comprising a one million TEU IMEX facility and 300,000 sq. m of warehousing. SIMTA has also received concept approval from the Planning Assessment Commission (PAC) under the (then) Part 3A of the NSW EP&A Act for the development of an IMT. In approving the development however, the PAC granted concept approval only for a 250,000 TEU IMEX facility until the local road infrastructure is upgraded to support increased capacity. The PAC stipulated that' subject to more detailed traffic assessment, an ultimate 500,000 TEU capacity could be provided and that this should be adequate to 'meet the Government's objectives for rail freight from Port Botany well into the future'. This is less than the one million TEU that was sought by SIMTA. The PAC approved the 300,000 sq. m of warehousing proposed.

SIMTA is now in the process of obtaining development approval (DA) to construct and operate Stage 1 of its development being:

- a 250,000 TEU IMEX facility; and
- a rail connection to the SSFL at the southern end of the Moorebank site.

The agreement between MIC and SIMTA is subject to certain contractual conditions between the two parties. These conditions include that:

- project approval be obtained by SIMTA for the IMEX terminal on the SIMTA site; and
- a staged DA be obtained by MIC for terminal development on the Moorebank site.

The agreement between MIC and SIMTA considers the planning pathway if the conditions of the agreement are met. The planning pathway would incorporate the current approval that has already been obtained by SIMTA, and would include the following milestones:

- SIMTA obtains Stage 1 DA development approval for its site (current);
- MIC obtains staged DA - including Stage 1 Early Works for its site (current); and
- SIMTA obtains all subsequent DAs for each stage of the precinct development including any necessary modifications to approval conditions granted to both sites to secure an integrated 1.55 million TEU single IMT.

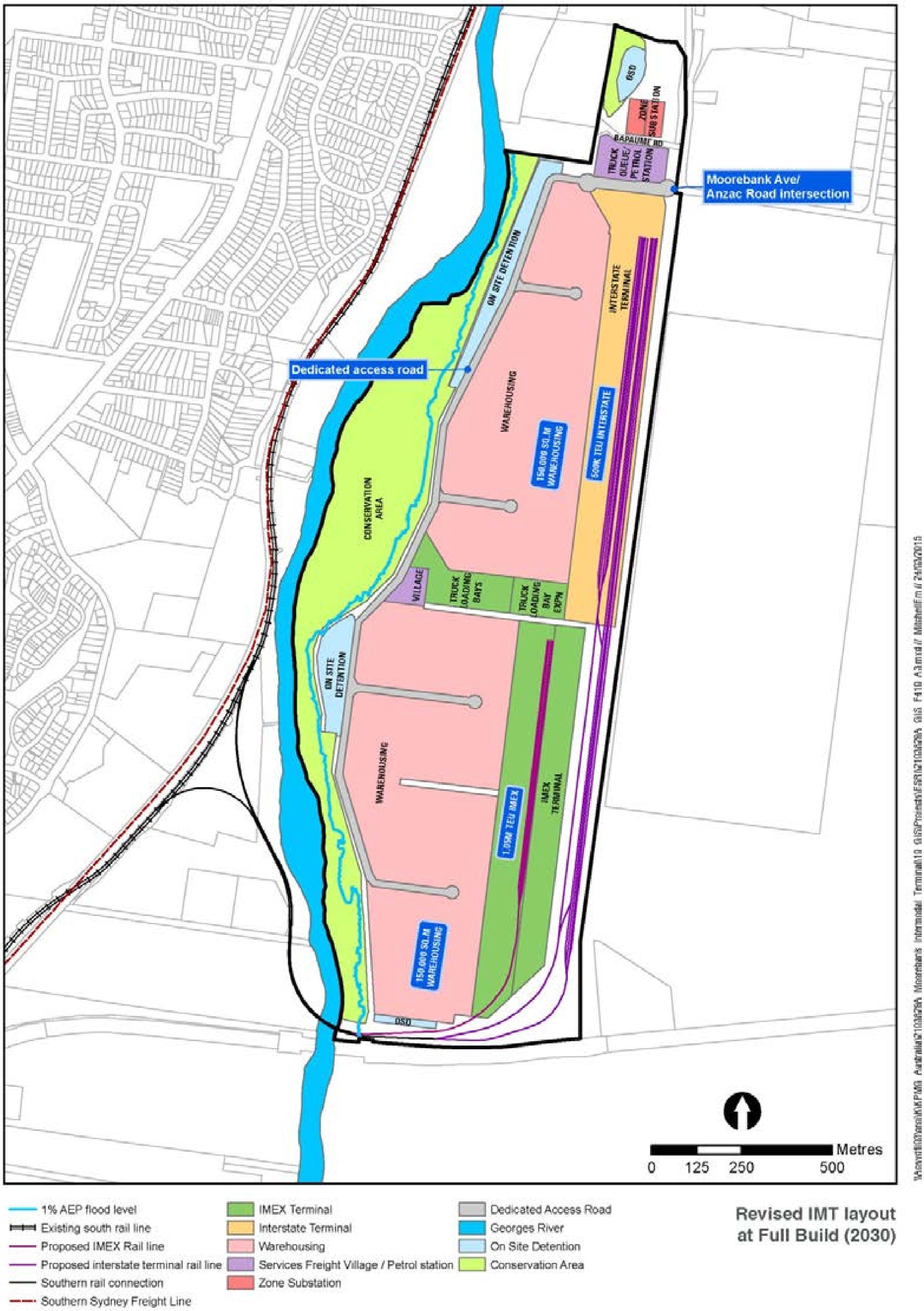


Figure ES.1 Project layout for revised development

Elements of the Project layout and built form that have changed

Amendments to the Project layout and built form are shown on Figure ES.1 and comprise:

- changes to the layout and operation of the IMT, including the location of the warehousing, working tracks and storage tracks, IMT freight village precinct, IMEX and interstate equipment storage and repair area and detention ponds;
- confirmation that the southern rail access into the site will be required (the EIS sought flexibility to build either a southern, central or northern rail access into the site from the SSFL);
- changes to access and circulation including heavy and light vehicle access to the facility via the Moorebank Avenue and Anzac Road intersection, along a dedicated road at the north and along the western boundary of the Project site;
- changes to the upgrade of Moorebank Avenue, which will be upgraded between Anzac Road and the M5 Motorway into a four-lane dual carriageway. No upgrades are proposed south of the Anzac Road intersection since traffic from the terminal will not use the southern section of Moorebank Avenue; and
- an increase in the size of the conservation area.

Figure ES.2 shows the components of the EIS and the proposed amendments to the development and illustrates how they have changed.

The amendments are being proposed to facilitate the integration of the Moorebank and SIMTA site operations, consistent with the agreement between MIC and SIMTA to develop the Project across a single site.

KEY PROJECT COMPONENTS	EIS	REVISED PROJECT
IMEX FREIGHT TERMINAL	Designed to handle 1.05 million TEU per year of IMEX containerised freight. Located in the centre of the Project site.	Designed to handle 1.05 million TEU per year of IMEX containerised freight. Located in the southern section of the Project site, adjacent to Moorebank Avenue.
INTERSTATE TERMINAL	Designed to handle up to 500,000 TEU per year of interstate containerised freight. Located in the centre of the Project site.	Designed to handle up to 500,000 TEU per year of interstate containerised freight. Located along the eastern section of the Project site, adjacent to Moorebank Avenue.
WAREHOUSE FACILITIES	Capacity of up to 300,000 sq m. Located on the eastern boundary of the Project site, adjacent to Moorebank Avenue.	Capacity of up to 300,000 sq m. Located along the western boundary of the Project site, adjacent to a dedicated access road.
RAIL ACCESS AND LAYOUTS	Project connected to the Southern Sydney Freight Line (SSFL) via a new rail access. Three rail access options assessed in EIS (northern, central and southern rail access).	Project connected to the Southern Sydney Freight Line (SSFL) via a new southern access from the SSFL. Northern and central rail access options not considered further.
VEHICLE ACCESS	Vehicles to access the Project site from Moorebank Avenue via the M5 Motorway. Modification to the M5 Motorway intersection, widening and upgrade of Moorebank Avenue to East Hills Railway Line. Upgrade of Anzac Road and relocation and upgrade of Bapaume Road.	Vehicles to access the Project site from a new Moorebank Avenue/Anzac Road intersection via the M5 Motorway. Modification to the M5 Motorway intersection, widening and upgrade of Moorebank Avenue to the new intersection only.
INTERNAL ROAD LAYOUT	Vehicles to access IMEX, IMT terminals and warehouses via access points off the upgraded Moorebank Avenue.	Vehicles to access IMEX, IMT terminals and warehouses via a dedicated access road (open to the public), leading from the new Moorebank Avenue/Anzac Road intersection, located on the western boundary of the site adjacent to the conservation area.
CONSERVATION AREA	Located along Georges River on the western boundary of the Project site.	Located along Georges River on the western boundary of the Project site.
ON-SITE STORMWATER DETENTION BASIN	Multiple detention basins along western edge of development area. Detention basin locations differ for each rail access option.	Multiple detention basins along western edge of development area. Currently four detention basins proposed; two adjacent (western site) to dedicated access road, one in northern corner (adjacent to ABB land) and one in the southern end of the site. Final locations will be determined during detailed design.

Figure ES.2 Comparison of the key project components of the EIS and revised

A detailed description and assessment of the amendments are provided in Chapter 7 – *Proposed amendments to the development* of this report. The impacts associated with the amendments are assessed in section 7.9 and management and related mitigation measures are detailed in Chapter 9 – *Revised environmental management measures* of this report.

Overview of submissions received

The EIS for the Project was placed on public exhibition between 8 October and 8 December 2014. During this period government agencies, local councils, key business/infrastructure stakeholders and the community were invited to make written submissions on the Project to NSW DP&E.

A total of 1,793 submissions were received during the EIS exhibition period. Of these submissions, 14 were provided by government agencies and local councils, with the remaining 1,779 provided by community members.

The content of each community submission was reviewed and categorised according to key issues (e.g. traffic, noise, air quality) and sub-issues (e.g. traffic impacts on the M5 Motorway). Due to the relatively large number and diversity of issues raised in community submissions, these matters raised in submissions were grouped based on their assigned key issue and sub-issue categories. This means that while the exact wording of the submission may not be captured in this Response to Submissions Report, the intent and the issues raised have been identified. Details of the issues raised and MIC's response are provided in Chapter 6 – *Response to community submissions* of this report.

Fourteen submissions were received from government agencies and local councils. These included submissions from Liverpool City Council (LCC), Campbelltown City Council (CCC), Hurstville City Council (HCC), Fairfield City Council (FCC), Bankstown City Council (BCC), Transport for NSW (TfNSW), Office of Environment and Heritage (OEH), Environment Protection Authority, Fire and Rescue NSW, NSW Rural Fire Service, Sydney Catchment Authority, NSW Department of Primary Industries (including comments from NSW Office of Water and Fisheries NSW), NSW Health and NSW Ports. Details of the issues raised and MIC's responses are provided in Chapter 5 – *Response to government agency submissions* of this report.

Following conclusion of the public exhibition period, MIC prepared this report to address the issues raised through the submissions and to document a number of amendments/variations to the proposed development since the exhibition of the EIS.

Assessment of submissions

The community and stakeholder submissions raised a number of key issues, with most submissions raising multiple issues. The top five issues raised by the community were:

- Project site alternatives and justification;
- traffic, transport and access;
- noise and vibration impacts;
- local and regional air quality; and
- human health risks and impacts.

Justification for a 1.55 million TEU throughput capacity at the site (given the PAC decision to cap the SIMTA project initially at 250,000 TEU), relationship to the SIMTA approval and cumulative impact considerations were also raised by submitters and are key issues to be considered.

The agreement with SIMTA for a single integrated terminal and the extensive assessment of the cumulative impacts of various stages of construction and operation are presented further in this report.

Project site alternative considerations and justification

The Project site was selected for its good access to existing major freight and rail corridors (SSFL, M5 Motorway, near the M7 Motorway and Hume Highway) and its central location relative to major freight markets in the west and south west of Sydney. The size of the site was also a significant factor in its selection, with the requirement to accommodate interstate trains (which can be up to 1,800 m long) and the need for the site to be large enough to handle the number of containers expected (a total throughput capacity of 1.55 million TEU a year, including up to 1.05 million TEU a year of IMEX). The site also has space for onsite warehousing, which increases the efficiency of the freight service offered and therefore increases the attractiveness of the terminal and its potential to get more freight onto the rail network.

Currently only 14% of freight to and from Port Botany travels by rail. To achieve NSW Government rail share target of 28% beyond 2020, the NSW government has begun to invest in network upgrades and operational improvements at the port-rail interface and upgraded the rail connection to the port. The NSW rail mode share target will be most efficiently achieved by maximising the efficient use of existing intermodal terminals and making an economically efficient investment in additional intermodal capacity in locations that are attractive to the freight market to fill the shortfall between the future capacity of existing terminals and the capacity needed to handle 28% of Port Botany's total throughput. The Moorebank IMT project is therefore imperative to supporting the modal shift which will ultimately improve the state and national productivity and drive economic growth.

A number of submissions suggested the demand could be accommodated within Sydney's existing IMT facilities; however, IMTs serve a defined geographic catchment and there is clear demand for Moorebank from a catchment area that is different to that served by existing IMTs. Also, Sydney's estimated total future IMEX intermodal capacity at existing terminals is not sufficient to meet government rail freight targets or expected rail freight demand at Port Botany. This includes the potential future capacity provided by the Yennora, MIST (Minto) and Villawood terminals approved capacity at the Enfield IMT and the recently announced new IMEX capacity at Chullora.

For the NSW rail freight target of 28% to be met, almost 800,000 TEU would be transported to and from Port Botany by rail by 2020, increasing to almost 1.18 million TEU by 2030 and to 1.64 million TEU by 2040. Under a conservative set of assumptions, the shortfall in IMEX intermodal capacity needed to achieve this target would be around 415,000 TEU in 2020. The proposed Stage 1 of the precinct (i.e. 250,000 TEU capacity) would partially satisfy this shortfall. By 2030, the shortfall would be a little over 530,000 TEU and by 2040, it would be around 810,000 TEU. Under a less conservative scenario, the shortfall would be around 1.3 million TEU in 2030 and 1.7 million TEU in 2040. Additional capacity therefore will be required (on top of the 1.05 million TEU Moorebank IMEX terminal) to maintain the 28% rail share target, possibly before 2030. Further capacity will be required if a rail freight target of 40% is pursued, consistent with the NSW Freight Infrastructure Advisory Board recommendation in 2005. If this occurs, the 1.05 million TEU IMEX terminal will be needed at Moorebank soon after 2030, under conservative assumptions, and well before 2030 under less conservative forecasts.

No other known site in Sydney has the same unique characteristics to efficiently accommodate the type of activities being proposed. The availability of the site for development represents a once-in-a-generation opportunity for a transformational freight infrastructure project. Alternative IMTs would be significantly less economically efficient than the Moorebank IMT and not practically achievable in the timeframes required. In particular:

- There is no land set aside for an IMT at Eastern Creek and a new freight rail line to the area would be needed with substantial investment implications.

- Land would also be required for an IMT at Badgerys Creek as the new airport site is unlikely to have spare space for this purpose. A new freight rail line would also need to be constructed in addition to the planned passenger line. It would not be practical for freight trains to share the planned passenger line to the new airport since passenger trains receive priority on the passenger network, which would undermine the efficiency and reliability of a rail freight service via Badgerys Creek.
- Even if land was available at Eastern Creek or Badgerys Creek, the planning and environmental approval process to assess the sites' suitability from an environment, social and economic perspective can take years. Given the demand for intermodal facilities in western Sydney the Moorebank IMT site is considered the most appropriate to service the current demand.

Given the clear suitability of the Project site for an IMT and the lack of economically efficient alternatives, it would be inappropriate and mostly inefficient to use the site for an alternative purpose (e.g. residential or commercial), as these land uses would have greater impacts on the local environment and community. For example, during peak hours:

- residential development would generate up to 25 times more traffic than an IMT; and
- a business park would generate up to three times more traffic than an IMT.

The comprehensive site assessment undertaken in the EIS conclusively demonstrated the suitability of the proposed site for the proposed intermodal activities - the essential requirement for decision making.

Justification of 1.55 million TEU

The Moorebank precinct needs to be developed to a total intermodal capacity of 1.55 million TEU, comprising 1.05 million TEU in IMEX capacity and 500,000 TEU in interstate freight capacity for the following reasons:

- To achieve the NSW Government rail share target beyond 2020. The current NSW 28% rail mode share target will be most effectively achieved by maximising the efficient use of existing IMTs and by investing in additional intermodal capacity in locations that are attractive to the freight market. These measures would fill the shortfall between the future capacity of existing terminals and the capacity needed to handle 28% of Port Botany's total throughput.
- No other site has been identified that is practicably feasible in the timeframe required and able to deliver the same operational efficiency (including the efficiency benefit of competition between terminal users under the terminal open access arrangement). Therefore, only the Moorebank precinct creates an opportunity to increase Sydney metropolitan container movements by rail.
- The full IMEX capacity of 1.05 million TEU will be needed if the rail mode share from Port Botany is permitted to grow in line with demand, or if the NSW Government were to pursue a higher target (e.g. 40%, as recommended by the Freight Infrastructure Advisory Board) beyond 2020 to enable the Port to continue to grow. A cap of 500,000 TEU on IMEX throughput would:
  - limit the ability of importers and exporters to choose the most efficient freight transport mode for their needs;
  - reduce the efficiency of planned investment in intermodal capacity at Moorebank, requiring further investment before it is economically efficient, and potentially discouraging investment in intermodal capacity;
  - be inconsistent with NSW and Commonwealth Government objectives to increase freight transfers by rail to reduce reliance on the road network, enabling continued growth in Port Botany throughput and encourage productivity growth; and

> only be warranted if the environmental impacts beyond the cap could not be managed, which other parts of this report, and the EIS, demonstrate is not the case.

- The Moorebank precinct also needs to provide 500,000 TEU of interstate capacity (i.e. in addition to the 1.05 million TEU of IMEX capacity). The Commonwealth Government has been investing heavily in the freight rail network to increase its reliability and transit times. A network of large, modern intermodal facilities, including at Moorebank is required to complement this investment and encourage more interstate freight to travel by rail. An improved interstate rail freight network would compete on cost and reliability with road, thereby encouraging more interstate freight to travel by rail.

- An assessment of the cumulative impacts of the Moorebank precinct on the road network, notes there are a number of intersections that, as a result of background traffic growth will operate at an unacceptable level of service. As such, a series of intersection mitigation measures have been presented that demonstrate that, providing the treatments are undertaken, a precinct wide total of 1.55 million TEU as well as 600,000 sq. m of warehousing can be accommodated for all assessed cumulative scenarios.

- The interstate freight rail network has adequate capacity for the 500,000 TEU of interstate freight planned for the Moorebank precinct. An assessment of the freight rail line between Port Botany and Moorebank found that an upgrade (construction of two new passing loops) is needed to enable it to handle the 1.05 million TEU of IMEX freight planned for Moorebank, on top of demand from other users. ARTC is already planning these upgrades, which are considered practically and economically feasible and will be required by around 2020.

Response to Project specific impacts

Many community submissions raised concerns relating to human health impacts (specifically noise, sleep disturbance, wheel squeal, air quality impacts and diesel fumes/emissions) and traffic and transport (specifically impacts on the local roads and major arterials and the associated social, environmental and economic impacts). Our detailed response to community submissions is presented in Chapter 6 – *Response to community submissions* of this report.

The EIS demonstrates that the IMT will have some impacts on the local community and environment. These impacts will be addressed through a raft of mitigation measures (e.g. local intersection upgrades, noise walls and locomotive standards to reduce noise and diesel emissions). The residual impact on the local community and environment – accounting for mitigation measures – will be small and manageable within established regulatory requirements and criteria. For example, the EIS and Response to Submissions Report demonstrate that:

- the concentration of air borne pollutants in the area will be well within air quality guidelines;

- there will be no measurable impact of the terminal on human health;

- the performance of local intersections will be maintained at the level that would be experienced in the future without the IMT; and

- noise from the IMT and its rail connection will be within government guidelines.

MIC has also been working with the NSW Government to assist its decision making on some major road upgrades that will be needed in the area, regardless of whether the IMT proceeds. These road upgrades are needed to handle growth in background traffic, but would also benefit the IMT. These possible road upgrades were identified in the 2014 NSW State Infrastructure Strategy and are currently being considered by the NSW Government for implementation.

Assessment of amendments

To determine the impacts associated with the changes to the concept design, a scoping exercise was conducted against the findings and conclusions of the impact assessment presented in the EIS. This qualitative exercise determined that the proposed amendments to the development only affected a small number of studies. A summary of the revised impact assessments are:

- Biodiversity impacts – Changes to the Project footprint, specifically the alignment and width of the southern rail access corridor, required a revised assessment of the Project's impacts on biodiversity and the biodiversity offset strategy. The revised assessment also included some minor changes in the quantification of credits generated from the credit calculator which changed the requirement for securing offsite offsets for some species. MIC is committed to undertaking all reasonable steps to secure the matching ecosystem credits and provide an offset package that meets the quantum of the offset requirement. The Project is being assessed under the NSW Government Framework for Biodiversity Assessment calculator.

- Visual – The greatest visual impact of the Project will be on the public parks (Leacock and Carroll Parks in Casula) and associated residential properties that are situated on the elevated topography sloping west from the Georges River. These will have clear views over the site and the taller project elements such as lighting towers and rail mounted gantry cranes. Overall, when compared to the EIS layout, the visual impacts are consistent, recognising that the southern rail access option is the favourable option from a visual impact perspective.

- Traffic – The changed site layout changes the traffic impacts on the surrounding road network. The changes in Project development phasing have also resulted in amendments to the 'ramp up' of traffic generation associated with the revised conversion factors between site uses/activities and trip generation. Adopting the truck generation rates used by SIMTA in its traffic studies (undertaken for its EIS) has resulted in modifications to some of the underlying assumptions about the rates of traffic generation, generally resulting in lower traffic generation rates. Traffic impacts associated with the amendments include the following:

  > A requirement to upgrade Moorebank Avenue north of Anzac Road, and the upgrading of the Anzac Road intersection to a major signalised intersection. This location would be the site entry point for all vehicles, with separation of light and heavy vehicles occurring within the site.

  > For the key intersections, while the traffic impacts at 2030 are slightly worse relative to the predictions made in the EIS, the analysis continues to show that by 2030, all intersections will have experienced a reduced level of service as a result of background traffic growth. A number of intersections will have deteriorated to an unacceptable level of service (Level D or below) without mitigation, due to background traffic alone.

  > Mitigation measures in the form of intersection treatments are proposed to ensure the intersections' performance is returned to 'base level' at any point in time i.e. the performance of an intersection remains no worse than under background (without Moorebank) conditions.

  > Table ES.1 below identifies the treatments that would be required, and by what date, for affected intersections. Mitigation treatments would only be applied if an intersection is operating at level of Service (LoS) E or worse as a result of the Project traffic above the background growth and cumulative impacts by others. Treatments would not be recommended where the resulting LoS of D or above is achieved, even where performance has deteriorated as a result of the Project.

> Indicative timing of these upgrades is provided in Table ES.1, based on current projections for background traffic growth and anticipated increases in container throughput (or 'ramp up') over time. However, in recognition of the uncertainties in actual throughput increases (due to factors such as future economic growth rates), any funding contribution of the IMT towards these upgrades would be based on the following circumstances:

  – That certain throughput levels at the terminal had been achieved. These throughputs are outlined in column 1 of Table ES.1.

  – That it can be further demonstrated (as part of any subsequent planning approval stage) that the intersection performance would have deteriorated to a level of service E or worse (where previously operating at a LoS D or above) were it not for the implementation of the upgrades outlined in Table ES.1.

> The impact of traffic from the project site, when fully developed and operating at full capacity, represents less than 3.3% of the total traffic already on the M5 Motorway during peak periods. The Project would therefore not have a substantial impact on the motorway operation.

> The mid-block capacity analysis (examining the flow of traffic along the roads between intersections) shows that ratios for all mid-block road sections would continue to perform at similar levels to the base condition with the addition of Moorebank IMT traffic.

Table ES.1 Summary of key intersection upgrade requirements as a result of the Project

Throughputs triggering IMT contributions to upgrades	Upgrade description	Intersections	Indicative upgrade year
Construction of Phase A (no operational throughput)	Signal timing changes, change bus lane on Heathcote Road to general traffic lane (combined left and right turn lane) and second lane to right turn lane.	I-07 – Heathcote Road/ Moorebank Avenue	2016
	Ban right turn on Church Road	I-09 – Moorebank Avenue/ Church Road	
	Signal timing changes	I-12 – Newbridge Road/ Governor Macquarie Drive	
Operation of 250,000 TEU	Signal timing changes	I-08 – Moorebank Avenue/ Industrial Access	2019
Operation of 750,000 TEU	Signal timing changes	I-01 – Hume Highway/ Orange Grove Road I-06 – Newbridge Road/ Moorebank Avenue I-11 – Newbridge Road/Nuwarra Road	2023
	Signal timing changes, extend short right turn lane on M5 East to 230 m in length.	I-14 – Hume Highway/M5 Motorway	
Operation of 1 million TEU	Signal timing changes, changed layout on Governor Macquarie Drive to include a combined through and right turn lane, and dedicated right turn lane of 200 m lengths.	I-12 – Newbridge Road/ Governor Macquarie Drive	2025
	Provide a left, through and right lane and dedicated right turn lane on Canterbury Road.	I-15 – Cambridge Avenue/ Canterbury Road	

Throughputs triggering IMT contributions to upgrades	Upgrade description	Intersections	Indicative upgrade year
Operation of 1.3 million TEU	Signal timing changes.	I-13 – Moorebank Avenue/ M5 Motorway	2028
Operation of 1.55 million TEU	Signal timing changes, 60 m approach and 60 m departure lanes on Hume Highway in the northbound direction.	I-01 – Hume Highway/ Orange Grove Road	2030
	Signal timing changes, additional 60 m right turn lane on the Hume Highway in the northbound direction.	I-03 – Hume Highway/ Memorial Avenue	
	Signal timing changes.	I-04 – Hume Highway/ Hoxton Park Road	

- Construction noise impacts are similar to those identified in the EIS. The deletion of the northern rail option removes some of the most severe noise impacts (at Casula). During peak construction (2016), when piling, excavation and compaction works are undertaken adjacent to the nearest residential receptors the predicted worst case noise levels trigger the requirement for construction noise mitigation to reduce potential levels by up to 12 dBA $L_{Aeq(15minute)}$. For concreting works, predicted noise levels trigger the daytime criteria by 3 dBA $L_{Aeq(15minute)}$ at the nearest receptors in Wattle Grove. Potential noise levels from heavy vehicles operating within the onsite haul roads are within the daytime criteria and would not require specific noise mitigation to reduce the predicted noise levels.

- Operational noise impacts associated with the amendments include:

  > The container handling area at the IMEX terminal will be automated and so will not require audible alarms or beepers. Measured noise levels provided by the manufacturer of the rail mounted gantries (RMGs) are 10 dBA less when operated without the audible warning alarms. This has resulted in some improvements in noise impact relative to the EIS predictions.

  > In the revised Project the need for a rail loop to manage the entry and departure of trains within the site has been removed, which will reduce the likelihood of wheel squeal noise from trains.

  > During operation (Full Build), predicted noise levels comply with the daytime and evening noise criteria at all assessed receptors. Noise levels in the night-time are predicted to comply with the noise criteria at the majority of receptors. Exceedances of up to 4 dB are predicted at the northern extent of Casula and of 2 dB at the western extent of Anzac Road.

  > During adverse weather conditions, predicted noise levels comply with the daytime and evening noise criteria at all assessed receptors in Casula, Glenfield and Wattle Grove with the exception of the western extent of Anzac Road, where noise levels are up to 2 to 3 dB above the daytime and evening noise criteria.

  > Adopting the proposed noise mitigation measures would reduce predicted noise levels by at least 5 dB and would achieve compliance at all assessed receptors.

- Air quality – Predicted local air quality impacts show minor variances in modelled results compared to impacts predicted in the EIS. The predictive dispersion modelling demonstrates that concentrations of pollutants (TSP, PM_{10}, NO_x, CO, SO_2, benzene, toluene, xylene, 1,3-butadiene, acetaldehyde and polycyclic aromatic hydrocarbons) emitted would be below acceptable ambient air quality criteria and would not adversely affect the receiving environment. An exceedance of the annual average $PM_{2.5}$ advisory reporting goal at R33 was predicted to occur due to cumulative concentrations during Full Build activities. While this receptor was relocated in 2014, it has been retained in the assessment for completeness. The likely future land use at R33 would be associated with the SIMTA project. The elevated ambient background is the key contributor to these exceedances.

- Human health - Predicted impacts on human health of the local community show very minor variation from impacts predicted in the EIS. In addition, the recommendations presented in the EIS in relation to mitigating impacts or enhancing health benefits remain unchanged. Some additional noise mitigation measures have been outlined and these should be considered in conjunction with other mitigation measures outlined in the relevant assessments.

Revised environmental management measures have been proposed to address the impacts associated with the project amendments. These measures will be implemented to reduce the identified environmental impacts associated with the construction and operation of the Project.

Cumulative impact assessments

Based on the agreement with SIMTA for an integrated IMT across both the SIMTA and Moorebank sites, a revised approach to the cumulative assessment of the entire Moorebank precinct has been undertaken. This is presented in Chapter 7 – *Proposed amendments to the development* of this report. In summary the cumulative impact scenarios are as follows:

- Continue to recognise there is a maximum of 1.55 million TEU (IMEX plus interstate freight) for the entire Moorebank precinct.

- Continue to consider alternate scenarios whereby all IMEX capacity is built on the SIMTA site or the Moorebank site but not both.

- Introduce a new cumulative scenario (C1) reflecting a potential Stage 1 development that matches the current SIMTA Stage 1 DA (250,000 TEU) in conjunction with a likely first stage of development of the Moorebank site (500,000 TEU).

- Introduce a new cumulative scenario (C2) reflecting a Full Build (2030) with 500,000 TEU on the SIMTA site (reflecting the cap placed on SIMTA's concept approval) and with the remaining 1.05 million TEU capacity (consisting of 550,000 TEU IMEX and 500,000 TEU interstate) on MIC's site.

The results of the cumulative impact assessment demonstrate that the key issues of concern of noise and traffic would be within acceptable levels, as described below:

Noise and vibration

For all scenarios assessed, the predicted cumulative noise levels during both neutral and adverse conditions comply with the daytime, evening and night-time amenity noise criteria at all assessed receptors in Glenfield and Liverpool. The predicted cumulative noise levels in Casula and Wattle Grove comply with the daytime and evening amenity noise criteria but exceed the night-time amenity noise criteria during neutral weather conditions by up to 3 dBA (with Scenario B representing the worst-case scenario). During adverse weather conditions, the predicted cumulative noise levels would be exceeded by up to 5 dBA (for scenario B) with exceedances at some receptors for all scenarios. The results are outlined in Table ES.2 below.

Cumulative traffic noise impacts are only marginally greater than the background levels (by 1 dBA), which is below the level at which specific mitigation measures are required.

Table ES.2 Predicted cumulative noise levels – all scenarios

Residential receptor	Predicted Noise Levels, $L_{Aeq,\ dBA}$			
	Scenario A		Scenario B	
	Neutral weather	Adverse weather	Neutral weather	Adverse weather
Casula	27–**42**	29–**44**	27–**43**	29–**45**
Wattle Grove	35–40	39–**44**	38–**43**	40–**45**
Glenfield	29–32	29–33	31–34	31–34
Liverpool	32–34	38–40	33–33	38–38
Non-Residential Noise Sensitive Receptors	21–**43**	25–**44**	26–**43**	26–**44**
	Scenario C1		Scenario C2	
Casula	25–40	26–**42**	27–**41**	28–**43**
Wattle Grove	35–39	38–**42**	35–40	37–**42**
Glenfield	29–32	30–32	31–33	31–34
Liverpool	30–30	35–35	30–32	34–34
Non-Residential Noise Sensitive Receptors	22–40	24–**42**	24–41	26–**43**

Traffic, transport and access

By 2030 a number of intersections will be operating at an unacceptable LoS, under cumulative scenarios A, B and C as a result of background traffic growth (and planned upgrades by RMS) in conjunction with traffic generated by the Moorebank IMT and the SIMTA site. Table ES.3 identifies the treatments required, and by what date, for affected intersections under cumulative scenarios A, B and C. Mitigation treatments would only be applied if an intersection is operating at level of Service (LoS) E or worse as a result of the precinct (i.e. cumulative) traffic above the background growth and cumulative impacts by others. Treatments would not be recommended where a resulting LoS of D or above is achieved, even where performance has deteriorated as a result of the Project.

- Indicative timing of these upgrades is provided in Table ES.1, based on current projections for background traffic growth and anticipated increases in container throughput (or 'ramp up') over time for the IMT. However, in recognition of the uncertainties over actual throughput increases (due to factors such as future economic growth rates), any funding contribution of the IMT towards these upgrades would be based on the following circumstances:
  - That certain throughput levels at the terminal had been achieved. These throughputs are outlined in column 1 of Table ES.1.
  - That it can be further demonstrated (as part of any subsequent planning approval stage) that the intersection performance would have deteriorated to a level of service E or worse (where previously operating at a LoS D or above) were it not for the implementation of the upgrades outlined in Table ES.1.

The upgrades required as a result of background traffic growth combined with traffic generated by the Project and the SIMTA project are presented as potential road network solutions but are not nominated for delivery by the Project as they are based on a number of assumptions which will be proven or otherwise during operations in the period 2018–2030. The delivery funding and mechanisms for delivery network upgrades will be subject to further assessment in consultation with the NSW Government during future DA stages. Intersections I-0B and I-0C in Table ES.3 are intersections that would be constructed in the event that the SIMTA site is developed (i.e. they would not exist under an IMT-only scenario).

Table ES.3 Summary of key intersection upgrade requirements taking account of cumulative traffic

Throughputs triggering IMT contributions to upgrades	Cumulative scenario	Upgrade description	Intersections	Upgrade year
750,000 TEU	C1	Signal timing changes (brought forward from 2023 for IMT-only).	I-01 – Hume Highway/ Orange Grove Road I-06 – Newbridge Road/ Moorebank Avenue	2020
		Signal timing changes, extend short right turn lane on M5 east Motorway to 230 m (brought forward from 2023 for IMT-only).	I-14 – Hume Highway/ M5 Motorway	
1.55 million TEU	C2	Signal timing changes, additional 70 m right turn lane on Elizabeth Drive in the westbound direction.	I-02 – Hume Highway/ Elizabeth Drive	2030
	A, B and C2	Signal timing changes for an additional 75 m right turn lane on the Hume Highway in the southbound direction.	I-04 – Hume Highway/ Hoxton Park Road	
	A, B and C2	Signal timing changes, extend left turn lane on Newbridge Road to 150 m in the westbound direction.	I-06 – Newbridge Road/ Moorebank Avenue	
	A, B and C2	Signal timing changes, short left turn lane of 100 m to Moorebank Avenue slip lane (dual signalised slip lane westbound).	I-13 – Moorebank Avenue/ M5 Motorway	
	A and C2	Signal timing changes; provide a dedicated left turn lane on Moorebank Avenue north.	I-0A – Moorebank Avenue/ Anzac Road	
	B	As for A and C2 plus additional right turn lane on Moorebank Avenue South.		
	B	Provide dual right-turn lanes on SIMTA central access.	I-0B – Moorebank Avenue/ new DNSDC access/ SIMTA northern access	
	B	Provide dual right-turn lanes on SIMTA southern access.	I-0C – Moorebank Avenue/ SIMTA central access	

Local air quality

The following key points are taken from the cumulative modelling results generated for the operations at the Moorebank IMT site and SIMTA site:

- Cumulative incremental impacts (Moorebank IMT and SIMTA only) of all pollutants are below NSW EPA and National Environment Protection Measure (NEPM) advisory reporting goals at all surrounding receptor locations, for all assessed site configurations;
- Additional exceedance of the NSW EPA 24-hour average PM_{10} criterion and NEPM advisory reporting goal for 24-hour average $PM_{2.5}$ is predicted to occur at R33 (which is located on the SMITA site);
- Cumulative annual average (Moorebank IMT and SIMTA (only increment) plus background) $PM_{2.5}$ concentrations exceed the NEPM advisory reporting goal at receptor R33. The exceedance at R33 is attributable to the location of R33 directly among SIMTA site emission sources.
- No other cumulative (Moorebank IMT and SIMTA (only increment) plus background) pollutant exceedances are predicted for any scenario at any of the surrounding receptor locations.

Human health

In relation to the assessment of cumulative impacts from the operation of both the Moorebank and SIMTA sites, the predicted health impacts are generally considered to be low (not significant). The human health risk assessment has identified risks to commercial/industrial properties on Moorebank Avenue currently within the SIMTA site boundary. Mitigation measures are required to minimise exposure to particulates at those sites, however, as all the identified receptors would be relocated with the development of the SIMTA site, these receptors have been discounted from further consideration in the cumulative assessment.

Managing residual impacts

The Project as proposed incorporates a range of mitigation and management measures to ensure it operates within acceptable limits. Many of the impacts have already been reduced through the application of technology or design optimisation:

- The development of the Project layout to maintain a substantial conservation area along the banks of the Georges River, has substantial benefits in terms of biodiversity conservation and preservation of the amenity of the Georges River as well as creating a buffer between the site and residents of Casula.
- The Project layout places warehousing on the western area of the site to provide a buffer between Casula residents and rail operations on site.
- A range of noise mitigation measures, including a noise barrier at the western boundary of the site has been allowed for to protect residents of Casula. In addition, the use of automated cranes has eliminated the need for warning alarms, resulting in a significant reduction in noise levels.
- The on-site operations include the use of Liquefied Petroleum Gas (LPG) generated plant and equipment in place of diesel to minimise impacts on local air quality.
- The rail crossing from the SSFL into the site has been located at the south of the site to minimise noise and visual impacts on residential receivers and to minimise flood risk to surrounding land.

- Traffic access arrangements are designed to prevent truck traffic from entering or leaving the site from the south minimising traffic impacts on local communities.
- Water quality in the Georges River will be maintained or improved through the application of effective water quality management throughout construction and operation of the Project.

Even with these measures in place, a number of residual impacts remain that will require further mitigation and management. Key residual impacts are summarised in Chapter 7 – *Proposed amendments to development* of this report. Strategies to manage residual impacts include the following:

- Minimising native vegetation clearing through careful detailed design. For unavoidable impacts, MIC is currently working closely with NSW OEH and the Commonwealth Department of Environment (DoE) to establish a package of offsets that will ensure that biodiversity values for the affected vegetation communities and species are maintained.
- Other measures to reduce noise emissions (such as rail noise damping and quieter gantry cranes) will be explored with a view to further reducing at-source noise impacts. Once all reasonable and feasible at-source measures have been applied, boundary treatments (such as additional noise walls) would be applied to the satisfaction of the regulators.
- MIC and the future Project operator will continue to work with the NSW Government to evaluate the impacts of the Project on the surrounding road network and will contribute proportionally to upgrading the affected intersections to ensure that the road network functions at an acceptable level into the future.
- Landscaping and urban design treatments would be applied to minimise the visual impact and light spill from the Project.

A detailed schedule of mitigation and management measures to manage residual impacts is outlined in Chapter 9 – *Revised environmental management measures* of this report.

Public benefit test

The Project is in the public's best interest as its residual impacts will be localised and managed; however its benefits will be significant and widespread for the entire community. The benefits include a major contribution to jobs and productivity growth, supply chain efficiency and reduced congestion growth. The local community will receive a share of these benefits as well as a local benefits program. In addition, the public interest is also served by the IMT in terms of its contribution to government policy, the lack of suitable alternative sites; and the unique characteristics of the site which are not needed for other land uses but make it ideal for an IMT. While some local community members oppose the Project, the broader community interest is reflected by strong support from government and industry stakeholders.

Granting development consent for the Project in its entirety as proposed is therefore consistent with the public interest, which satisfies a key aspect of planning decision-making. A reduced throughput IMT would not deliver the strategic certainty, sustainable outcomes nor government objectives and would not be in the public interest.

Planning assessment and approval pathway

MIC is seeking both Commonwealth and NSW Government approvals for the Project concept (i.e. the broad parameters of the Project). That is, MIC is seeking approval to satisfy:

- the Commonwealth requirements for the Project in relation to impacts of the proposed action on matters protected under the EPBC Act (which, in the case of this action, comprise listed threatened species and communities, and impacts on the environment by a Commonwealth agency); and
- a staged SSD consent under the NSW *Environmental Planning and Assessment Act* 1979 (EP&A Act) for the full development (including a Stage 1 consent for Early Works).

Approval of cumulative capacity

MIC recognises there is already an approval for the SIMTA project on the adjacent site. Accordingly MIC has suggested a regime of appropriate conditions of consent, with the key objectives of:

- not exceeding the capacity of the local, regional or state network; and
- demonstrating compliance with the approved environmental and amenity conditions and the effectiveness of the mitigation measures.

The suggested approval regime provides that:

- commencement of construction to provide for an initial throughput of 500,000 TEU on the MIC site can only proceed subject to a further DA and once the consent authority is satisfied that the capacity of the local road network will not exceed background conditions;
- commencement of construction to provide for a further throughput of 550,000 TEU (bringing the total to 1.05 million TEU on the MIC site) can only proceed subject to a further DA and once the consent authority is satisfied that the capacity of the road network will not exceed above background conditions; and
- a total throughput beyond a total 1.05 million TEU (bringing the total to 1.55 million TEU on MIC's) cannot occur unless the consent authority is satisfied that there is not, nor will not be, DA granted on the adjacent land (i.e. the SIMTA site).

Conditions governing the approval of future development application stages

The PAC placed a cap on the SIMTA planning approval on the basis of concerns about the capacity of the road network. This report demonstrates that with suitable modification of key intersections and other supplementary measures outlined in Table ES.3, the road network can be progressively improved to ensure that, allowing for background traffic growth, the road network can be maintained at a LoS commensurate with its 2030 conditions (were there no project), up to a level of 1.55 million TEU.

Additionally this report clearly justifies the development of the Moorebank precinct to a total intermodal capacity of 1.55 million TEU (comprising 1.05 million TEU in IMEX capacity and 500,000 TEU in interstate freight capacity) to meet market demand for containerised goods in western Sydney and to achieve the NSW Government's rail share target. No other site has been identified that could be delivered in the same timeframe and with the same advantages of size and proximity to existing transport corridors. As such, only the Moorebank precinct creates an opportunity to increase Sydney's metropolitan container movements on rail.

To provide a framework for future DA stages, this Stage 1 DA proposes a number of tests and procedures that would have to be satisfied for each successive development stage. These stages are outlined below.

Prior to the granting of development consent for any future stage, the proponent will be required to demonstrate, to the satisfaction of the consent authority, that:

1. the Project is operating within the limits predicted by the EIS, through annual monitoring of key parameters and public environmental reporting of results;

2. adequate consultation with LCC and the local community has been undertaken in accordance with an approved stakeholder engagement plan;

3. the impacts of additional traffic associated with the future development approval stage will be within the capacity of the road network, taking account of background traffic growth and planned road network improvements;

4. arrangements are in place (irrespective of funding source) for the on-time delivery of the necessary road network improvements referred to in point 3 above; and

5. all additional amenity and environmental impacts can be managed to acceptable levels, taking into account the existing impacts of the already completed development plus the additional impacts that will occur as a result of the future development stages.

Future development stages will require the preparation of an EIS for that stage to address the above as well as:

- any other matters prescribed in further SEARs for that stage; and

- any matters identified in any conditions of approval granted by the Minister or PAC for this Stage 1 DA.

Next steps

This Response to Submissions Report has been provided NSW DP&E for consideration. The approval process under the EPBC Act (Commonwealth) and the EP&A Act (NSW) are to proceed in parallel, as follows:

- NSW approval process under the EP&A Act:

  > The Response to Submissions Report will be made publicly available for a minimum of 30 calendar days during which the community and stakeholders will be invited to make written submissions on the report to NSW DP&E.

  > MIC will review submissions received and prepare a Supplementary Response to Submissions Report which addresses issues raised relating to proposed amendments to the development. The Supplementary Response to Submissions Report will be provided to NSW DP&E for consideration.

  > NSW DP&E will prepare an Assessment Report to assist the NSW Minister for Planning in making a determination on the staged SSD application for the Project. The Assessment Report will be made publicly available.

> The NSW Minister for Planning (or the Planning Assessment Commission by delegation) will decide whether to approve the staged SSD application and any conditions of the approval.

> The staged development consent (if received) would provide consent at a concept level for the development, for which detailed proposals for separate parts of the site would be the subject of subsequent DAs. The exception would be for the Early Works package, for which MIC is seeking development consent without the need for further applications.

- Commonwealth approval process under the EPBC Act:

> MIC will provide a formal request to the DoE to vary the EPBC referral (EPBC number 2011/6086) to reflect the proposed amendments to the development.

> MIC will provide final EIS documentation (incorporating the draft EIS, this Response to Submissions Report and the Supplementary Response to Submissions Report) to DoE to reflect changes to the Project since exhibition of the draft EIS.

> DoE will consider the final EIS documentation and the variation to the EPBC referral and will prepare an Assessment Report to assist the Commonwealth Minister (or delegate) in making a determination on the Project.

> The Assessment Report will be made publicly available for a minimum of 30 calendar days.

> The Commonwealth Minister for the Environment (or delegate) will decide whether to approve the Project and any conditions on such approval.

Consultation with key stakeholders and the community will continue during the next stages of the Project from detailed design, to construction and operation. If staged development consent is received, a Community Engagement Plan (CEP) will be prepared and implemented by the contractor selected for the construction and operation of the Project. This will outline the consultation and notification processes during the pre-construction, construction and operation phases of the Project. Further details of future consultation activities are provided in section 3.4 of this report.

Conclusions

The Project is an important infrastructure project for Sydney and NSW. It would increase intermodal capacity in Sydney and would have a number of flow-on benefits across the freight sector and the NSW economy. By providing increased intermodal capacity it is envisaged the unit costs of transporting containers by rail for IMEX and interstate markets would be reduced, and this would lead to an increase in the share of freight movements by rail.

The Moorebank precinct needs to be developed to a total intermodal capacity of 1.55 million TEU, comprising 1.05 million TEU of IMEX capacity and 500,000 TEU in interstate freight capacity to meet market demand for containerised goods in western Sydney and to achieve the NSW Government's rail share target beyond 2020. No other site has been identified that would deliver the same operational efficiency (including an efficiency benefit of competition between terminal users under the terminal open access arrangement) and therefore only the Moorebank precinct creates an opportunity to increase Sydney's metropolitan container movements by rail.

The Project is in the public's best interest as its residual impacts will be localised and managed while its benefits will be significant and widespread for the entire community. The benefits include a major contribution to jobs and productivity growth, supply chain efficiency and reduced congestion growth. The local community will receive a share of these benefits as well as a local benefits program.

Granting development consent for the Project in its entirety as proposed is therefore consistent with the public interest, which satisfies a key aspect of planning decision-making. A reduced throughput terminal will not deliver the strategic certainty, sustainable outcomes or Government objectives and will not be in the public interest.

The EIS and the environmental impacts assessed for the amended concept layout confirm that the impacts associated with the Project are manageable, and recommends a number of mitigation measures to reduce these impacts further during construction and operation of the Project.

Chapter 1
Introduction

1. Introduction

An intermodal terminal, or IMT, is a location for the interchange of freight between one mode of transport and another. The Moorebank IMT Project (the Project) is intended to provide an inland road/rail terminal to service freight movements to and from Sydney's west and south-west.

This chapter provides an overview of the Project as presented in the Environmental Impact Statement (EIS) and describes the purpose and structure of this report.

1.1 Background and purpose of this report

The EIS for the Project was placed on public exhibition between 8 October and 8 December 2014. During this time the community, key stakeholders and interest groups were invited to make a submission either using the online submission tool on NSW Department of Planning and Environment (NSW DP&E)'s website or by providing a written submission. An electronic copy of the EIS is available on NSW DP&E's website http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=5066

This document comprises the Response to Submissions Report (incorporating a proposed amendment to the development and associated impact assessment) (this report) which is required under Division 6 and clause 85A(2) of the NSW *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation). Clause 85A(2) specifies that:

> 'The Director-General may, by notice in writing, require the applicant to provide a written response to such issues raised in those submissions as the Director-General considers necessary'.

This report documents and considers the issues raised in the community and agency submissions received during the public exhibition of the EIS. In particular, this report provides:

- an overview of the Project and EIS;
- an assessment of the issues raised by the NSW Planning Assessment Commission in its assessment of the Sydney Intermodal Terminal Alliance concept plan EIS with a specific focus on matters with direct implications for the Project;
- details of consultation activities undertaken prior to, and during, the public exhibition of the EIS, as well as future consultation to be undertaken during the pre-construction, construction and commissioning phases;
- responses to issues raised in community and agency submissions;
- details of the proposed amendments and additional investigations that have been undertaken since the public exhibition of the EIS; and
- a revised list of environmental management measures proposed for the Project (including revisions made through design changes and additional investigations).

1.2 Project background

Forecast growth in international and interstate freight movements through Sydney's Port Botany and increased industrial and commercial development in west and south-west Sydney have prompted government and industry to consider new strategies for alleviating constraints on the road freight network. Insufficient intermodal rail freight capacity is recognised as a key barrier to the future development of Sydney and improvements in national productivity.

The Project involves the development of intermodal freight terminal facilities at Moorebank, in south-west Sydney that facilitates the reduction of road traffic along key road freight corridors supporting the movement of freight by train. This is consistent with NSW Government objectives towards increasing the mode share from trucks to trains

In September 2004 the Australian Government announced it would consider the development of an IMT at Moorebank (Department of Transport and Regional Services 2006). In September 2010, the Commonwealth Department of Finance (DoF) (formerly the Commonwealth Department of Finance and Deregulation (DoFD)) commenced the Moorebank Intermodal Terminal Feasibility Study (the feasibility Study) which included economic and financial analysis, technical feasibility and master planning for the facility. A scoping study undertaken as part of the Feasibility Study found that an IMT at Moorebank would have a positive impact on national productivity and long-term public benefits associated with reducing road congestion from heavy vehicle freight transport, and the associated environmental and social impacts of this congestion.

Following this study, a business case was prepared for the Project by KPMG, and in April 2012 after reviewing the findings of the business case, the Australian Government committed to proceeding with the Project, subject to planning and environmental approval.

1.2.1 Approval pathway

The planning and assessment process for the Project is summarised in Figure 1.1. MIC is currently seeking approval for the proposal 'concept' (i.e. the broad parameters of the Project to operate at maximum capacity of 1.55 million twenty-foot equivalent units (TEU)) to satisfy both:

- a staged State significant development (SSD) consent under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) (including a Stage 1 development consent for Early Works); and
- the requirements of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in relation to impacts of the proposed action on matters protected under the Act (which, in the case of this Project, comprise listed threatened species and communities and impacts on the environment by a Commonwealth agency).

The approval processes under the EPBC Act and the EP&A Act are being undertaken in parallel and the EIS addressed both the Commonwealth's EIS guidelines as well as the Secretary for NSW DP&E's Environmental Assessment Requirements (SEARs) for the Project.

In addition, a planning proposal is seeking Commonwealth and State environmental and planning approvals to facilitate the development of the IMT by rezoning the Project site and introducing relevant provisions into the *Liverpool Local Environmental Plan 2008* (LLEP). More specifically, the planning proposal seeks to:

- amend the land use zoning of the Project site to provide for, with consent, the development of the IMT and access to the freight network;

- introduce the requirement to provide for satisfactory arrangements for contributions to be made towards regional transport infrastructure reasonably required by the Project; and
- introduce planning controls that are consistent with the development controls for other industrial land uses.

The planning proposal was exhibited at the same time as the EIS so that the rezoning of the Project site can be considered in conjunction with the Commonwealth and NSW approvals.

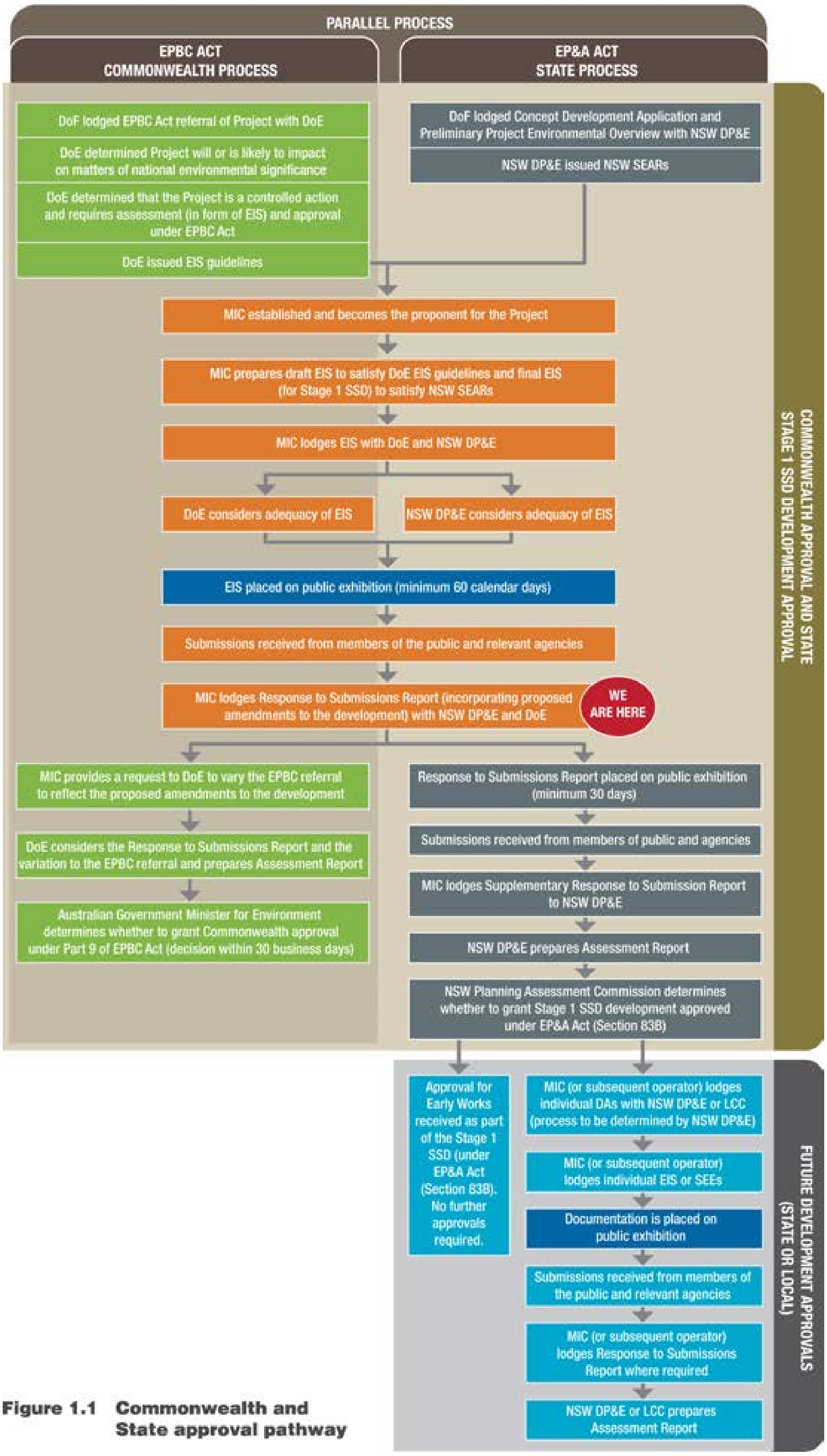


Figure 1.1 Commonwealth and State approval pathway

1.3 Overview of Project as presented in the EIS

The Project, as presented in the EIS, involves the development of IMT facilities at Moorebank in south-west Sydney, linked to Port Botany and the interstate rail network. The Project includes associated commercial infrastructure (warehousing), a rail link connecting the Project site to the Southern Sydney Freight Line (SSFL) and road entry and exit points along Moorebank Avenue. The following sections briefly describe the key features, staging and timing, strategic context and benefits of the Project. Further details are provided in the EIS which can be accessed at http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=5066.

1.3.1 Key features of the Project

The key features of the Moorebank IMT as presented in the EIS include the following:

- *An import/export (IMEX) freight terminal* designed with a maximum capacity of 1.05 million twenty-foot equivalent units (TEU) a year (525,000 TEU inbound and 525,000 TEU outbound) servicing international IMEX freight movement between Port Botany and the Project site.
- *An interstate freight terminal* designed to handle up to 500,000 TEU a year (250,000 TEU inbound and 250,000 TEU outbound) of interstate freight, servicing trains travelling to, from and between Sydney and regional and interstate destinations.
- *Warehousing facilities* with capacity for up to 300,000 square metres (sq. m) of gross floor area to provide an interface between the IMEX and interstate terminals and commercial users of the facilities such as freight forwarders, logistics facilities and retail distribution centres.
- *Establishment of a conservation area* to maintain and enhance the riparian vegetation between the Georges River and the 1% annual exceedance probability (AEP) flood level.
- *An upgrade of Moorebank Avenue* including widening of the road to a four-lane carriageway between the M5 Motorway and the East Hills Railway Line, upgrades to intersections to accommodate the widening and additional traffic, and traffic control measures.
- *A rail access connection (rail link) between the main IMT site and the SSFL* via a bridge crossing the Georges River to the west of the main IMT site at either the northern, southern or central part of the Project site's western boundary.

1.3.2 Staging and timing

The Project would involve the phased delivery of the IMEX and interstate terminals and warehousing capacity in line with the market demand for processing of containers through the IMT. Construction is proposed to commence in 2015 with the Early Works development phase. Development would then progress with construction and later simultaneous operation activities until the Project reaches Full Build in 2030.

For the purpose of assessing the impacts of the Project, the EIS used five development phases to describe the likely construction and operational activities. A summary of the phasing presented in the EIS include:

1. Early Works (2015);
2. Phase A – construction of initial IMEX terminal and warehousing (2015–2018);

3. Phase B – operation of initial IMEX terminal and warehousing, construction of additional capacity (2018–2025);

4. Phase C – operation of IMEX terminal and warehousing, construction of interstate terminal and additional warehousing (2025–2030); and

5. Full Build – operation of IMEX terminal, warehousing and interstate terminal (2030).

Future Stage 2 SSD approval applications will be linked to the proposed development phases presented above and may be subject to further change in light of changing economic conditions in future years. As such, the proposed phasing is a best estimate for the purpose of assessing environmental impacts at key stages of development. Each SSD stage of development will be subject to its own detailed EIS which will provide an opportunity for the (slightly revised compared to the EIS) Project stages and timing to be determined in detail.

1.3.3 Need for the Project

Sydney's need for additional IMEX and interstate IMT infrastructure is driven by the following factors.

- Continued strong growth in containerised IMEX freight, with growth averaging 7% annually over the last 15 years (NSW Government 2013), and forecast (by the Australian Government's Bureau of Infrastructure, Transport and Regional Economics (BITRE 2010)) to be a compound annual growth rate of 4.25% to 2030.
- The need to ease the bottleneck for containerised freight at Port Botany, which is a critical gateway for the movement of national freight – i.e. to cope with future growth in containerised freight, more freight needs to be moved to and from Port Botany by rail.
- The expected growth in containerised interstate freight moving through Sydney, which is forecast to grow at 3.6% a year over the next 20 years (BITRE 2010).
- Capacity constraints within the current and planned IMT network in Sydney.
- Increasing containerised freight demand in Sydney and interstate, with a significant amount of this demand focused on west and south-west Sydney, and strategic planning in the freight sector placing increasing emphasis on interstate rail transportation.
- Heavy road congestion around Port Botany and on the M5 Motorway, which is predicted to worsen with the anticipated growth in freight.
- The high social and environmental costs of road freight relative to rail and shipping.

If these issues are not addressed, they are predicted to add substantial costs to the national and regional freight supply chain, and would have wider economic and environmental impacts associated with road congestion in Sydney.

An IMT at Moorebank would respond to Sydney's need for more freight handling capacity as the Project would enable more containerised freight to be moved by rail. The Project is one of a number of IMTs required to manage the increased number of containers expected to come through Port Botany in the long term.

1.3.4 Strategic context

Improving freight infrastructure and performance has been a key focus for both the Australian and NSW Governments. The need for additional intermodal capacity at Moorebank has been identified in a number of strategic policy documents (refer to Table 1.1). In addition, analysis of market demand undertaken by KPMG has determined that there is a shortfall in IMEX capacity of more than one million TEU a year, at 2025 (even when taking into account the existing capacity at Yennora, Minto, Villawood and Enfield). KPMG also forecast there would also be shortfall in interstate capacity, of approximately of 328,000 TEU a year at 2030 growing to 363,000 by 2040. Chapter 2 – *Assessment of the issues raised by the NSW Planning Assessment Commission* of this report provides a detailed discussion of market demand.

Overall, the Moorebank IMT is intended to satisfy the strategic need for the intermodal capacity in the Sydney region and is consistent with the national and state policy framework.

Table 1.1 Summary of modifications to the proposal

Australian Government policies and publications	
Policy/publication	**Relevant to the Project**
National Building Program	The Australian Government is investing $36 billion in road and rail infrastructure through the National Building Program over the period from 2009–09 to 2013–2014. An IMT at Moorebank is identified as a NSW project that will receive funding under the National Building Program.
National Land Freight Network Strategy	The *National Land Freight Strategy Discussion Paper* (Infrastructure Australia 2011) identifies the need to integrate freight and land use planning in developing a national and freight network. New IMT capacity at Moorebank is identified in the discussion paper as a key priority.
National Ports Strategy	The *National Ports Strategy* (Infrastructure Australia 2010) identifies the need to improve the efficiency of port-elated freight movements across the infrastructure network.
National Infrastructure Priorities	An IMT located at Moorebank has been identified in the *National Infrastructure Priorities – Infrastructure for an economically, socially and environmentally sustainable future* (Infrastructure Australia 2009) as a priority infrastructure project. The Project is listed as a ‘priority infrastructure pipeline project with real potential’.
NSW policies and publications	
NSW 2021	*NSW 2021: A plan to make NSW number one* (NSW Government 2011) is a 10-year plan to guide strategic policy making and infrastructure delivery in NSW. The plan includes a target of enhancing rail freight movement in NSW, by doubling the proportion of container freight movement by rail through NSW ports by 2020. The NSW Government has indicated that shifting freight movements to rail is a priority action to maximise capacity at Port Botany and reduce truck movements on the NSW road network.
State Infrastructure Strategy 2012–2032	The *State Infrastructure Strategy 2012–2032* (Infrastructure NSW 2012) identifies transport access to and from Sydney’s international gateways as a short term infrastructure priority. Development of an IMT at Moorebank in the next four years, and supporting infrastructure in five to ten years’ time, are principal recommendations of the strategy, particularly should there be growth in demand for IMEX intermodal freight handling in NSW.

NSW policies and publications	
NSW Long Term Transport Master Plan	The *NSW Long Term Transport Master Plan* (NSW Government 2012) identifies intermodal terminals as a key part of the NSW freight network system, critical to increasing the share of container freight moved by rail and to manage growing import container trade particularly in Sydney. The Moorebank IMT is identified within the Master Plan as having the potential to generate new jobs in the transport and logistics sector and supporting commercial activity across south west Sydney and the broader city.
Metropolitan Plan for Sydney 2036	The *Metropolitan Plan for Sydney 2036* (NSW Government 2010) identifies intermodal terminals as an essential component of an efficient freight and logistics sector and identifies ongoing collaboration with the Australian Government towards facilitating development of intermodal facilities. The Moorebank IMT is noted for its potential to generate employment in the Liverpool LGA and support commercial land use across the metropolitan area.
Draft Sydney Metropolitan Strategy for Sydney to 2031	The *Draft Metropolitan Strategy for Sydney to 2031* (NSW Government 2010) identifies the need for more efficient transport and infrastructure delivery to ensure that Sydney's freight transport and intermodal terminal network will be more efficient and have greater capacity. The Strategy identifies that industrial lands close to rail, motorways, other major roads, or ports, airports and intermodal terminals have high strategic value and recognises the need to plan for the Moorebank IMT Project in the medium to long term.
Railing Port Botany's Containers	The NSW State Government identified the Moorebank IMT as a critical component in meeting Sydney's freight rail targets in the *Railing Port Botany's containers: Proposals to ease pressure on Sydney's roads* (Freight Infrastructure Advisory Board 2005). The Moorebank site is identified as strategically important given its proximity to the SSFL, M5 Motorway and M7 Motorway.
Sydney Metropolitan Strategy	Contained within the *Metropolitan Strategy – City of Cities: A Plan for Sydney's Future* (Department of Planning 2005) objectives is an action to 'Plan an intermodal terminal network in Sydney', noting that the plan would examine the need to locate new major terminal to service western and south0western Sydney. The Metropolitan Strategy has since been superseded by the *Metropolitan Plan for Sydney 2036,* but is still instructive in detailing the strategic need for the Project.
South West Subregion: Subregional Strategy	The *South West Subregion: Draft Subregional Strategy* (Department of Planning 2007) identifies a transport terminal at Moorebank as a key component in meeting Sydney's intermodal capacity needs.
NSW Ports and Freight Strategy	The *NSW Freight and Ports Strategy* (NSW Government 2013) strategy expressly supports the development of an IMT at Moorebank as it is 'supported by dedicated rail freight lines and adequate road connections' (p121).
Action for Air 2009	*Action for Air 2009* (Department of the Environment, Climate Change and Water 2009) discusses future directions and strategies for air quality management and notes that increasing the use of the rail network for transport freight improves air quality.

1.3.5 Project benefits

The development of the Project is intended to increase intermodal capacity in Sydney, and would have a number of flow-on benefits across the freight sector and the NSW economy. By providing increased intermodal capacity in Sydney, it is envisaged the unit costs of transporting containers by rail for IMEX and interstate markets would be reduced, and this would lead to an increase in the share of freight movements by rail.

The Project is expected to generate a number of economic, social and environmental benefits for the community and economy, as outlined below:

- *Economic benefits*: close to $9 billion in economic benefits (before costs and in present value terms), over a 30-year operational period for the Project, including $120 million a year for the south-western Sydney economy, through improved productivity; reduced operating costs; reduced costs associated with road damage, congestion and accidents; and better environmental outcomes;

- *Job creation*: 1250 jobs (typical workforce) during construction of the IMEX terminal and warehousing and 300 jobs (typical workforce) during the construction of the interstate terminal, with operation of the Project expected to generate approximately 2200 jobs;

- *Better environment through reduced road congestion*: up to 3,000 fewer truck journeys every day (1,500 to and 1,500 from Port Botany) once the terminal is operating at capacity, equating to 1.05 million fewer truck journeys per year. As a result fewer greenhouse emissions will be released, saving an estimated 7,300 tonnes of $C0_2$ per year once the terminal is fully operational in 2030;

- *Social benefits of reducing road traffic and associated noise* along key road freight routes between Moorebank and Port Botany and interstate;

- *Easing the Port Botany bottleneck* to enable the Port to cope with future growth and provide large-scale freight capacity; and

- *Enabling the movement of freight around Australia*, considering interstate freight is expected to grow by 3.6% a year over the next 20 years.

The Project is in the public's best interest as its residual environmental impacts will be localised and managed; however its benefits will be significant and widespread for the entire community. The local community will receive a share of these benefits as well as a local benefits program. The public interest is also served by the IMT in terms of its contribution to government policy, the lack of suitable alternative sites; and the unique characteristics of the site which are not needed for other land uses but make it ideal for an IMT. While some local community members oppose the Project, the broader community interest is reflected by strong support from government and industry stakeholders.

1.3.6 Why Moorebank?

The site at Moorebank has been identified by the Australian and NSW Governments as the preferred location for additional intermodal capacity in Sydney because of its proximity to major freight corridors ((SSFL, M5 Motorway, near the M7 Motorway and Hume Highway) and its central location relative to major freight markets in the west and south west of Sydney. Other reasons why the Project site has been selected include:

- It is located a sufficient distance from Port Botany to make rail a commercially viable alternative to road for movements to and from Port Botany.

- It is adjacent to existing industrial areas, and centrally located relative to major freight markets, considering almost two-thirds of port container freight are transported to or from markets in western Sydney.

- It is long enough to handle interstate freight trains, which can be 1,500 to 1,800 m long.

- It is large enough to handle the number of containers expected (up to 1.05 million TEU a year of IMEX freight and another 500,000 TEU a year of interstate freight) and has the space required for the associated warehousing, This will increases the efficiency of the freight service offered and therefore increases the attractiveness of the terminal and its potential to get more freight onto the rail network.
- It is located near to the South West Growth Centre.
- It is owned by the Australian Government and available for an alternative use, as the current occupant of the site, the Department of Defence's School of Military Engineering (SME), is moving to new, purpose-built facilities in mid-2015.

No other known site in Sydney has the same unique characteristics to efficiently accommodate the type of activities being proposed. The availability of the site for development represents a once-in-a-generation opportunity for a transformational freight infrastructure project. Alternative IMTs would be significantly less economically efficient than the Moorebank IMT and not practically achievable in the timeframes required. In particular:

- There is no land set aside for an IMT at Eastern Creek and a new freight rail line to the area would be needed with substantial investment implications.
- Land would also be required for an IMT at Badgerys Creek as the new airport site is unlikely to have spare space for this purpose. A new freight rail line would also need to be constructed in addition to the planned passenger line. It would not be practical for freight trains to share the planned passenger line to the new airport since passenger trains receive priority on the passenger network, which would undermine the efficiency and reliability of a rail freight service via Badgerys Creek.
- Even if land was available at Eastern Creek or Badgerys Creek, the planning and environmental approval process to assess the sites' suitability from an environment, social and economic perspective can take years. Given the demand for intermodal facilities in western Sydney the Moorebank IMT site is considered the most appropriate to service the current demand.

The comprehensive site assessment undertaken in the EIS conclusively demonstrated the suitability of the proposed site for the proposed intermodal activities - the essential requirement for decision making.

1.4 Key findings of the EIS

1.4.1 Key impacts identified in the EIS

The EIS prepared for the Project identifies the key environmental and social impacts (positive and negative) during the construction and operation of the Moorebank IMT. Due to the proposed phased development of the Project over a relatively long period of time, the EIS adopted a 'multiple scenario' approach and impacts were assessed at certain points in time during which there would be concurrent construction and operation. This approach was used for assessing the traffic and transport, noise and vibration, local air quality and human health impacts as these were identified as the most significant for the Project.

For other impacts (including biodiversity, hazards, contamination, hydrology and water quality, heritage, visual, property and infrastructure and waste and resource use) the EIS assessed the Early Works development phase as well as one typical construction scenario and one worst case operational scenario (Full Build). Chapter 10 – *Impact assessment approach* of the EIS provides further details on the impact assessments for the Project.

Chapters 11 to 29 of the EIS presented the findings of the impact assessments. In summary, the Project is anticipated to have a number of environmental and social impacts, however, the majority of the identified impacts are not considered significant, assuming effective implementation of the proposed mitigation and management measures outlined in the EIS.

Chapter 28 – *Environmental management framework* of the EIS provided a consolidated list of management and mitigation measures to be implemented during the detailed design or pre-construction, Early Works, construction and/or operation phases of the Project. These management and mitigation measures have been further reviewed in light of the submissions received following exhibition of the EIS. The revised management and mitigation measures are presented in Chapter 9 – *Revised environmental management measures* of this report.

Assuming implementation of the proposed mitigation measures, the residual impacts of the Project on key issues — such as traffic, transport and access; local air quality; heritage; socio economics; hazard and risk; soils and contamination; local stormwater catchment flooding and water quality; property and infrastructure; greenhouse gases; and human health — are predicted to be either 'low' or 'low to moderate' in significance.

The following issues were predicted to have a residual impact of 'moderate':

- increase in ambient noise levels at sensitive receivers;
- loss or disturbance of threatened flora and fauna species;
- potential for increase in flood levels (afflux) upstream of the Georges River bridge; and
- adverse impact on visual amenity.

In each case, the residual risk rating of 'moderate' was reflective of the need for a relatively complex set of mitigation measures to as far as feasible mitigate residual impacts consistent with established practice and regulation. The ratings do not indicate that these issues cannot be mitigated effectively through the measures proposed.

Key mitigation measures proposed for the impacts with a residual rating of 'moderate' are as follows:

- Noise mitigations:
  - Limiting of construction works to standard daytime construction hours, unless essential and approved (e.g. required for safety) or where not above acceptable levels.
  - Provision of specific noise mitigation where noise-generating construction works are outside standard hours, additional (e.g. localised acoustic screens, restricting simultaneous use of noisy plant).
  - Development of Project design/layout to minimise noise (e.g. procurement of mechanical plant with lowest available noise emissions, use of noise reduction barriers, restricting track turn radii).
  - Ongoing community consultation / complaints management system.
  - Ongoing monitoring to continually evaluate Project noise emissions and, as required, implement additional noise mitigation.

- Biodiversity mitigation:
  > Retention (as a conservation area) of substantial areas of vegetation along the Georges River.
  > Identification of vegetation clearing exclusion zones for sensitive areas.
  > Presence of a trained ecologist to accompany clearing crews to ensure disturbance is minimised and any native fauna are relocated.
  > Long-term weed removal/riparian vegetation restoration within conservation area.
  > Pre-clearing surveys and clearing of hollow-bearing trees prior to vegetation clearing.
  > Development of a biodiversity offset strategy in accordance with regulatory requirements.
- Flood mitigation:
  > Construction phase mitigation measures include locating site compounds, stockpiles and storage areas above the design flood level; and implementing a staged construction plan for the Georges River bridges that minimises temporary obstruction of flow in the main channel and floodplain.
  > Operation phase mitigation measures include designing bridge piers to minimise obstruction to flow and associated afflux; and further design of the central rail access bridge structures and their alignment and/or consideration of compensatory measures to reduce the impact.
  > No major construction would be undertaken in the 1 in 100 year flood zone (excluding rail access connection and stormwater drainage channels).
- Visual mitigation:
  > Incorporation of urban design principles into Project design, including height controls that limit building heights to 21 metres.
  > Visual mitigation measures such as landscaping, screening/ buffering of less attractive activities/infrastructure.
  > Designing lighting to minimise light spill.
  > Monitoring of light spill.
  > A full list of all proposed mitigations is provided in Chapter 28 – *Environmental management framework* of the EIS.

1.4.2 Conclusions of the EIS

As discussed in Chapter 30 – *Project justifications and conclusions* of the EIS, there is a strong justification for the Moorebank IMT in relation to its need, the anticipated benefits and costs/impacts, the objectives of the EP&A Act and matters of ecologically sustainable development. The EIS also concluded that provided the mitigation measures specified in the EIS are applied and effectively implemented during the design, construction and operational phases, the residual environmental impacts on the environment and community would be acceptable with established practice and regulation. In addition, the Project would result in benefits that would be in the public interest and it is considered that the benefits outweigh the residential impacts.

1.4.3 Structure of the EIS

Given the size of the EIS, the EIS comprised nine volumes:

- Volumes 1A and 1B consist of the main EIS document;
- Volume 2 consists of the appendices to the main EIS document; and
- Volumes 3 to 9 consist of the technical reports that support the EIS prepared by specialists and the wider Project Team.

The contents of this EIS are shown in Figure 1.2 below.

Contents of the EIS

EIS Summary

VOLUME 1a

Chapter 1 – Introduction
Chapter 2 – Site context and environmental values
Chapter 3 – Strategic context and need for the Project
Chapter 4 – Planning and statutory requirements
Chapter 5 – Stakeholder and community consultation
Chapter 6 – Project development and alternatives
Chapter 7 – Project built form and operations
Chapter 8 – Project development phasing and construction
Chapter 9 – Project sustainability
Chapter 10 – Impact assessment approach
Chapter 11 – Traffic, transport and access
Chapter 12 – Noise and vibration
Chapter 13 – Biodiversity
Chapter 14 – Hazards and risks
Chapter 15 – Contamination and soils

VOLUME 1b

Chapter 16 – Hydrology, groundwater and water quality
Chapter 17 – Local air quality
Chapter 18 – Regional air quality
Chapter 19 – Greenhouse gas assessment
Chapter 20 – Aboriginal heritage
Chapter 21 – European heritage
Chapter 22 – Visual and urban design
Chapter 23 – Property and infrastructure
Chapter 24 – Social and economic impacts
Chapter 25 – Human health risks and impacts
Chapter 26 – Waste and resource management
Chapter 27 – Cumulative impacts
Chapter 28 – Environmental management framework
Chapter 29 – Environmental risk analysis
Chapter 30 – Project justification and conclusions
Chapter 31 – References

VOLUME 2

Appendix A – EIS Project team
Appendix B – EIS guidelines and requirements
Appendix C – Compliance with the Georges River REP principles
Appendix D – Consultation information, materials and outcomes
Appendix E – MCA criteria relating to Project objectives
Appendix F – Layouts of shortlisted Project alternatives
Appendix G – Peer review endorsement letters
Appendix H – Provisional EMPs
Appendix I – Environmental record of Proponent
Appendix J – Compliance with Schedule 1, Part 1 and 2 of the (NSW) *Environmental Planning and Assessment Regulation 2000*
Appendix K – Tenure history of the Project site

TECHNICAL PAPERS

EIS Volume 3
1 – Traffic and Transport Impact Assessment
2 – Noise and Vibration Impact Assessment

EIS Volume 4
3 – Ecological Impact Assessment (with associated Biodiversity Offset Strategy)
4 – Preliminary Risk Assessment

EIS Volume 5a
5 – Environmental Site Assessment (Phase 2)

EIS Volume 5b
5 – Environmental Site Assessment (Phase 2) Appendices C to F

EIS Volume 6
6 – Surface Water Assessment
7 – Local Air Quality Impact Assessment
8 – Regional Air Quality Impact Assessment
9 – Greenhouse Gas Assessment

EIS Volume 7
10 – Aboriginal Heritage Impact Assessment

EIS Volume 8
11 – European Heritage Impact Assessment
12 – Visual Impact Assessment

EIS Volume 9
13 – Light Spill Impact Assessment
14 – Social Impact Assessment
15 – Human Health Risk Assessment
16 – Health Impact Assessment

Figure 1.2 Structure and contents of the EIS

1.5 Proposed amendments to the development

Section 89F(4) of the EP&A Act provides for a SSD application to be amended, substituted or withdrawn before it has been determined by the Minister. In this case where NSW DP&E determines that the amendments to the project are substantially different from that of the original application, then the proposal may require further public consultation under the EP&E Act.

Prior to the EIS exhibition, MIC developed the Moorebank IMT proposal as a stand-alone project. The Sydney Intermodal Terminal Alliance (SIMTA) proposal for an intermodal terminal on the site immediately east of the Project site was also being pursued separately, with its own planning and environmental approvals being sought. However, since the exhibition of the EIS, an agreement has been reached between MIC and SIMTA for an integrated precinct-wide intermodal facility and associated warehousing across both the MIC and SIMTA sites. This has resulted in a change in concept layout on the Moorebank intermodal site and the selection of the southern rail access option as the preferred rail connection from the SSFL to the site.

Under this agreement MIC will continue with its existing application for Stage 1 SSD concept approval (incorporating early works) for the Moorebank IMT site and SIMTA will be responsible for obtaining all other approvals required under the EP&A Act, to build all stages of the Project.

Therefore, a number of amendments have been made to the Project to reflect this precinct approach and to address issues raised through the submission process. This report incorporates proposed amendments to the development (refer to Chapters 7 to 9), and provides justification for the proposed changes. This includes a revised IMT layout, details of the proposed rail and road access, and revised project schedule. The impacts of the changes have been assessed and are discussed in section 7.6 of this report.

NSW DP&E has determined that the amendments proposed warrant further public consultation under the EP&A Act. As such, the report will be made publicly available for a minimum of 30 calendar days during which time the community and stakeholders will be invited to make written submissions on the Response to Submission Report (including the proposal amendments to the development) to NSW DP&E.

1.6 Structure of this report

The structure of this report is as follows:

- *Executive summary:* Provides a brief summary of the information presented in this report.
- *Chapter 1 – Introduction:* Provides an introduction to this report; an overview of the key features of the Project; a summary of the key conclusions of the EIS; and the structure of this report. Chapter 1 also introduces the need for amendments to the development, which is further discussed in Chapter 7.
- *Chapter 2 – Assessment of the issues raised by the NSW Planning Assessment Commission –* provides a discussion on the matters raised by the NSW Planning Assessment Commission in its assessment of the SIMTA Concept EIS in late 2014, with focus on matters with direct implication for this Project.
- *Chapter 3 – Consultation:* Provides an overview of consultation activities undertaken prior to, and during, the public exhibition of the EIS. Chapter 3 also includes a summary of ongoing consultation and communication.

- *Chapter 4 – Overview of submissions:* Provides an overview of the process that was used to analyse the issues raised in submissions, as well as an overview of the key issues raised by the community, government agencies and key stakeholders.
- *Chapter 5 – Response to Government agency submissions:* Summarises the issues raised in government agency and key stakeholder submissions. Due to the complexity of these submissions, MIC's detailed response to these issues is provided in Appendix B of this this report.
- *Chapter 6 – Response to community submissions:* Details the key issues raised in community submissions and MIC's response to these issues.
- *Chapter 7 – Proposed amendments to the development:* Documents and assesses the proposed changes that have been made to the Project since the exhibition of the EIS. This includes a description of the proposed conceptual site layout and revised construction staging and assessment approach (including cumulative assessments to include the SIMTA project). An overall statement of the changes in environmental and social impacts relevant to those documented in the EIS is also provided.
- *Chapter 8 – Additional technical investigations since the EIS* documents additional investigations that have been undertaken since the exhibition of the EIS.
- *Chapter 9 – Revised environmental management measures:* Provides the revised set of environmental management measures for the Project, which have been amended in response to the changes to the Project, additional investigations undertaken since the public exhibition of the EIS, and issues raised in submissions received during the public exhibition period.
- *Chapter 10 – Conclusion:* Provides key conclusions for this report.

The structure of this report including the technical appendices is presented on Figure 1.3 below:

Figure 1.3 Contents of the Response to Submissions Report

Chapter 2
Assessment of the issues raised by the NSW Planning Assessment Commission

2. Assessment of the issues raised by the NSW Planning Assessment Commission

Chapter 2 provides a discussion on the matters raised by the NSW Planning Assessment Commission (PAC) in its assessment of the Sydney Intermodal Terminal Alliance (SIMTA) Concept Plan Environmental Impact Statement (EIS) in late 2014, with a specific focus on matters with direct implications for the Moorebank Intermodal Terminal project (the Project).

2.1 Background

The SIMTA Concept Plan application was referred to the PAC for determination under delegation from the Minister for Planning on 12 June 2014, following assessment of the project by Department of Planning and Environment (DP&E). The SIMTA concept plan application was referred to the PAC as more than 25 objections were received and both Liverpool and Campbelltown City Councils objected to the proposal. Given the number of objections received during the public exhibition, the PAC will most likely also determine the Moorebank IMT proposal following an initial assessment by DP&E. The Project will additionally be subject to approval by the Commonwealth Minister for the Environment; however, this is unrelated to the PAC process.

In relation to the SIMTA proposal, the PAC raised three issues considered to be of direct relevance to the Moorebank precinct as a whole and are equally applicable to this Project:

- That the Moorebank Intermodal Company (MIC) proposal must be assessed to take into account the SIMTA proposal – i.e. a coordinated approach that is articulated across the two projects including a master plan.
- That the Project should be subject to a 250,000 twenty foot equivalent (TEU) per annum (p.a.) interim and a 500,000 TEU p.a. final cap on capacity (specifically in relation to on-road container movements) associated with presumed road network capacity constraints and the PAC's view that this would be sufficient to service the long-term market demand at Moorebank. In particular the PAC references the Government's strategic goal of 28% rail share from Port Botany by 2020, and incorrectly determines this requires only 152,000 TEU p.a. capacity. The PAC notes that the SIMTA Stage 1 of 250,000 TEU p.a. would more than satisfy this requirement.
- Concerns about the capacity of the road network to accommodate the development of the precinct, and associated traffic issues. This was specifically relevant to the imposition of the cap. In particular the PAC stated "given the uncertainty about assessing traffic impacts and proposed mitigation measures based on assessments to meet capacity needs far into the future (2031), the Commission considers that concept approval should not be granted for 1 million TEU p.a.

These issues are discussed in detail below with a response to how they are to be dealt with by the Project provided.

2.2 Precinct wide approach to the development of the two sites

2.2.1 Issues raised by the PAC

The PAC, in considering the SIMTA Concept Plan application, made the following points:

- It expressed disappointment that a more coordinated approach to assessing the precinct had not been undertaken.
- It noted concerns raised by members of the community that the approach to the two proposals is ad-hoc, the cumulative impacts of the proposals have not been adequately addressed, and there was confusion about the total traffic generated by the two proposals.
- It expressed disappointment that a Precinct Master Plan was not prepared, specifically noting that even though the proponents have both agreed that both projects cannot proceed on the scale proposed, there are still two similar proposals.
- It acknowledged that while negotiations were underway between SIMTA and MIC to combine the two planning proposals, these had not concluded, and as such the projects continued to be assessed as separate planning processes. The PAC acknowledged that it could not force the two proponents to combine their applications.

In relation to the rail access from the Southern Sydney Freight Line (SSFL), the PAC report noted that:

- SIMTA is seeking a rail corridor to the south utilising the East Hills passenger rail corridor crossing the Georges River and running in a north westerly direction generally along the boundary of the Glenfield Waste Disposal Centre linking to the SSFL.
- There are community concerns that further rail crossings were also being considered by the Moorebank IMT Project. In its report the PAC stated that as a matter of principle there should only be one rail corridor accessing the site in the event that both proposals proceed. The report also acknowledged that the southern rail access as proposed in the Moorebank IMT EIS (since exhibited) was the same corridor as that proposed by SIMTA. The report, however considered that other rail access options (the northern and central rail alignments described in the EIS) would generate significant noise impacts.

2.2.2 Relationship with SIMTA

MIC is a federal government entity. Prior to the EIS exhibition, the Moorebank IMT proposal was being developed by MIC as a stand-alone project. SIMTA is a private consortium consisting of Qube Holdings and Aurizon Holdings and has been pursuing its own proposal separately[1].

Since the exhibition of the Moorebank IMT EIS, MIC and SIMTA have reached an agreement to develop and operate a precinct-wide intermodal facility and associated warehousing across the Moorebank and SIMTA sites (hereafter referred to as the Moorebank precinct). As part of that agreement, the Commonwealth Government would retain ownership of the Moorebank IMT site, with SIMTA occupying the site under a long-term lease. MIC would remain involved to ensure the Commonwealth Government's

[1] Concept Plan Approval (MP 10_0193) for the SIMTA project was granted on 29 September 2014 by the NSW Planning Assessment Commission and EPBC approval (no. 2011/6229) in March 2014 by the Commonwealth Minister for Environment.

objectives for construction and operation of the site (including environmental compliance requirements) are satisfied.

2.2.3 SIMTA EIS for concept approval

SIMTA's EIS for concept approval was initially exhibited from March to May 2012 and an updated EIS was re-exhibited between September and October 2013. The EIS sought concept approval for one million TEU IMEX facility and 300,000 sq. m of warehousing. The EIS did not contemplate the implications of the Project in any detail and no quantitative or cumulative assessment was undertaken of any higher precinct capacity than the 1 million TEU p.a. approval sought for the SIMTA site. The Concept Plan specifically identified that a Stage 1 development application would be subsequently pursued for a 250,000 TEU p.a. IMEX terminal (with no warehousing).

The subsequent PAC approval placed an initial 250,000 TEU p.a. cap on the project (in line with the proposed Stage 1 development application proposed by SIMTA), with an ultimate cap of 500,000 TEU p.a., based on concerns about road network capacity, and the view that such a limit would adequately accommodate likely long term demand in the precinct. The concept approval does not allow for the commencement of construction of any part of the project. Construction can only occur following a further consent for a subsequent Stage 1 development application.

SIMTA also received approval under the Commonwealth EPBC Act in March 2014 for the construction and operation of an intermodal terminal comprising a one million TEU p.a. IMEX facility and 300,000 sq. m of warehousing. The Commonwealth approval was sought due to the impact of the project on Commonwealth-listed species and Commonwealth land, and was required to address the full range of environmental issues including traffic impacts. The Commonwealth Minister for the Environment, in approving the action in full, took account of the impact of the project on the road network.

2.2.4 SIMTA Stage 1 development application

SIMTA is planning to exhibit its Stage 1 development application (i.e. detailed to enable construction) at the same time as the Moorebank IMT Response to Submissions (this report). Specifically, SIMTA's Stage 1 application is seeking approval to build:

- a 250,000 TEU p.a. IMEX facility; and
- a rail connection to the SSFL at the southern end of the Moorebank site.

SIMTA has submitted a Preliminary Environmental Assessment (PEA) in support of its application. The application was lodged in October 2014 and NSW Secretary's Environmental Assessment Requirements (SEARs) were issued in December 2014 (Application Number SSD 14-6766).

2.2.5 Approach to joint consideration of the two projects

Since the exhibition of the Moorebank IMT EIS, agreement has been reached between SIMTA and MIC that would result in the development of the Moorebank precinct with a maximum capacity of 1.55 million TEU and 600,000 sq. m of warehousing comprising:

- 1.05 million TEU p.a. IMEX facility (on either the Moorebank IMT site or the SIMTA site, but not both);

- 300,000 sq. m of warehousing on the SIMTA site;
- 500,000 TEU p.a. interstate facility on the Moorebank site;
- 300,000 sq. m warehousing on the Moorebank site, and
- rail access to the precinct via a connection to the SSFL near the south of the Moorebank site.

To enable maximum flexibility, MIC is seeking a staged development consent for a 1.05 million TEU p.a. IMEX facility on its own site, as well as the 500,000 TEU p.a. Interstate facility and 300,000 sq. m of warehousing described above. Combined with the SIMTA project, and subject to development consent, this may appear to result in a total precinct capacity of 2.05 million TEUs p.a. However, this is not the case. It would only occur in two unlikely circumstances; firstly if there is no agreement between SIMTA and MIC and secondly if the consent authority gives development consent to operate both terminals at maximum levels.

With respect to the first outcome, MIC does not believe there is any possibility that both sites would operate independently – at least at full capacity (i.e. at a potential total precinct capacity of 2.05 million TEU p.a.). Both SIMTA and MIC agree that the maximum precinct capacity would be 1.55 million TEU p.a. MIC considers the maximum capacity arises from the constraints posed by other parts of the network (particularly the SSFL). MIC does not share the PAC's view that the precinct should be capped at 500,000 TEU p.a., from either a road network capacity or a demand perspective. This is discussed further in sections 2.3 and 2.4 below.

With respect to the second outcome, the consent authority is able to limit the total precinct capacity through the subsequent development approvals process – evident in the limitation placed on the current SIMTA Concept Plan approval.

Accordingly the cumulative assessment presented in the Moorebank IMT EIS is no longer considered representative as it does not reflect the recent agreement – particularly with respect to SIMTA's Stage 1 concept approval nor the realistic maximum precinct capacity as discussed above.

Taking these issues into consideration, a revised approach to the cumulative assessment of the Moorebank precinct has been undertaken and presented in Chapter 7 – *Proposed amendments to the development*. In summary it:

- Presents layouts for the various precinct layouts (see Figures 7.5 to 7.8 in section 7.5).
- Continues to recognise there is a proposed maximum throughput of 1.55 million TEU p.a. (IMEX plus Interstate freight) for the precinct.
- Continues to consider alternate scenarios whereby all IMEX capacity is built on the SIMTA site or the Moorebank site but not both.
- Introduces a new scenario (Scenario C) that treats the 500,000 TEU p.a. cap as applicable to the SIMTA site only, and assumes that the remaining 1.05 million TEU capacity (consisting of 550,000 TEU p.a. IMEX and 500,000 TEU p.a. interstate) will be developed on the Moorebank IMT site.
- Introduces an interim scenario at 2020 that in terms of intermodal capacity reflects the SIMTA Stage 1 development application in conjunction with a likely first stage of development of the Moorebank site.

The cumulative impact assessments undertaken for the revised concept layout are presented in Table 2.1 below.

Table 2.1 Proposed cumulative scenarios

Cumulative Impact Scenario	Moorebank IMT site (Project site)	SIMTA site
Scenario A (same as EIS Cumulative Scenario 1) (2030 – full build)	• IMEX terminal at 1.05 million TEU p.a. • Interstate terminal at 500,000 TEU p.a. • 300,000 sq. m warehousing	• 300,000 sq. m warehousing
Scenario B (same as EIS Cumulative Scenario 3) (2030 – full build)	• Interstate terminal at 500,000 TEU p.a. • 300,000 sq. m warehousing	• IMEX terminal at 1 million TEU p.a. • 300,000 sq. m warehousing
Scenario C1 (2020 – Stage 1 development)	• IMEX terminal at 250,000 TEU p.a. • Interstate terminal at 250,000 TEU p.a. • 100,000 sq. m warehousing	• IMEX terminal at 500,000 TEU p.a. • 200,000 sq. m warehousing
Scenario C2 (2030 – full build)	• IMEX terminal at 550,000 TEU p.a. • Interstate terminal at 500,000 TEU p.a. • 300,000 sq. m warehousing	• IMEX terminal at 500,000 TEU p.a. • 300,000 sq. m warehousing

The layouts, characteristics and impacts of these scenarios are presented in section 7.5 of this report.

2.2.6 Planning controls for precinct capacity

While MIC is seeking a staged consent for full capacity (i.e. 1.55 million TEUs p.a.) on its own site, MIC recognises it will be necessary for a planning mechanism to be established that precludes the development of both the SIMTA and the IMT to full capacity. In the same way, while both proponents are seeking approval to build a rail connection from the SSFL, given the agreement between SIMTA and MIC there will only be one rail link built, a similar planning mechanism is also required that precludes the development of more than one rail link.

To provide an assurance to the consent authority and to the local community with respect to MIC's position on maximum precinct capacity in consideration of the SIMTA project, MIC would suggest the following conditions of consent.

Condition X. Projects carried out under this staged development consent must be operated with the objective of not exceeding the capacity of the transport network, including the local, regional and State road network. The container freight road volume must not exceed 500,000 TEU p.a., subject to the exception identified in Condition Y, which may only be considered after the facility has been in operation.

Condition Y. The movement of container freight by road may exceed the limit in Condition X by up to a further 550,000 TEU p.a. if the consent authority of a subsequent Development Application is satisfied that traffic monitoring and modelling of the operation of the facility demonstrates that traffic movements resulting from the proposed increase in TEU will achieve the objective of not exceeding the capacity of the transport network.

Condition Z. The movement of container freight by road may be increased by a further 500,000 TEU p.a. above the limitation identified in Condition Y (i.e. giving a total precinct capacity of 1.55 million TEU p.a.) should there be no valid/operable development consent for an import/export terminal on land adjacent to the subject site – that being any part of the land identified in development application MP10_0193.

Note: Condition Z enables the development to expand to the full operating precinct capacity of 1.55 million TEU p.a. if no intermodal terminal is constructed on the adjacent site (currently subject of a development application by SIMTA – MP10_0193).

These draft conditions are framed similarly to those imposed by the PAC for the adjacent SIMTA development. Condition X would potentially represent the cumulative impact of Stage 1 of both the Moorebank IMT and the SIMTA IMT (i.e. total precinct capacity of 1 million TEU) and is assessed under cumulative impact Scenario C1 (see Table 2.1).

Condition Y assumes the SIMTA development proceeds to full capacity and would represent the cumulative impact of the IMT operating at 1.05 million TEU p.a. and SIMTA operating at 500,000 TEU p.a. (i.e. total precinct capacity of 1.55 million TEU p.a.). This is assessed under cumulative impact Scenario C2.

Condition Z assumes the SIMTA development does not proceed and assumes all development on the Moorebank IMT site. This would represent the same cumulative impact as under Condition Y (i.e. the same total precinct capacity of 1.55 million TEU p.a.).

In relation to the development of the rail connection:

Condition Z1: A rail connection between the site and the SSFL, may not be constructed if a rail connection has been constructed associated with the SIMTA development as identified in development application MP10_0193.

Condition Z1 would ensure that only one rail connection could be constructed, either by SIMTA under the terms of its consent, or, if that consent lapses, under the terms of the Moorebank IMT approval.

2.2.7 Planning for development of the rail access

As described in Chapter 7 – *Proposed amendments to the development* of this report, approval is being sought for construction of a rail access from the SSFL to the site. A southern alignment for the rail access is sought, as shown in Figures 7.1 to 7.3. This alignment is the same as that proposed by SIMTA, albeit that for this proposal the rail line would terminate within the IMT site.

In the event that both sites are developed, only one rail access from the SSFL will be developed. This rail access would service both sites, assuming that both sites include intermodal facilities.

In terms of the planning consent for the Project, if SIMTA constructs the rail access, the rail access component of the Project would not be implemented. A modification to the Stage 1 development consent for the Project would be sought (to exclude the rail spur) concurrently with the Stage 2 development application (to construct the first stage of the Project).

In the event that SIMTA did not construct the rail access, it would be constructed as part of the IMT development. In this event a detailed impact assessment (and associated design development) for the rail spur would be undertaken as part of the Stage 2 development application, before the rail access could be constructed.

2.3 Demand for Intermodal Capacity in the Moorebank precinct

2.3.1 Suitability of a 500,000 TEU cap

The Moorebank precinct needs to be developed to a total intermodal capacity of 1.55 million TEU p.a., comprising 1.05 million TEU p.a. in IMEX capacity and 500,000 TEU p.a. in interstate freight capacity.

The key reasons for developing the Moorebank IMEX capacity at 1.05 million TEU p.a. are:

- To achieve the NSW Government rail share target, that PAC's cap on throughput at the SIMTA intermodal terminal (250,000 TEU p.a. for Stage 1 and, ultimately, 500,000 p.a.) would be too low and appears to be based on a misunderstanding about how freight is most efficiently distributed. See section 2.3.2 below for discussion of this issue.

- No other sites have been identified to deliver the same operational efficiency (including the efficiency benefit of competition between terminal users under the terminal's open access arrangement) and therefore only the Moorebank precinct creates an opportunity to increase Sydney metropolitan container movements on rail.

- The full capacity of 1.05 million IMEX TEU p.a. and additional capacity a future intermodal terminals will be needed if the rail mode share from Port Botany is permitted to grow in line with port throughput, or if the NSW Government were to pursue a higher target (e.g. 40%, as recommended by the Freight Infrastructure Advisory Board) beyond 2020 to enable the Port to continue to grow. A cap of 500,000 TEU p.a. on IMEX throughput would:

  > limit the ability of importers and exporters to choose the most efficient freight transport mode for their needs;

  > reduce the efficiency of planned investment in intermodal capacity at Moorebank, requiring further investment before it is economically efficient, and potentially discourage other investment in intermodal capacity in the region;

  > be inconsistent with NSW and Commonwealth government objectives to increase freight transfers by rail to reduce reliance on the road network, enabling continued growth in Port Botany throughput and encourage productivity growth; and

  > only be warranted if the environmental impacts beyond the cap could not be managed, which other parts of this report, and the EIS, demonstrate is not the case.

The Moorebank precinct also needs to provide 500,000 TEU p.a. of interstate intermodal capacity (i.e. in addition to the 1.05 million TEU p.a. of IMEX intermodal capacity). The Commonwealth Government has been investing heavily in the freight rail network to increase its reliability and improved transit times. A network of large, modern intermodal facilities, including at Moorebank is required to complement this investment and to encourage more interstate freight to travel by rail. An improved interstate rail freight network will be able to compete on cost and reliability with road, thereby encouraging more interstate freight to travel by rail.

Detailed discussion on these aspects is provided below and in Chapter 3 – *Strategic context and need for the project* in the EIS.

2.3.2 IMEX intermodal capacity needed at Moorebank

The PAC's interpretation of capacity required

The PAC has capped throughput at the SIMTA IMT to 250,000 TEU p.a. initially and 500,000 TEU p.a. ultimately. The PAC's decision focused on the SIMTA IMT contribution to the NSW Government target that 28% of Port Botany container throughput be transported by rail by 2020[2].

The report by the PAC stated that:

> *To meet the Government's goal of a 28% rail share from Port Botany to the south-west catchment by 2020, the precinct will require capacity to handle a throughput of 152,000 TEU per annum. Stage 1 of the SIMTA's proposal at 250,000 TEU per annum will more than achieve this.*

And:

> [A] *500,000 TEU limit should enable the precinct to meet the Government's objectives for rail freight from Port Botany well into the future.*

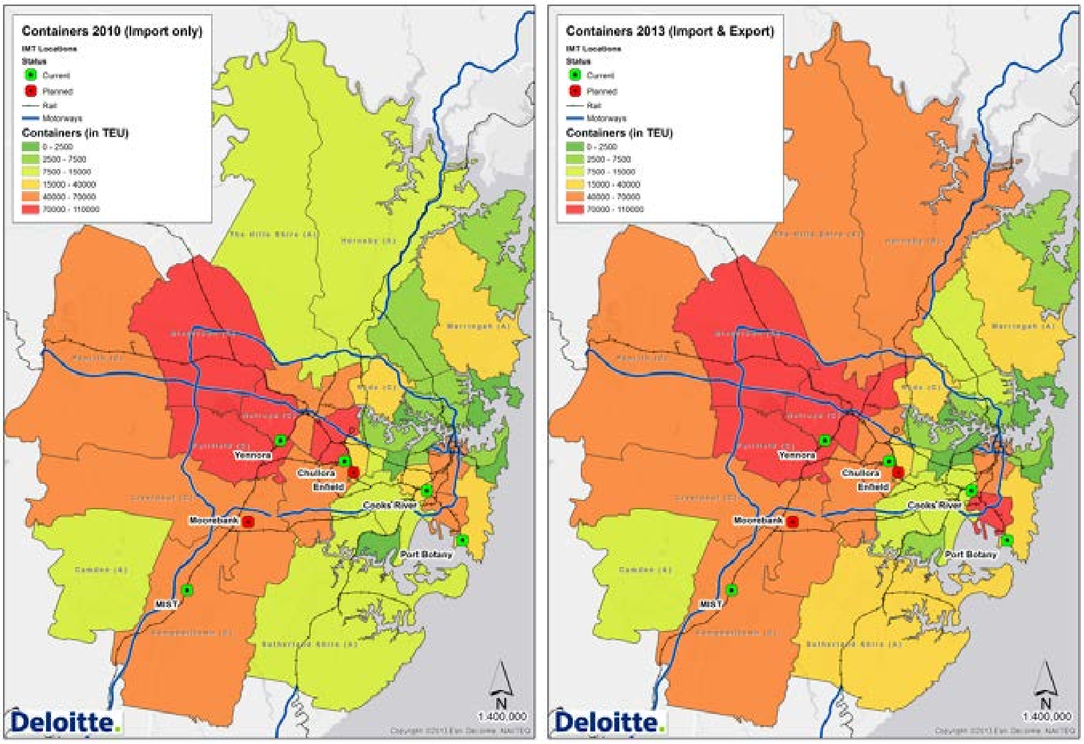
These statements appear to assume that the Moorebank precinct would contribute to the NSW Government's rail share target by providing capacity for 28% of freight headed to the 'south-west catchment'. The PAC's report assumes this catchment comprises 15%[3] of Sydney's IMEX market so, using the PAC's approach, Moorebank would only need to provide capacity for 4.2% (i.e. 28% of 15%) of Port Botany's total throughput. This 4.2% share would amount to 153,000 TEU p.a. in 2020, 292,000 TEU p.a. in 2030 and 560,000 TEU p.a. in 2040 (based on a high growth forecast of Port Botany throughput)[4].

However, this is not an appropriate way to define the capacity needed in the Moorebank precinct. The 28% rail share target does not mean each catchment in Sydney should receive 28% of its freight by rail, it means that 28% of the total volume leaving or arriving at the port should travel by rail. Port related cargo is not distributed evenly across Sydney. Some areas have higher port related volumes than others as illustrated in Figure 2.1.

[2] The rail mode share target for 2020 is based on the NSW Government's goal to double the proportion of container freight moved by rail through NSW ports by 2020. For Port Botany, the NSW Government adopted the 2010–11 rail freight share of 14% as the baseline for this goal. This means the NSW Government's target is that 28% per cent of Port Botany throughput is transported by rail by 2020.

[3] MIC considers that the catchment for the Moorebank terminal includes parts of both west and south west Sydney and the proportion of the total Sydney IMEX market is much greater than 15%. However, for the purpose of the discussion here, the size of the catchment is irrelevant.

[4] Based on the Port Botany throughput assumed in SIMTA's freight demand modelling report for 2020 (3.64 million TEU p.a.) escalated by 6.7 per cent p.a. to 2030 and 2040, in accordance with the Sydney Ports growth forecast referred to in the PAC report.



Source: Deloitte analysis based on data provided by Australian Customs and Border Protection Service

Figure 2.1 IMEX container distribution in Sydney – 2010 and 2013

Whether a container moves by rail or road is heavily dependent on the relative price and service of the two modes. This varies by destination or catchment due to proximity to the port and proximity of the container destination to the rail network and an intermodal terminal (some catchment areas in Sydney are not served by rail or intermodal terminals at all). Rail is likely to be more competitive where container destinations are further from the port but close to rail served intermodal terminals.

This factor together with the volume of containers destined for each catchment will determine the absolute number of containers (the demand) that could through move through each intermodal terminal. As such, some catchments will receive a large share of freight via rail (e.g. catchments like that served by the Project, for which rail is more cost-competitive than road for many destinations). Other catchments will receive a smaller share of freight via rail (e.g. catchments near Port Botany because it is harder for rail to compete over short distances). As such, for the 28% rail mode share target to be achieved, some catchments will have to achieve a rail mode share higher than 28%, the south-west catchment is likely to be one such area).

Available intermodal capacity in one area will not necessarily reduce potential demand for a terminal in another area. An example of this would the provision of IMEX capacity at Chullora in addition to planned capacity at Enfield. Because Enfield and Chullora service a different area from Moorebank there is likely to be minimal impact on likely demand for capacity through Moorebank. This is illustrated in Figure 2.2 below.

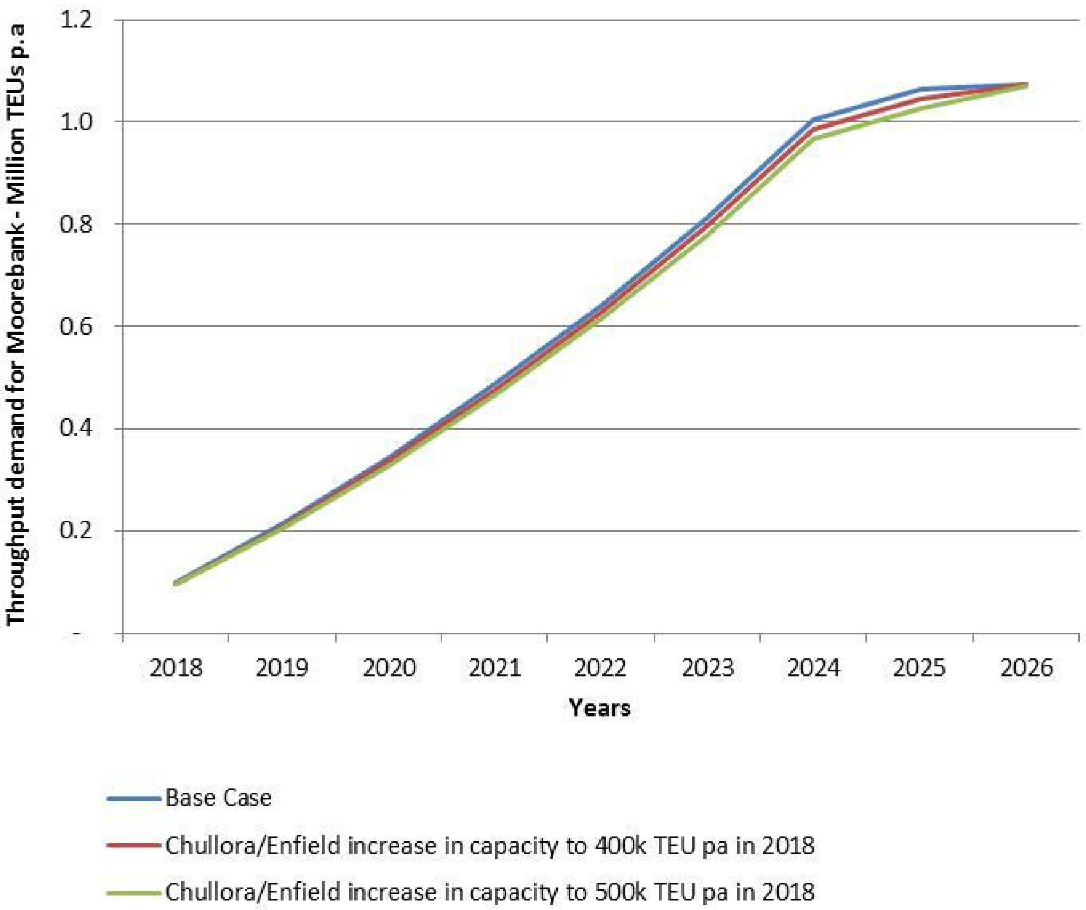


Figure 2.2 Estimated impact on demand for Moorebank as a result of increased capacity at Chullora or Enfield

As a result, the rail share across all catchments should, on average, meet the 28% target. Uniform application of the target to each catchment would be highly inefficient. A more efficient means of meeting the target is outlined below.

It also appears the PAC may have adopted an ultimate 500,000 TEU p.a. target for SIMTA's terminal because the Freight Infrastructure Advisory Board, in its 2005 report, recommended Moorebank as '*a key component in meeting Sydney's intermodal needs with a capacity to handle at least 500,000 TEUs per annum of port freight.'* However, apart from the reasons outlined above, it is not appropriate to apply this recommendation to the Moorebank precinct as the report was written 10 years ago in a context which is quite different from today. In 2005, Port Botany was government owned and subject to a 3.2 million TEU p.a. volume cap. That cap has now been removed and the Port has grown significantly and further growth is expected to continue (to well beyond 3.2 million TEU). As such, the Freight Infrastructure Advisory Board's recommended capacity for the Moorebank precinct is now significantly understated.

In addition, the Freight Infrastructure Advisory Board's recommendation about Moorebank's capacity was made in the context of an assumption that planning would also commence for an additional intermodal terminal in north-west Sydney, in the vicinity of Eastern Creek. However, since then, no site has been identified or preserved and two studies into a potential dedicated freight line to the area have found that such a connection would be technically and financially challenging and it is therefore unlikely to proceed in the foreseeable future.

NSW rail share target – 28%

The NSW 28% rail mode share target will be most efficiently achieved by maximising the efficient use of existing intermodal terminals and making an economically efficient investment in additional intermodal capacity in locations that are attractive to the freight market to fill the shortfall between the future capacity of existing terminals and the capacity needed to handle 28% of Port Botany's total throughput.

Sydney's estimated future IMEX intermodal capacity at existing terminals is 380,000 TEU p.a. in 2020, 645,000 TEU p.a. in 2030 and 830,000 TEU p.a. in 2040. This includes potential future capacity provided by the Yennora and MIST (Minto) terminals and approved capacity at the Enfield intermodal terminal and recently announced new IMEX capacity at the Chullora terminal.

These estimates assume:

- the ultimate capacity of the Yennora (110,000 TEU p.a.) terminal is reached by 2020;
- the current capacity of the MIST terminal (45,000 TEU p.a.) increases to 150,000 TEU p.a. by 2040;
- the Enfield terminal commences operations at 100,000 TEU p.a. and increases to its full approved capacity of 300,000 TEU p.a. by 2030; and
- the Chullora terminal will handle 75,000 IMEX TEU p.a. in 2020, 135,000 TEU p.a. in 2030 and 270,000 TEU p.a. in 2040[5].

The actual available IMEX capacity may be lower than the above estimates this as intermodal terminals generally serve a local catchment. For example, the catchments for the Enfield and Chullora terminals overlap, given their close proximity, thereby delaying or eroding the ability of each to reach its full IMEX capacity. Also, the Enfield intermodal terminal has not commenced operations so is yet to prove its ability to achieve its intended 300,000 TEU p.a. capacity, and there are questions about the ability of a single port shuttle to Chullora to achieve the volumes indicated above[6]. There are also questions around the long term viability of the Yennora intermodal terminal given it needs to compete with growing demand on the passenger rail network (which gives precedence to passenger trains).

Table 2.2 shows the future IMEX intermodal terminal capacity in Sydney based on the above assumptions.

[5] These estimates for Yennora and MIST represent ultimate capacity and may require substantial investment to be realised at each location. The estimate for Enfield is based on statements in the original Environmental Assessment for that terminal. The estimate for Chullora is based on statements by Asciano that the recommencement of IMEX services at Chullora would be supported by a new port shuttle above-rail service with an initial capacity of 75,000 TEU p.a. and an ultimate capacity of 135,000 TEU p.a. These capacities have been adopted for 2020 and 2030 respectively, and a doubling of capacity (through the adoption of a second service) has been assumed for 2040. The Villawood intermodal terminal has been excluded because it has been closed for some time.

[6] The IMEX capacity assumptions for Chullora appear to be based on a very high level of utilisation of the port shuttle train servicing the terminal, which include two-way loading. It is not clear that additional empty container storage for IMEX containers is being created at Chullora, which would facilitate achievement of the capacity assumed. Some of the IMEX capacity at Chullora might also be used for regional export freight that already travels to Port Botany by rail, meaning these volumes would not affect the rail mode share achieved overall.

Table 2.2 Potential future IMEX intermodal terminal capacity

Scenario Terminal	2020 IMEX capacity TEU p.a.	2030 IMEX capacity TEU p.a.	2040 IMEX capacity TEU p.a.
Chullora	75,000	135,000	270,000
Enfield	100,000	300,000	300,000
Yennora	110,000	110,000	110,000
MIST	45,000	100,000	150,000
TOTAL	**380,000**	**645,000**	**830,000**

Table 2.3 shows the long-term rail share for Port Botany throughput, if the 28% target is met, and the IMEX intermodal shortfall – i.e. the capacity needed at Moorebank and other future terminals to meet the target – based on the assumed capacity of the existing intermodal network as set out in Table 2.2. The rail share is based on a conservative forecast of Port Botany throughput, which was prepared by Deloitte Access Economics in 2014 and presented in Chapter 3 – Strategic context and need for the project of the EIS (the 'Low Port Growth Scenario') as well as a less conservative forecast that assumes Port Botany's throughput will be 3.6 million TEU in 2020, 7.0 million TEU in 2030 and 9.0 million TEU in 2040 (the 'High Port Growth Scenario')[7].

Table 2.3 TEU transported by rail if the 28% Port Botany rail share target is met, and IMEX intermodal capacity shortfall

Year	Port Botany rail mode share target (TEU p.a.)	Low Port Growth Scenario IMEX intermodal terminal shortfall (TEU p.a.)	High Port Growth Scenario IMEX intermodal terminal shortfall (TEU p.a.)
2020	795,875	415,875	641,988
2030	1,177,896	532,896	1,309,745
2040	1,640,309	810,309	1,690,000

Under the Low Port Growth Scenario, the IMEX intermodal shortfall in 2020 would be around 415,875 TEU p.a. The proposed Stage 1 of the precinct (i.e. 250,000 TEU p.a.) would partly satisfy this shortfall Under the Low Port Growth Scenario, the full precinct capacity (1.05 million TEU p.a.) would enable the target to continue to be achieved in 2030 and 2040 with some precinct capacity to spare. Under the High Port Growth Scenario, additional capacity will be needed to meet the target (in addition to that planned to be provided at Moorebank) from 2020 and beyond.

Future rail share target – 40% target

While Table 2.3 shows the capacity required to meet the 28% target, it is more likely that a higher rail share target will be required beyond 2020. A growing proportion of Port Botany throughput will need to travel by rail as a result of limitations on the roads around the port due to the airport and increased underlying traffic. Currently, around 5,000 TEU a day travel to and from Port Botany by road. Without more intermodal capacity, this number could increase to between 14,000 TEU a day (based on the Low Port Growth Scenario) and 22,000 TEU a day (based on the High Port Growth Scenario) by 2040. With the Project, the number of trucks traveling to and from the port by road will still need to increase to

[7] The High Port Growth Scenario is based on a Sydney Ports forecast for 2020 and 2030 and MIC's understanding of NSW Ports' anticipated throughput at Port Botany for 2040.

between 11,000 TEU a day (based on the Low Port Growth Scenario) and 20,000 TEU a day (based on the High Port Growth Scenario) by 2040[8].

While the WestConnex project will provide some of the additional road capacity needed to handle these growing container volumes, the rail mode share will also need to increase to enable Port Botany to continue to grow as forecast. If the rail mode share does not increase (or the roads near the port aren't expanded further), container terminal capacity may need to be expanded at Port Kembla or developed at Newcastle earlier than it might otherwise be necessary, with significant associated costs.

The Freight Infrastructure Advisory Board recommended the NSW Government adopt a 40% rail share target in its 2005 report, *Railing Port Botany's Containers: Proposals to Ease Pressure on Sydney's Roads.* (This recommendation was made in the context of much lower forecast throughput at Port Botany, as noted above). MIC understands the owner of Port Botany, NSW Ports, also wishes to increase the rail mode share to 40%.

Table 2.4 sets out the capacity required at the Moorebank precinct and other future intermodal terminals in Sydney if the rail mode share rose to 40% from 2030. Under the Low Port growth Scenario, if the rail share increases, a 1.05 million TEU p.a. IMEX terminal will be needed at Moorebank soon after 2030. Under the High Port Growth Scenario, the full capacity IMEX terminal at Moorebank will be needed well before 2030.

Table 2.4 TEU transported by rail and IMEX intermodal shortfall if the Port Botany rail share rises to 40% from 2030

Year	Port Botany rail share target (TEU p.a.)	Low Port Growth Scenario IMEX intermodal terminal shortfall (TEU p.a.)	High Port Growth Scenario IMEX intermodal terminal shortfall (TEU p.a.)
2020	795,875	415,875	641,988
2030	1,682,709	1,037,709	2,147,493
2040	2,343,299	1,513,299	2,770,000

Demand-driven rail share

The NSW Government's rail share target is a target, not a cap. The target is not intended to limit the ability of freight to travel by rail where it is economically efficient to do so, that is, where there has been investment in IMT infrastructure that is capable of efficiently handling additional freight and where there is demand from prospective users of that infrastructure.

The rail share at Port Botany could be even higher than 40% if it is not limited by a government target. As detailed in Chapter 3 – *Strategic context and need for the project* of the EIS, analysis conducted by Deloitte (2014) determined there will be strong demand for freight transport via the Project to and from destinations in west and south-west Sydney. This demand would be driven by the availability of new intermodal capacity that is capable of providing a cost-effective alternative to road transport.

The Deloitte (2014) analysis considered the relative cost of road and rail transport to various destinations in Sydney using data from the Australian Customs and Border Protection Service on the origin and destination of containers. This analysis found that significant volumes of freight heading to and from west and south-west Sydney would be transported by rail via Moorebank because of the significant cost advantage that the Project will be able to offer. A large part of this cost advantage is derived from the economies achievable from the large volume of freight that the Moorebank precinct is proposed to handle.

[8] These container volumes assume all existing intermodal capacity is used and all remaining Port Botany throughput is carried by road.

Based on this analysis and an assumption that the Enfield, Yennora and MIST intermodal terminals are able to reach their capacities, the rail mode share for IMEX traffic could be as high as 32% by 2018 and 43% by 2030. In the longer term, as port volumes continue to grow relative to rail capacity, rail mode share is anticipated to stabilise then decline to around 26% by 2050.

Implications of a cap on IMEX throughput at Moorebank

The Moorebank precinct should be permitted to develop (in line with demand and within given external infrastructure constraints) to an IMEX capacity it can efficiently handle (i.e. 1.05 million IMEX TEUs p.a.). While a cap could potentially be designed to match Moorebank's IMEX capacity to the NSW government's current rail share target, this would result in a number of negative outcomes.

For example, analysis by Deloitte (2014) found that given demand in west and south-west Sydney the IMEX terminal would reach its proposed capacity of 1.05 million TEU p.a. If the IMEX capacity is capped at less than 1.05 million TEU p.a., some importers and exporters will be prevented from choosing what would otherwise be the most efficient freight transport option for their needs. This would reduce the cost savings that could otherwise be achieved by business and, in turn, consumers. More broadly, it would reduce the state and national productivity benefits that are captured as a result of the investment in the terminal associated infrastructure.

Improving state and national productivity is one of the Commonwealth Government's key objectives for the Project. The NSW Government also has stated objectives to drive economic growth and reduce red tape. A cap on throughput that is driven by anything other than environmental impacts would have the effect of imposing a red tape burden on business that has negative implications for state and national economic growth and productivity.

A cap on throughput would also reduce the efficiency of planned investment in the Project. If MIC's proposed agreement with SIMTA is approved by the Commonwealth Government, MIC and SIMTA will invest significant capital in the Moorebank precinct. The efficiency of this investment by both the Commonwealth Government and the private sector will be significantly undermined if the terminal cannot be developed to its full precinct capacity. Throughput drives the returns on which this investment is justified and a decision that reduces the potential throughput of the precinct could discourage future investment in intermodal capacity in NSW and in Sydney in particular. A cap would also mean that additional capacity will need to be developed elsewhere earlier than it would otherwise be required, the cost of which will be significant. The marginal cost of providing additional capacity and throughput at Moorebank is substantially lower than it would be to deliver new greenfield capacity at any other site in Sydney.

The Moorebank precinct will be able to achieve greater efficiencies with a higher throughput – because of the economies of scale and the additional opportunities for competition among users of the terminal (which will be an open access facility). By achieving higher efficiencies, the terminal will be able to attract higher volumes of freight off road and onto rail. A cap on throughput would therefore be inconsistent with NSW and Commonwealth Government objectives to get more freight on rail. The NSW and Commonwealth Governments are each pursuing multiple strategies in support of this objective. For example, the governments have facilitated operational improvements at the port-rail interface, upgraded the rail connection to the port, and invested in intermodal capacity. A cap on Moorebank's throughput would undermine these efforts to get more freight on rail.

Finally, a cap would reduce the opportunities for competition created by the precinct by reducing the potential choices (in terms of transport mode and provider) available to freight logistics customers. Competitive markets provide various benefits to business and consumers, including through increased efficiency, choice, service quality and innovation. The competition benefits of the Project will likely be smaller if the precinct's throughput is capped. In March 2015, the Harper Review of competition policy recommended that governments avoid planning rules that restrict competition unless it can be demonstrated that the restriction's broader community benefits outweigh the costs, and the objectives of the rules can only be achieved by restricting competition. Similar recommendations have previously been made by the Australian Competition and Consumer Commission and the Productivity Commission. Consistent with these recommendations, the Moorebank precinct's throughput should only be capped if the terminal's environmental impacts cannot be managed without restricting competition <u>and</u> if the community benefit of a cap outweigh the cost of restricting competition. This report and the EIS demonstrate that a cap is not required as the environmental impacts of the terminal can be managed without the cost to competition of a cap on throughput.

2.3.3 Interstate freight

The Moorebank precinct also needs capacity for 500,000 TEU p.a. of interstate freight each year. The interstate terminal would initially be developed to handle 250,000 TEU p.a. by 2019, gradually expanding to reach its ultimate capacity by 2030, depending on demand.

Unlike the IMEX terminal, whose capacity is driven by a combination of demand and government policy, interstate terminal capacity is primarily driven by government policy only. In particular, the Commonwealth Government has an objective to increase the movement of interstate freight by rail. There has been significant investment in the interstate rail freight network over the past 5 years, however, the nation's interstate rail network is currently not fully utilised. Greater use of rail for long distance freight transport can deliver significant operating cost savings, economic and environmental benefits. This objective is one of the principal drivers behind the Commonwealth Government's decision to facilitate development of the Project.

The interstate freight market is currently dominated by road. Road transports the vast majority of interstate freight travelling in all Australian corridors, apart from the east-west corridor between the eastern states and Perth. Road freight however has higher external costs relative to rail and sea freight. For example, road transport is a major contributor of air pollution; trucks contribute to the number of road accidents and to the significant social and economic costs of fatalities and healthcare; road is less efficient than rail in relation to fuel consumption and waste generation, especially as travel distances increase; and congestion creates costs associated with time delays, emissions and wear and tear on roads. These externality costs of road transport can be mitigated by increased use of rail for interstate freight.

Interstate rail freight also has the potential to achieve significant operating cost savings, thereby removing costs from the supply chain and achieving substantial benefits for national productivity. To facilitate these cost savings, the Commonwealth Government through the Australian Rail Track Corporation (ARTC), has been investing heavily in infrastructure improvements to benefit rail reliability and transit times. In Sydney, this has included construction of the SSFL and the Northern Sydney Freight Corridor. These projects have separated freight and passenger rail lines at critical bottlenecks throughout Sydney's main north-south freight rail routes.

This investment will contribute to rail's competitiveness in the interstate freight market. However, to take advantage of these track improvements, complementary investment in interstate IMT capacity is needed. That is, the freight rail network is only as efficient as the intermodal facilities that enable the transfer of freight on and off the network, and is limited in its ultimate capacity to the capacity of the terminals it connects. A nationwide network of large, modern intermodal terminals is critical to getting the most out of the upgraded freight rail network and ensuring more interstate freight is transported by rail.

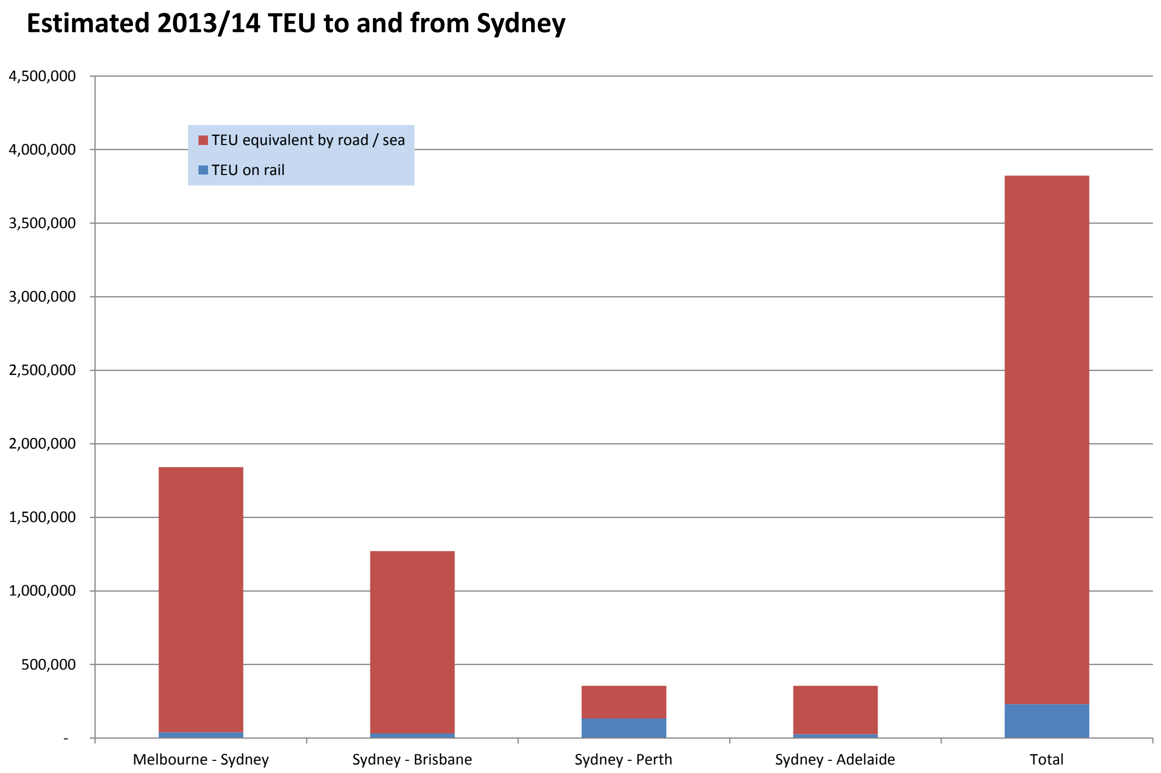
As part of the national intermodal network, the Commonwealth Government has nominated the establishment of a large terminal on the SSFL – i.e. a 500,000 TEU p.a. interstate terminal at Moorebank – as a key component in supporting ARTC's strategy to increase utilisation of the interstate rail network.

Development of intermodal capacity in Sydney is particularly important because, while Sydney is Australia's largest city, it has the lowest domestic container rail throughput of the major capitals.

Infrastructure Australia's *National Freight Strategy* also recognises the critical role of intermodal terminals in developing the national freight network and proposes major and new intermodal terminal/freight cluster sites in Melbourne, Sydney (both Moorebank and Eastern Creek), Brisbane, Perth, Gold Coast and Canberra. While there is existing interstate intermodal capacity in Brisbane, Sydney (at Asciano's Chullora terminal), Melbourne and Perth, many of these terminals have restricted the ability for new entrants to enter the market, and they are now constrained, outdated and limited in their ability to efficiently handle large freight volumes. This means their capacity needs to be supplemented with larger, modern facilities. The NSW, Victorian and Queensland governments all support this approach.

Chapter 3 – *Strategic context and need for the project* of the EIS illustrated that demand for interstate intermodal capacity in Sydney is currently fairly low[9] and forecast growth is also reasonably slow. Low demand however is primarily due to the low cost competitiveness and reliability of rail compared to road. The intention of the Commonwealth Government is that investment in the freight rail and intermodal networks will increase the cost competitiveness and reliability of rail so that demand will increase.

The potential for rail volume throughput to increase is significant. Figure 2.3 shows both the current estimated interstate TEU handled by rail and the equivalent TEU handled on road and sea, estimated at around 3.6 million TEU p.a. Rail would only need to capture 6 per cent of this potential market to double its throughput from around 230,000 TEU in 2013/14 to over 500,000 TEU p.a. These figures do not include the regional freight market, which the terminal will also be able to handle.



Source: ARTC

Figure 2.3 Estimated 2013/14 interstate TEU to and from Sydney

[9] Demand for interstate intermodal capacity at Moorebank may also be lower than forecast in the EIS if Asciano's Chullora facility is not closed (as assumed) but instead is expanded. However, the extent to which an expanded facility can attract additional interstate demand will depend on the catchment it serves and competition from the Project.

The Project will materially increase rail's competitiveness for both interstate and regional containerised freight through:

- increased capacity enabling additional rail operators to enter the market and supporting expansion of the operations of existing rail operators, through the open access arrangements for the terminal;
- cost savings from a modern, purpose designed terminal;
- cost savings from on-site warehousing;
- reduced pick-up and delivery costs as the terminal will be better located than existing terminals relative to the industrial areas of Sydney; and
- in the longer term, the opportunity to double stack containers on trains heading to Melbourne, Adelaide and Perth from Moorebank.

In addition, the Project will have a private sector developer and operator which will be strongly incentivised to do everything it can to grow demand for freight on rail.

While demand may be lower than 500,000 TEU p.a. for some time, the first stage of the terminal will only be built to handle 250,000 TEU p.a. For MIC, this represents an efficient initial investment in interstate capacity while demand builds.

Regardless of current forecast demand for interstate freight transfers by rail, it is crucial that the interstate IMT is capable of being expanded to 500,000 TEU p.a. ultimately, in line with demand. As noted above, the Commonwealth Government's intention is that investment in the freight rail and intermodal networks will, together, improve reliability and cost competitiveness and drive increased demand. Any limit on the ability of the interstate IMT to expand to 500,000 TEU p.a. would be inconsistent with Government policy objectives and limit the ability of the terminal to drive productivity growth through the operating cost savings and reduced environmental costs. It may also discourage investment in other capital city intermodal terminals, thereby undermining the development of the network of large, modern interstate intermodals that is needed to complement investment in the freight rail network to increase the rail mode share of freight.

2.4 Road network impacts

2.4.1 Issues raised by the PAC regarding the SIMTA concept application

Road network capacity

The PAC report examined the relationship between road network capacity and terminal throughput, and specifically stated:

- *'Any intermodal approved for the precinct <u>must not exceed the capacity of the transport network'</u>, and that 'To ensure this, the Commission considers it is appropriate to impose a TEU throughput annual limit'.*
- *'Given the uncertainty about assessing traffic impacts and proposed mitigation measures and based on assessments to meet capacity needs far into the future (2031), the Commission considers that concept approval should not be granted for 1 million TEU per annum.*

- *'If the proponent undertakes monitoring and modelling of the operation of Stage 1 and can demonstrate that an increase in the volume of freight will not exceed the capacity of the transport network (with or without further mitigation measures), then the Commission considers that the subsequent development applications for further increases could be considered up to a total upper limit throughput of 500,000 TEU per annum'.*

The PAC noted that a review (undertaken by Aurecon) of the SIMTA traffic assessment on behalf of DP&E concluded the following five key intersections (the 'core intersections' as defined by the assessment) would be significantly affected by the Project by 2031 based on a one million TEU throughput:

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

The review additionally noted that the Project would not have a significant impact beyond the core area (it would only contribute a 2% increase in traffic) however the wider network conditions would generally deteriorate, mainly as a result of background traffic growth. The review advised that the provision of infrastructure including upgrades to Moorebank Avenue and the key intersections would be critical. The PAC has placed an approval condition on the Project that any traffic assessment for future approval stages must identify upgrades and mitigation measures required to achieve the objective of not exceeding intersection capacity of the following intersections and roads:

- Moorebank Avenue/Newbridge Road;
- Moorebank Avenue/Heathcote Road;
- Cambridge Avenue;
- M5 Motorway/Moorebank Avenue;
- M5 Motorway/Heathcote Road; and
- M5 Motorway/Hume Highway.

Impacts on Cambridge Avenue

The PAC report highlighted that for the SIMTA proposal, Cambridge Avenue could be an alternative road traffic route due to congestion on the M5 Motorway. The report noted that SIMTA had taken the position that Cambridge Avenue would only be used for 5% of car traffic, 5% of rigid trucks and no larger trucks (B-doubles/container trucks).

Comments including those from Campbelltown City Council noted that in the event of an a failure of the Moorebank Avenue access from the north, Cambridge Avenue would be the only alternative access route.

The PAC noted that DP&E, in its assessment report, had recommended the ongoing monitoring of Cambridge Avenue, but took the view that a more detailed assessment of impacts on Cambridge Avenue would be required as part of any future approval stages, as well as identification of measures to prevent heavy vehicles accessing residential streets. This was reflected in approval conditions.

2.4.2 Traffic assessment undertaken by SIMTA

The key findings of the SIMTA traffic assessment are set out below in terms of impact on key intersections.

The traffic assessment in the EIS converts TEU (moved by truck) into actual truck numbers. The resultant truck numbers are as follows:

- 1,603 articulated trucks per day (801 in and 802 out)
- 1,035 rigid trucks per day (516 in and 517 out)
- Total 2,638 trucks per day (1,317 in and 1,319 out)
- 3,613 private car trips (1,806 in and 1,807 out) per day.

The SIMTA EIS benchmarked the total theoretical number of truck movements against existing terminals in order to validate its findings.

On the basis of the above, the daily traffic generation from SIMTA (with a rail terminal capacity of 1 million TEU p.a.) equates to approximately 6,250 vehicle movements per day on an average weekday (2,638 trucks and 3,613 cars).

The impact on intersections for the complete project (i.e. 1 million TEU p.a. throughput by 2031) is shown in the Table 2.5.

Table 2.5 Intersection performance with and without SIMTA proposal

Intersection	Without SIMTA (2031)		With SIMTA (2031)	
AM peak	**Delay**	**LOS**	**Delay**	**LOS**
Moorebank Avenue/Anzac Road	49	D	71	F
M5 Motorway/Moorebank Avenue	30	C	49	D
M5 Motorway/Hume Highway	120	F	124	F
Moorebank Avenue/Heathcote Road	103	F	152	F
Moorebank Avenue/Newbridge Road	144	F	147	F
PM peak	**Delay**	**LOS**	**Delay**	**LOS**
Moorebank Avenue/Anzac Road	37	C	71	F
M5 Motorway/Moorebank Avenue	44	D	68	E
M5 Motorway/Hume Highway	75	F	111	F
Moorebank Avenue/Heathcote Road	205	F	255	F
Moorebank Avenue/Newbridge Road	124	F	134	F

Source: Hyder Consulting 2013

The assessment indicates that while traffic conditions are generally already poor, the SIMTA proposal would further worsen the road network. SIMTA proposes to upgrade the roads in stages as the capacity of the facility increases through a Voluntary Planning Agreement (VPA).

The EIS proposes that Stage 1 will provide an initial capacity of 250,000 TEU p.a. (throughput) – i.e. 125,000 TEU p.a. in and 125,000 TEU p.a. out. Stage 2 to be completed by 2019 will increase capacity to 750,000 TEU p.a. and the final stage to be completed by 2022 would deliver capacity of 1 million TEU p.a.

2.4.3 Approach to traffic assessment for the Moorebank IMT proposal

Through consultation with Transport for NSW (TfNSW) and Roads and Maritime Services (RMS) during the development of the EIS, the requirements of the traffic impact assessment were determined, including the need to assess the Project's impacts on a number of intersections. In total, 14 intersections were analysed, including all of those identified by the PAC as being critical (i.e. the core area intersections investigated by Hyder (2013) as presented in Table 2.5 above). The intersections analysed are described in section 7.10.1 of this report.

The traffic assessment undertaken and presented in section 7.6.1 of this report notes there are a number of intersections that, as a result of background traffic growth in addition to the Project, will operate at an unacceptable LoS (the results also identify that for some intersections in future there will be problems from background traffic alone). The traffic assessment therefore presents a series of intersection treatments that demonstrate a precinct-wide total of 1.55 million TEU p.a. intermodal capacity as well as up to 600,000 sq. m warehousing can be accommodated for all scenarios provided the intersection treatments are undertaken. Section 7.10.1 provides additional information on when these treatments would be needed.

In preparing the traffic impact assessment for the Project, a review of traffic generation rates was undertaken for the proposed land uses and activities on site, to achieve consistency between underlying assumptions used in the SIMTA EIS and in this report. These assumptions are detailed in section 7.9.3.

Cambridge Avenue

The PAC expressed concerns about the impacts of the SIMTA Project on Cambridge Avenue. As detailed in section 7.10.1, the Moorebank IMT will be designed with an intersection treatment at the site entry point that prevents trucks leaving the site from turning right, and ensures that trucks can only enter the site from the north. As such the impacts on Cambridge Avenue would be limited to light vehicles including cars.

2.5 Public benefit

The 'public interest' in a development proposal is a significant matter for consideration by a consent authority. DP&E's report on the SIMTA Project determined the project to be in the public interest because its benefits outweigh its potential impacts. Given the PAC approved the SIMTA Project, presumably the PAC also considered the SIMTA Project to be in the public interest – if developed in accordance with the conditions of consent.

Various factors influence whether a proposal is in the public interest, including: the benefits and impacts of the proposal; the contribution of the proposal to government policies and plans; the views of community members; and the suitability of the site for the proposal. The public benefit test ultimately considers whether the economic, social and environmental benefits of a proposed development outweigh its environmental and amenity impacts in its locality.

The Moorebank IMT will significantly benefit Sydney, NSW and Australian communities, particularly at its full proposed capacity of 1.55 million TEU p.a. As outlined in Chapter 3 – *Strategic context and need for the project,* the Project's benefits relate to:

- its contribution to productivity, reduced business costs, reduced road congestion and environmental outcomes – these benefits have been estimated at around $9 billion;
- the unique characteristics of the terminal site, which provide a once-in-a-generation opportunity for a transformative freight project;
- the project's consistency with Commonwealth, and State planning and infrastructure strategies and policies; and
- the terminal will have some local impacts and, for this reason, some members of the local community oppose the Project. However, once the effect of mitigation measures is taken into account, the residual impact will be relatively minor and within established criteria and regulatory requirements. In addition, a package of local benefits will be progressed in consultation with relevant stakeholders. On balance, therefore, the project is in the public interest.

2.5.1 Local, state and national benefits of the terminal

Employment and productivity

The contribution of the terminal to new jobs and productivity growth will provide a significant public benefit. The new jobs created by the Project include:

- over 1,200 jobs during construction of the IMEX terminal and warehousing;
- almost 300 jobs during the construction for the interstate terminal; and
- almost 2,200 jobs during operation of the IMEX and interstate terminals and warehousing – this includes jobs on site and jobs in the industries that will service the terminal and its staff.

These jobs will directly benefit the people employed and their families. They will also have broader benefits for the local, state and national economy as increased spending by new wage earners induces further output and employment.

The terminal will also make a significant contribution to NSW and national productivity growth. This will be derived from a number of factors that are outlined further below, such as:

- savings in operating costs in the freight transport sector;
- decongestion cost reductions and travel time reliability improvements for commercial vehicles;
- port delay wait time reductions for commercial vehicles; and
- service quality benefits in the rail sector.

Given that transport is an input for other economic activity (i.e. it is not used as an end in itself), transport efficiency savings as the result of the development will have significant flow-on benefits to the broader NSW and national economies. The total economic benefit of the project (before costs) over a 30 year period is estimated at over $9 billion.

Fewer containers transferred by road

One of the most substantial benefits of the Moorebank IMT is it will reduce the growth in the number of trucks that need to travel between Port Botany and other parts of Sydney:

- Currently, around 5,000 shipping containers a day travel to and from Port Botany by road.
- Without the Project, by 2040, around 14,000[10] containers a day will need to travel to and from the port by road (based on a conservative forecast of port growth.).
- The Project will reduce this figure to about 11,000 containers a day.

The Moorebank IMT will therefore significantly reduce the number of trucks that would otherwise need to travel from the port to destinations in west and south west Sydney.

While each container using the IMT (or its contents) will need to travel to and from Moorebank by truck, the IMT will nonetheless reduce the total distance travelled by trucks on Sydney's road network. This is because each container using the terminal will make part of its journey by rail, so it will travel a shorter distance by road. Ultimately, the IMT will reduce the total distance travelled by import-export freight trucks in Sydney by over 60,000 km each day.

This reduction in truck travel over the Sydney road network will:

- reduce the growth in traffic congestion across the Sydney network; and
- reduce travel times, and increase the reliability of trip length, for both private and commercial vehicles, compare to levels that would have occurred without the terminal.

The interstate terminal will also reduce the number of containers that need to move between Sydney and other parts of Australia by road. This will:

- reduce highway congestion, which will reduce delays for cars and remaining commercial vehicles on the road network, and improve journey time reliability; and
- reduce the cost of road damage on the interstate highway network as a result of reduced road haulage lessening the impacts on road pavements.

The reduction in truck travel on Sydney's roads and the nation's highways will also contribute to fewer road accidents and their associated social and economic costs, and environmental benefits at the regional level and beyond, such as a reduction in noise, fuel costs and air pollution.

Reduced costs, improved service for business and consumers

As a large, modern, purpose-built facility, the Moorebank IMT will achieve significant economies of scale and operate more efficiently than existing intermodal terminals in Sydney. The relatively large amount of space for onsite warehousing will contribute to the efficiencies achieved by the IMT because a large

[10] Assumes the intermodal terminal capacities outlined in Table 2.2 are fully utilised.

proportion of containers will be unpacked onsite rather than at distribution centres elsewhere. This will remove an additional road transport leg from the supply chain. The open access regime for the IMT will also contribute to the efficiencies by increasing competition in the freight market. These attributes of the terminal will reduce the cost of freight transfers in Sydney and improve the service reliability and availability compared to the case without the terminal. Road freight transfers will also be less affected by delays at Port Botany, which will reduce the cost and increase the reliability of road freight. These freight supply chain improvements will benefit business and ultimately flow on to consumers.

Uniqueness of the site

As presented in Section 3.3 of Chapter 3 – *Strategic context and need for the project* in the EIS, the SME site has a unique set of characteristics suited for an IMT that are not necessarily needed for other types of land uses. In particular:

- the site is large enough for a facility that can generate the economies of scale and efficiencies needed to encourage freight to make the switch from road to rail; and
- the site is next to an existing motorway and an existing freight railway line so the cost of the Project is much less than if new roads or railway lines were needed.

No other known site in Sydney has the same characteristics to efficiently accommodate the type of activities being proposed. The availability of the site for development represents a once-in-a-generation opportunity for a transformational freight infrastructure project. As outlined in Chapter 6 – P*roject development and alternatives* of the EIS), existing Sydney intermodal terminals cannot handle (or be expanded to handle) the anticipated demand for IMT capacity in Sydney. Alternative IMTs would be significantly less economically efficient than the Moorebank IMT and not practically achievable in the timeframes required. In particular:

- There is no land set aside for an Eastern Creek intermodal terminal and a new freight rail line to the area would be needed with substantial investment implications.
- Land would also be required for a Badgerys Creek intermodal terminal as the airport site is unlikely to have spare space for this purpose. A new freight rail line would also need to be constructed, in addition to the planned passenger line. It would not be practical for freight trains to share the passenger line as passenger trains receive priority on the passenger network, which would undermine the efficiency and reliability of a rail freight service via Badgerys Creek.
- Even if land was available at Eastern Creek or Badgerys Creek, the planning and environmental approval process to assess the sites suitability from an environment, social and economic perspective can take years. Given the demand for intermodal facilities in Western Sydney exist now, the Moorebank IMT site is considered the more appropriate site to service the current demand.

Given the clear suitability of the Project site for an IMT and the lack of economically efficient alternatives, it would be inappropriate and mostly inefficient to use the site for an alternative purpose (e.g. residential or commercial), as these land uses would have greater impacts on the local environment and community. For example, during peak hours:

- residential development would generate up to 25 times more traffic than an IMT; and
- a business park would generate up to three times more traffic than IMT.

In addition, the site is not suitable for residential development because it is contaminated. The cost of remediating the site to residential standard is likely to be much more than the land could be sold for.

The comprehensive site assessment undertaken in the EIS conclusively demonstrated the suitability of the proposed site for the proposed intermodal activities; the essential requirement for decision making.

Government policies and strategies

Planning, freight and infrastructure instruments and broader government policies and strategies are developed to achieve outcomes in the public interest. Consistency of a project with such instruments, policies and strategies is therefore relevant to whether the project is in the public interest.

As demonstrated in Chapter 4 – *Planning and statutory requirements* of the EIS, the Project is consistent with all relevant environmental planning instruments and policies. As demonstrated in Chapter 3 – *Strategic context and need for the project* of the EIS, the project is also consistent with broader NSW and Commonwealth Government policies. In particular:

- the Project will contribute to ongoing achievement of the NSW Government's target to increase rail freight to and from Port Botany to 28%; and
- the development of IMT capacity at Moorebank is clearly Commonwealth Government policy, as evidenced by its creation of MIC to facilitate development of the Project.

It is also Commonwealth Government policy that major infrastructure projects are subject to cost benefit analysis. This analysis provides information on the net benefits of a project to the economy and society as a whole, and assists governments make decisions about resource allocation. The cost benefit analysis of the Project found its overall economic benefits outweighed its costs. This analysis found the Project would have a benefit cost ratio of 1.72. This analysis will be updated to reflect the final agreement between MIC and SIMTA, which is expected to have a significantly lower cost to government than the proposal on which the initial cost-benefit analysis was based.

Alternative strategies could potentially help Sydney cope with growing port and interstate trade. However, the alternatives are likely to have a lower benefit cost ratio than the Project:

- development of an IMT terminal at Badgerys Creek or Eastern Creek would have a significantly higher cost than the Project (as discussed above);
- new or expanded IMT capacity could be developed at Port Kembla or Newcastle Ports but these would have a significantly higher capital costs than the Project and road or rail upgrades may also be needed to move freight to and from Sydney. Development of these ports does not solve the demand for IMT freight in Western Sydney; and
- roads could be further upgraded but there are limits on the cost-effectiveness and feasibility of ongoing upgrades, and continued reliance on road freight would fail to take advantage of sunk investment in the freight rail network or the environmental benefits of increased rail freight.

Government and industry stakeholder support

The Project is supported by the Commonwealth Government, the NSW Government and industry groups such as the Australian Logistics Council, the Business Council of Australia, the Australasian Railways Association and Infrastructure Partnerships Australia. Many individual freight logistics businesses have indicated their support for the Project. This demonstrates that, for government and the business community, the Project is considered in the public interest.

2.5.2 Local impacts and benefits

Local environmental and social impacts

The EIS and other parts of this report demonstrate the Project will have some impacts on the local community and environment. These impacts will be addressed through a raft of mitigation measures (e.g. local intersection upgrades, noise walls and locomotive standards to reduce noise and diesel emissions). Chapter 9 – *Revised environmental management measures* of this report demonstrates the effect that these mitigation measures will have on the Projects environmental and amenity impacts. The residual impact on the local community and environment – accounting for mitigation measures – will be small and manageable within established regulatory requirements and criteria. For example:

- the concentration of air borne pollutants in the area will be well within air quality guidelines;
- there will be no measurable impact of the Project on human health;
- the performance of local intersections will be maintained at the level that would be experienced in the future without the Project; and
- noise from construction and operation of the Project and its rail connection will be within government guidelines.

Development of the IMT may also bring forward some major road upgrades that will be needed in the area regardless of the Project. These road upgrades are needed to handle growth in background traffic but would also benefit the Project. Some possible road upgrades were identified in the 2014 NSW State Infrastructure Strategy and are currently being considered by government for implementation.

Local community views

Local community members have expressed their views on the Project through consultation undertaken by MIC and formal submissions on the EIS. The EIS and the consultation sessions conducted by MIC presented the unmitigated environmental and amenity impacts of the Project. In response to their understanding of the Projects impacts, a number of local community members have expressed their opposition to the Project.

A small number of local community members have also expressed their support for the Project to MIC. These local community members generally considered that the environmental impact would be outweighed by the new jobs and productivity benefits.

In addressing the public benefit test, community concerns and opposition were taken into account in that mitigation measures were developed to address as far as practical those concerns. The residual impacts are considered small and manageable.

Benefits of the terminal for the local community

The local community will receive a share of the broader economic benefits of the Project. This includes a contribution of around $120 million per year for the economy of south west Sydney. MIC also plans to deliver a local benefits program in conjunction with the project to increase the benefits associated with the Project for people living nearby.

MIC chose to seek community input to the local benefits program via a Citizens' Jury. The Citizens' Jury was made up of 19 people randomly selected from suburbs near the Project site – half from within 5 km and half from within 10 km. The jury recommended that the program include measures to improve health and education outcomes for people living near the terminal. These measures will be progressed further and implemented as applicable, in consultation with relevant stakeholders, after the Project receives all the necessary government approvals.

2.6 Summary

The PAC's decision on the SIMTA site has a number of implications for this Project, the most significant being the suggested cap on intermodal capacity that would restrict the precinct as a whole to a long-term capacity cap of 500,000 TEU per annum. The cap relates to the PAC's concerns about the ability of the road network to accommodate a greater throughput and a perception that such a cap would be sufficient to accommodate long term demand and therefore meet the Government objective of a doubling of rail freight mode share (currently 14% for freight entering Port Botany) by 2020.

The PAC additionally expressed regret that a more integrated approach (including a master plan) has not to date been provided for the precinct.

This report seeks to address these issues, demonstrating that:

- The market demand for rail freight in south western Sydney is adequate to substantiate the need for a 1.55 million TEU p.a. IMT facility in the Moorebank precinct by 2030.
- The road network has the capacity to accommodate this growth, subject to a number of road network upgrades as identified in section 7.9.3.
- There is consistency and alignment in relation to the traffic assessment of the SIMTA and IMT projects.

This report presents an updated evaluation of potential precinct development scenarios, including layout plans, as well as planning mechanisms to better link the two sites and their respective approvals. This was undertaken to satisfy the PAC concern about a lack of coordination between the planning of the two projects.

The Project is in the public interest because its residual environmental impacts will be localised and managed but its benefits will be significant and widespread for the entire community. The benefits include a major contribution to jobs and productivity growth, supply chain efficiency, and reduced congestion growth. The local community will receive a share of these benefits as well as a local benefits program. The public interest is also served by the Project in terms of its contribution to government policy; the lack of suitable alternative sites; and the unique characteristics of the site which are not needed for other land uses but make it ideal for an IMT. While some local community members oppose the Project, the broader community interest is reflected by strong support from government and industry stakeholders.

Granting development consent for the project in its entirety as proposed is therefore consistent with the public interest a key aspect of planning decision-making. A decision for a reduced throughput terminal will not deliver the strategic certainty, sustainable outcomes nor governments objectives and will not be in the public interest.

Chapter 3
Consultation

3. Consultation

Chapter 3 summarises the community and stakeholder consultation activities undertaken before and during the exhibition of the EIS for the Project. This chapter also identifies future ongoing communications that would be undertaken during the construction and operation of the Project.

3.1 Activities prior to EIS exhibition

Chapter 5 – *Stakeholder and community consultation* of the EIS provided a detailed description of consultation activities undertaken for the Project before and during the preparation of the EIS. It includes an overview of the key issues raised by stakeholders and the community; and, where relevant, how these concerns have been addressed through the concept design and proposed mitigations. A summary of the consultation activities undertaken with key stakeholders is provided in section 3.1.1; consultation with the community is detailed in section 3.1.2.

The level of consultation undertaken with stakeholders reflected of the level of interest or concern shown by the stakeholders regarding the Project and its likely impacts. For those stakeholders with a high degree of interest in the Project – including key agencies such as DoE, NSW DP&E, NSW Office of Environment and Heritage (OEH) and Liverpool City Council (LCC) – face-to-face meetings were undertaken. For stakeholders with a less interest in the Project, consultation occurred mainly through email and phone communication during the investigation activities of the Project.

Table 3.1 identifies the consultation activities undertaken with key stakeholders prior to the exhibition of the EIS.

Table 3.1 Summary of consultation with key stakeholders and the community

Stakeholders	Level of consultation
Key regulators	
• DoE • NSW DP&E	• One-on-one meetings and briefings • Letters • Telephone and email communication
High level of interest	
• Local community and community groups • LCC • OEH • (NSW) Environmental Protection Agency (EPA) • Department of Defence (Defence) • ABB • Transport for NSW (TfNSW) consisting of Freight and Regional Development and NSW Roads and Maritime Services (RMS) • Department of Infrastructure and Regional Development (DoIRD)	• Community open days • One-on-one meetings and briefings • Letters • Briefings • Reference group for the health impact assessment • Telephone and email communication • Site visit to the Project site

Stakeholders	Level of consultation
Medium level of interest	
• Sydney Trains (formerly RailCorp) • Australian Rail Track Corporation (ARTC) • (NSW) Department of Primary Industries (DPI) • NSW Rural Fire Service • NSW Health • Infrastructure Australia • Sydney Ports (Corporation (SPC) • Campbelltown City Council (CCC) • Western Sydney Regional Organisation of Councils (WSROC) • Sydney Business Chamber • NSW Business Chamber • Australian Trucking Association • Australian Army Cadets • Local Aboriginal Land Councils and Registered Aboriginal Parties	• One-on-one briefings • Telephone and email communication • Site visit to the Project site
Specific infrastructure interest	
• Sydney Water Corporation • Telstra • Endeavour Energy (formerly Integral Energy) • Optus • AAPT • Jemena • AGL • APA Group	• Telephone and email communication • One-on-one meetings (with Sydney Water Corporation and APA Group) • Letters
Specific governmental interest	
• NSW Treasury • (NSW) Department of Premier & Cabinet (DPC) and Ministerial officers	• One-on-one meetings

3.1.1 Consultation with key stakeholders

As identified in Table 3.1, consultation has been undertaken with key regulators, government agencies, infrastructure providers and business/infrastructure organisations. Consultation activities included letters, phone and email communication, one-on-one meetings and, in some cases, a site visit. Dates of individual meetings are provided in Volume 2, Appendix D of the EIS. Details of feedback and issues raised by key stakeholders are provided in section 5.3.1 of Chapter 5 – *Stakeholder and community consultation* in the EIS.

3.1.2 Consultation with the community

Community consultation for the Project began in 2010 and has been ongoing since. The following key consultation activities were undertaken before the exhibition of the EIS:

- A Project website <http://www.micl.com.au/> was established to provide information as the Project progresses, including the results of water, air and noise monitoring. Outcomes of community consultation sessions (as discussed below) have also been presented on the website. MIC has also responded to enquiries made through the website.
- A Project Information Line *(1300 382 239*) was established to enable all stakeholders to provide feedback and ask questions of the Project team.
- Community newsletters were mailed out to all households in communities surrounding the Project site (e.g. Casula, Wattle Grove, Holsworthy and Glenfield) to update the community on Project milestones. Five community updates were mailed to 10,000 residents – in August 2011, October 2011, November 2011 and June 2012 – and to 12,000 residents in October 2013 and May 2014. The letters also invited the community to the information sessions (discussed below).
- Five community information sessions were held, on 28 October 2011, 29 October 2011, 30 October 2013, 2 November 2013 and 7 November 2013. These sessions provided the community with the opportunity to: view information boards about the various aspects of the Project; hear presentations by MIC and the Project Team; ask questions about the Project during an open question and answer session; discuss the Project with members of the technical team and ask questions about any potential impacts; and take away fact sheets on some of the technical studies.
- A series of personal briefings occurred in January 2011, August 2012 and January 2014 with community members who contacted MIC through the Project website.
- Stakeholder meetings were held with local community members to address their particular concerns about the Project. Two meetings were held on 17 March 2014 (seven community members were invited to attend) and 30 January 2014 (three community members attended).
- Through these activities and processes the community raised a number of issues related to Project impacts, approvals, design and site issues, and cumulative impacts. Section 5.3.2 of Chapter 5 – *Stakeholder and community consultation* provides a discussion on the issues raised in MIC's response at the time.

3.2 Consultation during public exhibition of the EIS

The EIS was publicly exhibited between 8 October and 8 December 2014. During the exhibition period government agencies, interest groups, business/industry organisations and the community were invited to make a written submission. A summary of the engagement activities and tools used to encourage community and stakeholder participation during the public exhibition period is outlined below:

3.2.1 Advertising and EIS display locations

On Wednesday 8 October 2014 a public notice was published in *The Daily Telegraph, Liverpool Leader* and *Liverpool Champion* to advertise the exhibition of the EIS and information sessions. A notice was again published in the *Liverpool Champion* and the *Liverpool Leader* on Wednesday 26 November and Wednesday 3 December to advertise that the EIS exhibition was coming to a close.

The EIS was placed on public exhibition between 8 October 2014 and 8 December 2014 at the following locations:

- Liverpool City Council Customer Service Centre – Level 2, 33 Moore Street Liverpool;
- Liverpool City Library – Library Plaza, 170 George Street, Liverpool;
- Campbelltown City Council – Council Chamber, corner Queen Street and Broughton Street, Campbelltown;
- Glenquarie Branch Library – Brooks Street, Macquarie Fields;
- NSW DP&E Information Centre – 23-33 Bridge Street, Sydney; and
- Nature Conservation Council of NSW – Level 2, 5 Wilson Street, Newton.

Exhibition material including hard copies of the EIS, information brochure and Project poster were provided at each of the display locations.

An electronic copy of the EIS was also available on NSW DP&E's website at http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=5066 and MIC's website at http://www.micl.com.au/community/eis/environmental-impact-statement.aspx.

3.2.2 Community information sessions

Three community information sessions were held during the EIS exhibition period. The sessions were advertised through letters mailed to 12,000 residents/landowners in Wattle Grove, Moorebank and Casula two weeks before the first information session. The letter included details on the EIS and its content, the exhibition period and information on how to make a submission. A notice was published in *The Daily Telegraph, Liverpool Leader* and *Liverpool Champion* on the 8 October 2014, providing details of the upcoming information sessions. The information sessions were held at Comfort Inn Hunts, Casula on:

- Thursday 23 October, 6.00 pm–8.00 pm;
- Saturday 25 October; 2.00 pm–5.00 pm; and
- Tuesday 28 October, 6.00 pm–8.00 pm.

Community members were invited to view display boards and ask the Project team questions about the EIS and the outcomes of the studies. In addition, the Project team delivered presentations on the Project and the findings from the technical studies. Details were provided on:

- the IMT and what it does;
- why Moorebank was chosen;
- concept designs for the terminal;
- different rail options for the site;
- potential environmental impacts and mitigation measures for:
  - traffic;

  - > human health impacts;
  - > visual impacts and light spill;
  - > air quality and human health;
  - > noise and vibration; and
  - > other environmental matters.
- cumulative impacts of the terminal and the SIMTA development; and
- next steps and approval process.

Each information session was attended by 22 to 35 people and some community members attended more than one session. A total of 74 community members attended across the three sessions. Community members who attended the sessions were encouraged to make a formal submission via the NSW DP&E website.

3.2.3 Stakeholder letters, emails and briefings

At the start of the EIS exhibition period, MIC sent letters and emails to local residents who had previously subscribed to MIC for updates on the terminal's progress. This correspondence was sent to inform community members that the EIS was going on public exhibition and to provide information on where to view the EIS, where and when information sessions would be held, and how to make a submission on the EIS. MIC also offered briefings on the EIS to the following community representatives:

- Dr Andrew McDonald MP, Member for Macquarie Fields;
- Mr Chris Hayes MP, Member for Fowler;
- Mr Craig Kelly MP, Member for Hughes;
- Mr Laurie Ferguson MP, Member for Werriwa;
- The Hon. Paul Lynch MP, Member for Liverpool;
- Councillor Linda Downey, Mayor, Bankstown City Council;
- Ms Melanie Gibbons MP, Member for Menai;
- Councillor Ned Mannoun, Mayor, Liverpool City Council; and
- Councillor Paul Lake JP, Mayor, Campbelltown City Council.

MIC met with a number of relevant state Ministers and agencies, including TfNSW, RMS, the office of the NSW Minister for Roads and Freight (the Hon Duncan Gay MLC), the Minister assisting the Premier on Western Sydney (the Hon Stuart Ayres MP), the Department of Premier and Cabinet, Infrastructure NSW, NSW Trade and Investment and Sydney Trains. MIC also met with a number of relevant federal Ministers and agencies such as the NSW DP&E, the office of the Minister for Roads and Freight, DoE, DoIRD, Defence, Department of Finance, ARTC and Infrastructure Australia.

3.2.4 Enquiries, requests for information and complaints

The Project Information line (1300 382 239) and question facility on the MIC website (http://www.micl.com.au/contact-us.aspx) were available to the community and stakeholders to allow them to provide feedback on the Project and ask questions of the Project team. MIC received and responded to a number of telephone and email enquiries. All formal submissions were directed to NSW DP&E.

MIC's website also contained a dedicated section providing the electronic version of the EIS, along with details on where to view a hard copy, details on the exhibition period and the process for making submissions.

3.2.5 Citizens' Jury

MIC is committed to reducing the environmental impacts of the Project and recognises the impacts will mostly be experienced locally while the benefits of the terminal (e.g. for traffic congestion, growth of our imports and exports, and national productivity) are experienced over a broader area. Because of this, MIC plans to implement a public benefits package to increase the benefits of the terminal for people living nearby. This public benefits package is in addition to the measures that will be implemented to address the environmental impacts of the terminal. MIC chose to use a 'Citizens Jury' to choose public benefit measures rather than choose them itself. A Citizens Jury is an innovative approach to obtaining community input to a decision that might otherwise be made by a government organisation.

The Moorebank Intermodal Citizens' Jury was independently appointed and randomly selected from suburbs near the terminal site. Half of the participants were drawn from people living within a 5 km radius of the site and half from within a 10 km radius of the site. These boundaries were chosen so the jury would comprise people with a range of views, but with the focus being on people who live close by. Around 4,000 people were initially invited to participate in the jury and the final group of participants was matched to a profile of the community (based on age, gender, location etc.).

Members of the community were also invited to make submissions to the jury on what they see as a benefit for those most affected by the Project. Certain meetings of the Citizens' Jury were open to interested members of the community.

The jury recommended that the public benefit package include measures to improve health and education outcomes for people living near the terminal. These measures will be progressed further and implemented as applicable, in consultation with relevant stakeholders, after the Project receives all the necessary government approvals.

3.3 Aboriginal consultation

Consultation with Aboriginal representatives began in 2010 and continued through the preparation of the EIS. This consultation has been undertaken through site visits and written and verbal discussions with the registered aboriginal parties for the area.

The consultations were managed by Navin Officer Heritage Consultants and included the following registered aboriginal parties:

- Tharawal Local Aboriginal Land Council (TLALC);
- Cubbitch Barta Native Title Claimants Aboriginal Corporation (CBNTCAC);

- Gandangara Local Aboriginal Land Council (GLALC);
- Tocomwall Pty Ltd (TPL);
- Cubbitch Barta Native Title Claimants Aboriginal Corporation (CBNTCAC)
- Darug Land Observations (DLO);
- Darug Custodian Aboriginal Corporation (DCAC);
- Darug Aboriginal Cultural Heritage Assessments (DACHA);
- Darug Aboriginal Landcare Incorporated (DALI); and
- Banyadjaminga.

Consultation with the registered aboriginal parties regarding cultural knowledge and values has been an ongoing process. It has included formal invitations to contribute in writing and verbally during the field survey (2010, 2013 and 2014), site visit (2012), excavation program (2012 and 2013), telephone conversations and the provision of drafts of the technical reports. Further sub-surface testing was undertaken in August 2014, with registered aboriginal parties on site including a representative from Gandangara Local Aboriginal Land Council. Consultation with registered aboriginal parties was also undertaken during the scared tree assessment sampling undertaken in November 2014.

Consultation with the registered aboriginal parties will continue throughout the life of the Project and will include:

- consultation on the future care and management of recovered Aboriginal objects;
- methodologies for any future investigations; and
- finalisation of management and mitigation strategies subject to detailed design.

3.4 Consultation: the next steps

Community consultation will continue as part of the Project development process, to ensure MIC clearly understands the views of people living in the surrounding area and can respond to these views to the greatest extent possible. MIC will consider feedback from the local community during the exhibition of the Response to Submissions Report, and will continue to consider feedback during the ongoing design development, construction and operation phases of the Project (if approved) to ensure all relevant issues are addressed.

3.4.1 Statutory exhibition of the Response to Submissions Report

Public exhibition of the Response to Submissions Report (incorporating proposed amendments to the development) is required under NSW legislation. Section 89F of the EP&A Act requires that the Secretary of NSW DP&E makes the Response to Submissions Report publicly available for a minimum period of 30 calendar days.

During the exhibition period, any person (including a public authority) may make a written submission to the NSW Secretary of NSW DP&E. All submissions received will be provided to the proponent (MIC) in order to be considered in the context of the EP&A Act approval processes.

MIC's past consultation and engagement with the community has improved local awareness and understanding of the Project, and has given MIC a sound understanding of the matters that are of most interest to the community.

3.4.2 Additional community and stakeholder engagement during the exhibition period

During the exhibition period MIC will inform the community and other stakeholders of the exhibition of the Response to Submissions Report and provide information on key details to allow them to make comments in their submissions to NSW DP&E. Feedback during the exhibition period will also be obtained through, telephone calls to the Project Information Line (1300 382 239), emails to MIC, individual written submissions and face-to-face discussions if required.

MIC has prepared a Response to Submissions Report, which outlines MIC's objectives for the exhibition, how it will focus on ensuring relevant stakeholders are aware of the Response to Submissions Report and explaining key aspects of the proposed change to community members. As there are likely to be two planning approval applications on exhibition at the same time (i.e. the Moorebank IMT Response to Submissions Report and SIMTA's Stage 1 EIS) MIC will focus, on reducing confusion and providing some certainty to community members about the scope of the Moorebank freight precinct (which will include both the Moorebank and SIMTA sites). In particular MIC will clarify that there will only be:

- one IMEX terminal in the precinct, with a total capacity of 1.05M TEU per year;
- one interstate terminal in the precinct, with a total capacity of 500,000 TEU per year; and
- one rail access to the terminal and it will be located at the southern end of the terminal.

MIC will also aim to increase certainty by explaining:

- MIC's commitment to specific mitigation measures, such as locomotive standards to lower diesel emissions, noise walls and local intersection upgrades;
- that the terminal's initial IMEX capacity will be 250,000 TEU and will only increase over time in line with demand; and
- that Moorebank Avenue will not close but will be upgraded and may be moved in the future (but this will be subject to a further planning approval).

MIC will be able to give the community further certainty about the scope of the Moorebank freight precinct once MIC's agreement with SIMTA to develop the precinct has been approved by the Commonwealth Government.

Stakeholder engagement

Stakeholders will be notified of the exhibition of the Response to Submissions Report and its contents will be explained through the following actions:

- Newspaper advertisements will be placed by NSW DP&E at the start of the exhibition period.
- A copy of the Response to Submissions Report will be sent by NSW DP&E to local councils and relevant NSW agencies (list below) at the start of the exhibition period. MIC will offer briefings to key agencies.
    - > Council;

> DPI;
> NSW Office of Water;
> DoE;
> Sydney Metropolitan Catchment & Management Authority;
> OEH;
> EPA;
> Heritage Division;
> ARTC;
> TfNSW;
> SCP;
> Origin Energy;
> Essential Energy;
> Transgrid;
> Sydney Water;
> Fire & Rescue NSW;
> NSW Rural Fire Services; and
> NSW Health.

- A brochure will be developed for community members to present them with information on the proposed amendments to the development, invite them to make a submission and provide MIC's phone and email contact details for more information, along with the translation and interpreting services available via TIS National and the MIC website. The brochure will be:

> delivered to 12,000 homes in Moorebank, Wattle Grove and Casula;
> posted on the MIC website; and
> handed out at Westfield, Liverpool to reach interested people not in the letterbox drop catchment.

- A dedicated section will be developed for the MIC website to explain the proposed amendments to the development.

3.4.3 Future community engagement activities

Following the public exhibition period, a further Response to Submissions Report will be prepared to satisfy the NSW EP&A Act processes for addressing submissions received. The relevant documentation will be lodged with NSW DP&E to assist with their determination of the Project.

MIC will undertake further community engagement once the Commonwealth Government approve SIMTA as their developer and operator of the Moorebank freight precinct. At this time MIC will be able to explain the scope and layout of the precinct and the proposed timing of its staged development.

Consultation with key stakeholders and the community will continue during the next stages of Project development. Furthermore, with the exception of the Early Works (described in Chapter 8 – *Project development phasing and construction* of the EIS), under the EP&A Act the EIS approval would not provide the opportunity to construct any part of the IMT until further detailed environmental assessments are undertaken and approved (referred to as Stage 2 State significant development (SSD) approvals). Further community consultation would be undertaken during preparation of these Stage 2 SSD approvals.

If the Project is approved, a Community Engagement Plan (CEP) will be prepared and implemented by the contractor selected for the construction and operation of the Project. This will outline the consultation and notification processes during the pre-construction, construction and operation phases. The CEP would be prepared to ensure that:

- the community and stakeholders have a high level of awareness of all processes and activities associated with the Project;
- accurate and accessible information is made available; and
- a timely response is given to issues and concerns raised by stakeholders and the community.

3.4.4 Future agency and businesses/infrastructure stakeholder consultations

During the next stages of the approval process, MIC will continue to consult with the relevant key agencies and businesses/infrastructure stakeholders. The EIS (if approved) would be issued with conditions of consent, which would include a schedule of additional and more detailed assessments to be undertaken during subsequent development applications. MIC will consult with relevant agencies and business/infrastructure stakeholders as required in relation to these subsequent development applications.

Following staged development consent, the CEP will detail further consultation and notifications to be undertaken during the pre-construction, construction and operation phases of the Project to ensure that agencies and business/infrastructure stakeholders are adequately informed.

Chapter 4
Overview of submissions

4. Overview of submissions

Chapter 4 provides an overview of the process that was used to collate, analyse and respond to the submissions received during the exhibition of the Environmental Impact Statement (EIS). This chapter also identifies the key issues and sub-issues raised in the key government and community submissions. A detailed discussion on the issues raised by key government and the community is provided in Chapter 5 – *Response to government agency submissions* and Chapter 6 – *Response to community submissions*.

4.1 Analysis process

The NSW Department of Planning and Environment (DP&E) received a total of 1,793 submissions from community members and government agencies between 8 October and 8 December 2014. Of the 1,793 submissions received, 241 of these were from community members (including special interest groups), 9 were from key government agencies and 5 were received from local councils. Liverpool City Council (LCC) completed a letter drop to 183,000 residents in 78 suburbs across south-west Sydney. The letter drop included a completed submission form that the community was encouraged to sign and send to the NSW Minister for Planning. A total of 1,538 submissions were received from this process, which is a response rate of less than 1%. The Moorebank Intermodal Company (MIC) has considered this submission as one single submission (see form letter 3 (submission number 242)).

Submissions were also received from the following special interest groups, community action groups and infrastructure owners/operators:

- Liverpool City Youth Council;
- Interlink Roads Pty Ltd;
- Georges River Environmental Alliance;
- Liverpool Action Group Inc;
- Glenfield Waste Services;
- The No Intermodal Committee (chaired by John Anderson);
- Georges River Combined Councils Committee Inc;
- Action for Public Transport; and
- East Liverpool Progress Association.

Submissions received from special interest groups, community action groups and infrastructure owners (as identified above) were given an individual submission number and collated by NSW DP&E as part of the community submissions. Response to these submissions is therefore included in the response to community submissions (refer to Chapter 6 – *Response to community submissions* of this Response to Submissions Report (this report)).

Detailed submissions were received from local councils and government agencies including LCC, Campbelltown City Council (CCC), Hurstville City Council (HCC), Fairfield City Council (FCC), Bankstown City Council (BCC), Transport for NSW (TfNSW), NSW Office of Environment and Heritage (OEH), NSW Environment Protection Authority (EPA), Fire and Rescue NSW, NSW Rural Fire Service, Sydney Catchment Authority, NSW Department of Primary Industries ((DPI) (including comments from NSW Office of Water and Fisheries NSW)), NSW Health and NSW Ports. Responses to these submissions are provided in Chapter 5 – *Response to government agency submissions* of this report.

4.1.1 Receipt of submissions

Each community submission was assigned an individual number by NSW DP&E. Rather than referring to community members by name, the individual submission numbers have been referenced throughout this report, Submitters can contact NSW DP&E to obtain their individual submission number or access NSW DP&E's website (http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=5066).

The content of each community submission was reviewed and categorised according to key issues (e.g. traffic, noise, air quality) and sub-issues (e.g. traffic impacts on the M5 Motorway). Due to the number and diversity of issues raised in community submissions, these matters raised in the submissions were grouped based on their assigned key issue and sub-issue categories. This means that while the exact wording of the submission may not be captured in this report, the intent and the issues raised have been identified. Section 4.2 provides a summary of the key issues and sub-issues raised by the community while Chapter 6 – *Response to community submissions* of this report provides a detailed discussion of the issues raised and MIC's response.

Three standardised form letter submissions were received and a number of community submissions used these form letters to make their submission. For ease of reference, this report references the form letters (1, 2 and 3), rather than referring to each individual submission. Appendix A of this report identifies which submissions were made using the standardised form letters.

Submissions received from government agencies and local councils were reviewed and key issues raised were identified. Issues raised by government were not categorised as the issues raised were specific to each agencies assets and interests. A discussion of the issues raised by government is provided in Chapter 5 – *Response to government agency submissions* of this report.

The EIS was exhibited to seek approval under both the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and this report seeks to fulfil the submissions reporting requirements under both jurisdictions. NSW DP&E managed all of the submissions received, including acting on behalf of the Department of the Environment (DoE), as submissions were deemed to relate to both jurisdictions unless otherwise stated (in practice, no submissions specifically referred to one jurisdiction or another).

4.2 Summary of key issues and sub-issues

4.2.1 Community submissions

Table 4.1 identifies the key issues raised in submissions from the community, with most submissions raising a number of issues. As illustrated in Table 4.1, the top five issues raised by the community were:

- Project alternatives;
- traffic, transport and access;

- noise and vibration impacts;
- local and regional air quality; and
- human health risks and impacts.

Table 4.1 also identifies the percentage of submissions that raised each key issue.

Table 4.1 Summary of key issues raised by the community

Key issue	No. of submissions raising issue[1]	% of submissions raising key issue
Strategic context and need for the Project	33	18.3
Planning and statutory requirements	11	6.1
Community consultation	7	3.9
Project alternatives	144	80.0
Project development phasing and construction	6	3.3
Traffic, transport and access	113	62.8
Noise and vibration impacts	60	33.3
Biodiversity	24	13.3
Contamination and soils	3	1.7
Hydrology, groundwater and water quality	14	7.8
Local and regional air quality	46	25.6
Greenhouse gas	2	1.1
Aboriginal and European heritage	16	8.9
Visual and urban design	18	10.1
Land use and property	37	20.6
Social and economic impacts	8	4.4
Human health risks and impacts	40	22.2
Cumulative impacts	6	3.3
Environmental risk analysis	4	2.2
General	38	21.1

Note 1 For the purposes of the information provided in Table 4.1, form letters (form letter 1, 2 and 3) have been counted as one submission.

In reviewing and collating the community submissions, a number of sub-issues have also been identified. These relate to the key issues (i.e. traffic, transport and access) and provide further detail on the nature of the issue identified in the submission (e.g. traffic impacts on the M5 Motorway). Table 4.2 identifies the sub-issues identified under each key issue.

Of the 1,793 community submissions received (including form letters), two submissions indicated support for the proposal while the remainder either opposed the Project or provided general comments only (i.e. did not state their objection). MIC's response to the key community issues and sub-issues is provided in Chapter 6 – *Response to community submissions* of this report.

Table 4.2 Summary of key issues and sub-issues raised by the community

Key issue	Sub-issue
Strategic context and need for the Project	Local community benefit Viability of short haul freight for Moorebank Container destinations and freight demands Economic viability of the proposal Funding of infrastructure upgrades
Planning and statutory requirements	Concerns regarding the approval process Recommends that a Master Plan be prepared Confusion over the Defence National Storage Distribution Centre (DNSDC) project Concerns regarding the transparency and adequacy of impact assessments Accuracy of ownership and property details
Community consultation	Adequacy of community consultation Response time to complaints/concerns during operation Adequacy of Citizens' Jury
Project alternatives	Alternative site at Badgerys Creek Alternative site at Eastern Creek Capacity of Chullora Alternative location at Mittagong Alternative site at Auburn-Clyde-Granville Capacity of Enfield Capacity of Port of Newcastle Alternative location for IMT – general Suitability of IMT at Moorebank site Alternative uses for School of Military Engineering (SME) site Confusion over combined proposal for SIMTA and Moorebank IMT Capacity restrictions for SIMTA proposal Need for a whole of precinct approach Capacity of the SSFL Electrification of the SSFL
Project development phasing and construction	Concern regarding 24 hour IMT operations Concern regarding construction period
Traffic, transport and access	Impacts on local roads Traffic impacts on the M5 Motorway Impacts on the Hume Highway Traffic congestion Traffic safety issues Traffic impacts on Moorebank Avenue/M5 Motorway intersection Traffic impacts as a result of trucks Impact on travel times Traffic impacts on emergency services Traffic impacts on the M7 Motorway

Key issue	Sub-issue
	Impacts on public transport/opportunities for improvements Timing of traffic surveys and peaks Restriction on southbound heavy vehicle movements during construction Opportunity for a bridge over Georges River Adequacy of traffic assessment Potential spills during construction and operation Degradation of road assets (pavements and bridge) Traffic impact on the WestConnex project in combination with this Project Traffic impacts – general Benefits to toll operators on the M7 Motorway Impacts of induced traffic
Noise and vibration impacts	Noise impacts – general Noise impacts at night Noise impacts from IMT operations Wheel squeal Adequacy of noise assessment Accuracy and adequacy of identifying/locating sensitive receptors Adequacy and feasibility of mitigation measures Noise impacts during the day for people needing to sleep Impacts on surrounding suburbs and further afield Noise impacts on the community
Biodiversity	Impacts on flora and fauna Impacts on Georges River Pest species and biosecurity risks
Contamination and soils	Contamination impacts
Hydrology, groundwater and water quality	Flooding impacts Impacts on Georges River
Local and regional air quality	Air quality impacts – general Existing ambient air quality Diesel fumes/emissions Air quality impacts on human health Dust and odour during construction Adequacy of air assessment Adequacy and feasibility of mitigation measures
Greenhouse gas	Carbon footprint of proposal
Aboriginal and European heritage	Impacts on heritage sites Adequacy of consultation with Registered Aboriginal Parties
Visual and urban design	Light impacts Visual impact of IMT

Key issue	Sub-issue
Land use and property	Impacts on public open space/community facilities Impacts on Georges River Property values
Social and economic impacts	Social impacts from increased travel times Impacts of children getting to school Impact on usability of residential open space Impacts to the local community structure Impacts on quality of living
Human health risks and impacts	Health impacts on the community Air quality impacts on human health Learning difficulties for children Health impacts due to sleep disturbance Impacts on health systems Adequacy of human health assessment
Cumulative impacts	Adequacy of cumulative assessment
Environmental risk analysis	Appropriateness of risk assessment
General	General concern regarding pollution from the IMT General concern raised on impacts of the Project Concerned that the IMT would negatively impact on the quality of life for residents General concern regarding the long term planning for Sydney basin Concerned with crime issues associated with freight terminals Concerned with the impacts of rai access options Concerned with impacts of letter drop Argues that the business case has not been made public Concerned raised in relation to the accuracy and adequacy of identifying/locating sensitive receptors

Sub-issues of most concern under the top five key issues are as follows:

- Project alternatives:
  - argues the IMT should be located at Badgerys Creek;
  - argues the Moorebank site is not suitable for the purposes of an IMT;
  - argues the SME site should be developed for alternative uses (i.e. residential, commercial hub or public recreation/conservation area);
- Traffic, transport and access:
  - concerned about the impact of the Project on traffic congestion, with congestion already experienced along local and regional arterials;
  - concerned about the impacts of the Project on traffic safety including issues with trucks ‘weaving’ onto and off the M5 Motorway and trucks parking and using local roads;

> questions raised about the adequacy of the traffic assessment, including modelling and assumptions;

- Noise and vibration impacts:

> concerned about the impact of IMT operations, particularly at night;

> concerned about the noise impacts of wheel squeal and the adequacy of mitigations to address this;

- Local and regional air quality

> concerned about the impact of diesel fumes generated from locomotives, heavy vehicles and other equipment;

- Human health impacts;

> concerned about the impacts on human health as a result of construction and operation of the IMT including exposure to pollutants and particulate matter, noise and other IMT construction and operational impacts.

Figures 4.1 to 4.3 provide a breakdown by sub-issue of the top three key issues raised by the community members.

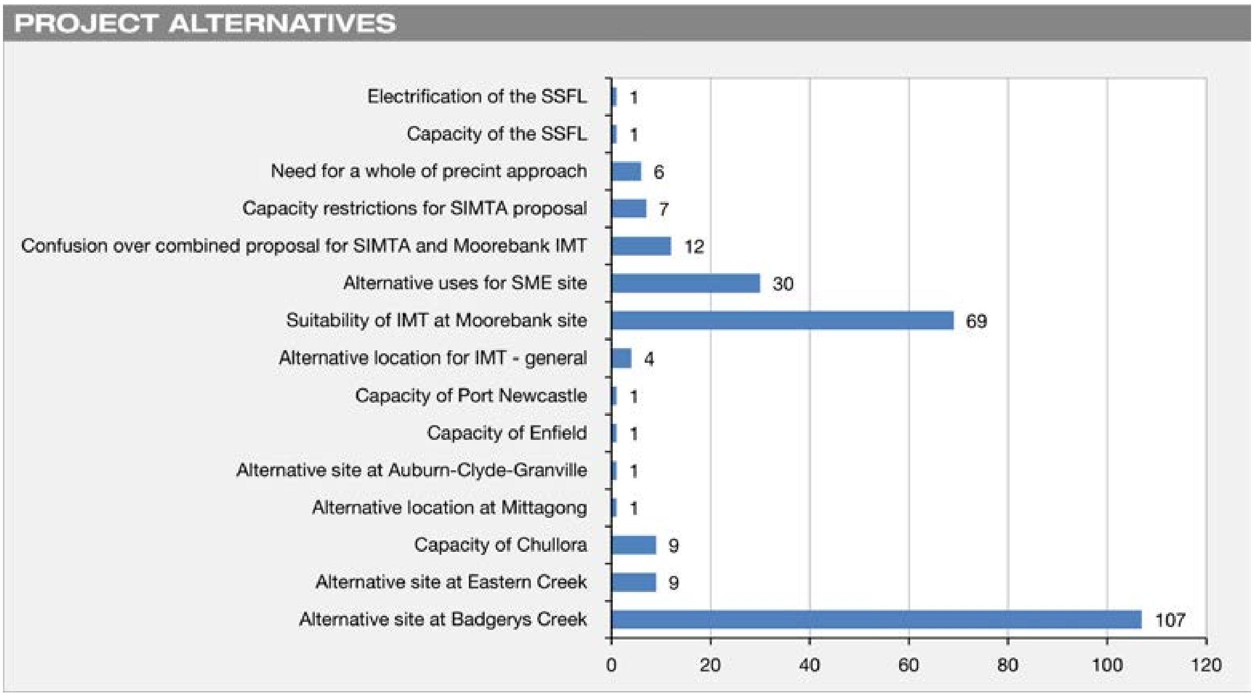


Figure 4.1 Breakdown of sub-issues under key issue 'Project alternatives'

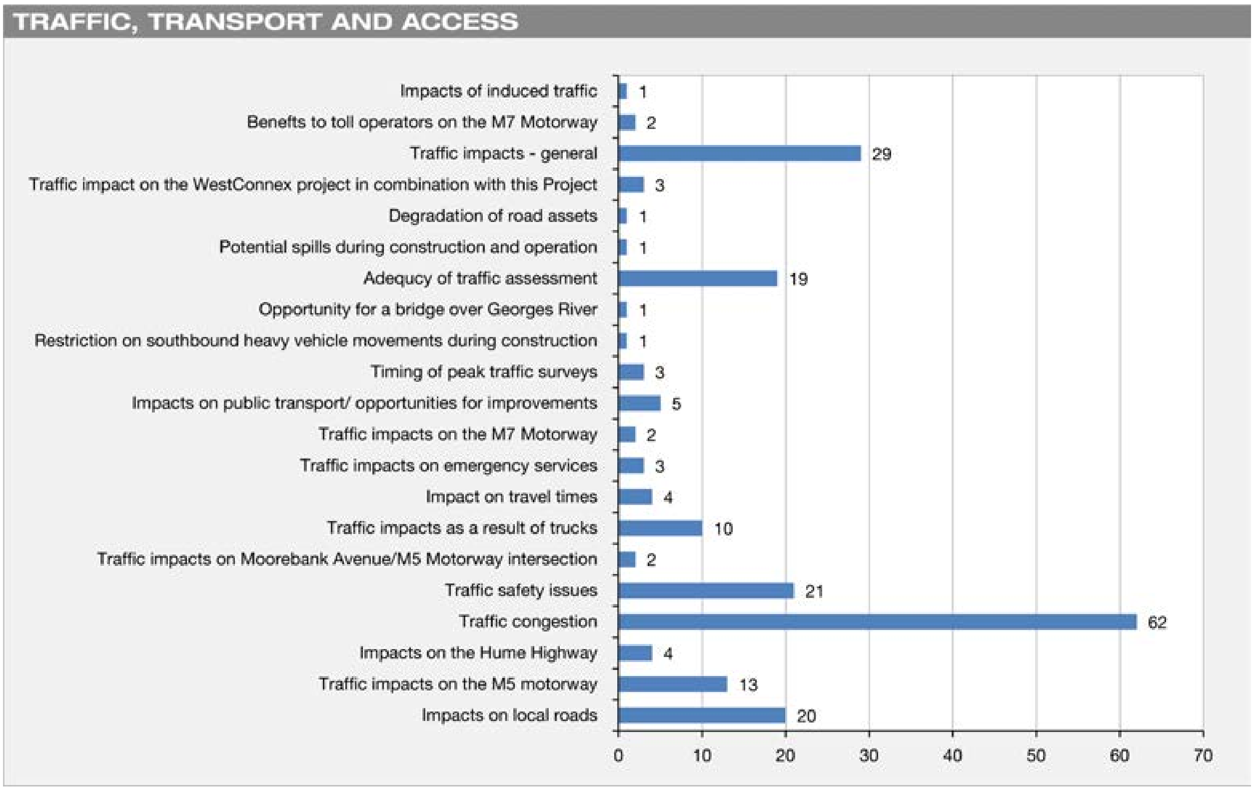


Figure 4.2 Breakdown of sub-issues under key issue 'Traffic, transport and access

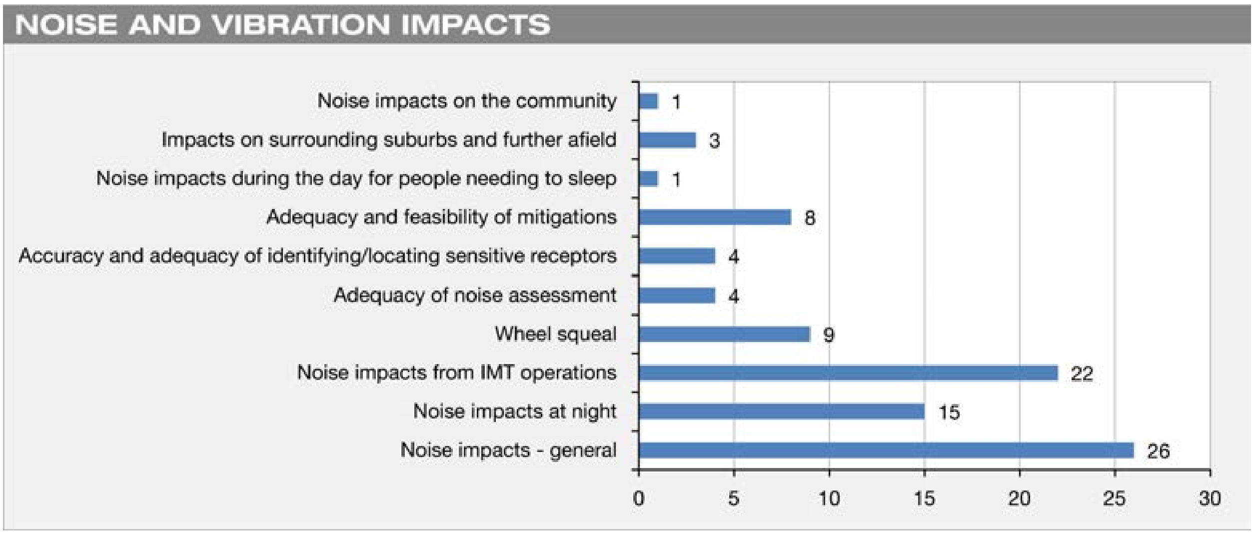


Figure 4.3 Breakdown of sub-issues under key issue 'Noise and vibration

Chapter 5
Response to government agency submissions

5. Response to government agency submissions

Chapter 5 provides a summary of the key issues raised in the submissions from government agencies and local councils. Due to the complexity of the issues, this section provides a high level overview of the key themes and a summary of the key issues raised by government agencies and local councils including Liverpool City Council (LCC), Hurstville City Council (HCC), Campbelltown City Council (CCC), Fairfield City Council (FCC) and Bankstown City Council (BCC), with Moorebank Intermodal Company's (MIC) response provided in a separate table in Appendix B of this report.

The LCC submission in particular was very detailed (including a letter and a report prepared by consultants Cardno), with the submission requesting comment from MIC on a number of items. Due to this level of detail, LCC's submission has been dealt with slightly differently, with a separate response provided in section 5.1 and a detailed breakdown of each of the key issues raised including MIC's response to the issues also provided in Appendix B.

5.1 Liverpool City Council submission

LCC engaged Cardno to undertake a peer review of the Environmental Impact Statement (EIS) and to provide assistance in preparing its detailed response submission.

LCC raised a number of issues as part of its submission and these issues and the technical responses are provided in Appendix B (Table 1). The discussion below focuses on the key points raised by LCC as part of its submission.

5.1.1 Alternative uses for the site

LCC believes that Badgerys Creek is the optimum location for the Moorebank Intermodal Terminal (IMT) near the new airport site. It argues the best use for the Moorebank site is premium residential land, where there is the potential for high quality land to be developed adjacent to the Georges River. LCC further adds that a mixed use development that capitalises on the high quality public amenity, recreational opportunities and connection to the passenger rail system should be considered.

LCC notes the Urban Development Industry of Australia (UDIA) has issued an Affordable Housing report identifying key actions to securing affordable housing. UDIA regularly audits Commonwealth-owned land with a view to making unused land available for housing developments. As such, LCC argues there are opportunities for the site to be developed for alternative and profitable uses, which will more effectively deliver on state and national objectives in the long-term. Its analysis suggests that 1,200 dwellings together with commercial and retail uses could generate sustainable employment activity. LCC indicate they are currently undertaking master concept planning for premium investment redevelopment opportunities which could be jeopardised by the Project.

MIC response

MIC notes that Badgerys Creek has been suggested by LCC and many community members as a suitable alternative site for the IMT. However, this site would be located too far west of current Sydney freight markets to be commercially viable as an intermodal facility and does not currently have adequate road or rail supporting infrastructure. Predicted demand in containerised goods suggests that a number of intermodal facilities will be required and that Eastern Creek and Badgerys Creek may be suitable future intermodal sites. Given that the demand for an IMT in western Sydney exists now, the Moorebank IMT site is considered the most appropriate site as described in Chapter 6 – *Project development and alternatives* of the EIS and in Chapter 2 – *Assessment of the issues raised by the NSW Planning Commission* of this report.

MIC is not aware of any existing Commonwealth land in the vicinity of Badgerys Creek that is currently suitable for an intermodal facility as the new airport site is unlikely to have spare space for this purpose. A new freight rail line would also need to be constructed in addition to the planned passenger line. It would not be practical for freight trains to share the planned passenger line to the new airport since passenger trains receive priority on the passenger network, which would undermine the efficiency and reliability of a rail freight service via Badgerys Creek. Even if land was available at Badgerys Creek, the planning and environmental approval process to assess the sites' suitability from an environment, social and economic perspective can take years. Given the demand for intermodal facilities in western Sydney the Moorebank IMT site is considered the most appropriate to service the current demand.

MIC acknowledges the suggestions for alternative uses of the Project site; however these alternatives have not been assessed in any level of detail for the following reasons:

- As detailed in Chapter 15 – *Contamination and soil* of the EIS, the site is contaminated and is not suitable for sensitive land development (such as residential development). With the current levels of contamination, the site is only suitable for industrial or commercial land uses. While former Defence land has in the past been remediated for residential development (e.g. at Wattle Grove), the cost of doing so is substantial and would affect the value of the land, were it sold for residential development.

- Development for residential purposes could house more than 40,000 people in 16,500 dwellings, which could generate around 3,154 passenger vehicle trips (inbound and outbound) in the morning peak hour (based on Roads and Maritime Services (RMS) methodology as discussed in section 4.4 of Technical Paper 1 – *Traffic, Transport and Accessibility Impact Assessment* of the EIS). This compares to the Project which, at full capacity, would generate around 422 vehicle trips (inbound and outbound) in the morning peak hour. Traffic generated by the terminal during peak hours would be a fraction of the traffic that would be generated by a residential development. This proportion would be higher at other times of the day (as the intermodal terminal spreads heavy vehicle traffic across the day, while residential traffic is focused on the peak hours.

A detailed assessment of alternative land uses is outside of the scope of this Project (i.e. the uses do not address the objective of the need to meet Sydney's freight demands). MIC has been established to oversee the delivery of an IMT in south-west Sydney and has been tasked with delivering a value for money solution to the Australian Government and acting in an environmentally and socially responsible manner. MIC is therefore unable to provide comment on alternative land uses.

MIC acknowledges the comments made by LCC with respect to current council master planning to achieve its potential as a regional city; however, MIC is not aware of any strategic policies/plans that document this vision. LCCs submission does not refer to or reference any policies or plans where this vision is defined. In any case, with the mitigation and management measures proposed, the development of the Moorebank IMT would not conflict with any broader strategy outside the Moorebank precinct.

In terms of local strategies, the *Liverpool Industrial Land Strategy* (Liverpool City Council 2007) identifies Moorebank as a suitable location for future industrial development, owing to its advantageous location, proximity to labour markets and access to key infrastructure including the central business district (CBD) and Sydney Airport. The Moorebank, Warwick Farm and Prestons areas are identified in the *Liverpool Industrial Land Strategy* as LCC's preferred location for a business park that restricts unsightly or unpleasant operations; however, the strategy also acknowledges the strategic need for a future key freight sector strategy to increase handling of freight by rail.

Chapter 3 – *Strategic context and need for the Project* of the EIS and Chapter 2 – *Assessment of the issues raised by the NSW Planning Commission* in this report outlines the objectives for the Project and provides an assessment of the Project against the key Australian and NSW Government policies and publications. The Project is consistent with, and assists in meeting the key objectives of a number key policies including the *National Land Freight Network Strategy*, *National Ports Strategy, National Infrastructure Priorities – Infrastructure for an economically, socially and environmentally sustainable future, NSW 2021, State Infrastructure Strategy, NSW Long Term Transport Master Plan, Draft Sydney Metropolitan Strategy for Sydney to 2031, Railing Port Botany's Containers, South West Subregion: Draft Subregional Strategy* and *NSW Ports and Freight Strategy*. It is noted that some of these reports identified Moorebank as a location for a future IMT. Refer to section 3.6 of Chapter 3 – *Strategic context and need for the Project* of the EIS for a detailed discussion.

5.1.2 Cumulative impacts

LCC states its disappointment in the lack of coordination in assessing the Project and the SIMTA Project and claims that separately considering the two proposals leaves gaps and inconsistencies in the information available. This results in lack of transparency in government decision making. LCC's view is that a master plan is required to facilitate the two intermodal projects so that a comprehensive approach to infrastructure requirements can be assessed and not duplicated.

LCC requests that clear operational standards are required to ensure appropriate monitoring and mitigation measures are conditioned and that the application should be deferred until the precinct master plan has been developed.

MIC response

Prior to the EIS exhibition, the Moorebank IMT project was being developed as a stand-alone project and was therefore necessary to assess the environmental impacts independently of the SIMTA project within the EIS. This assessment approach was a requirement of the NSW Secretary's Environmental Assessment Requirements (SEARs) and the Department of Environment's (DoE) EIS guidelines.

Chapter 27 – *Cumulative impacts* of the EIS assessed the cumulative impacts of both the Moorebank IMT in conjunction with the SIMTA IMT and other planned or proposed developments in the local area. In recognition of community and approval agencies concerns regarding the prospect of both projects being developed; three scenarios (as detailed in section 27.1 of Chapter 27 – *Cumulative impacts*), were assessed in the EIS (assuming a combined IMT precinct across both sites). The cumulative scenarios assessed in the EIS were developed in consultation with NSW Department of Planning and Environment (NSW DP&E), and in consideration of the capacity of the Southern Sydney Freight Line (SSFL) and freight demands (which were developed in consultation with Transport for NSW (TfNSW)).

Prior to the EIS exhibition, MIC developed the Moorebank IMT proposal as a stand-alone project. The SIMTA proposal for an IMT on the site immediately east of the Project site was also being pursued separately, with its own planning and environmental approvals being sought. However, since the exhibition of the EIS, an agreement has been reached between MIC and SIMTA for an integrated precinct-wide intermodal facility and associated warehousing across both the MIC and SIMTA sites. This Response to Submission Report incorporates proposed amendments to the development, including details on the proposed layout and associated impacts of a precinct-wide intermodal facility (including the selection of the southern rail access option for the combined precinct) (refer to Chapters 7 to 9 of this Response to Submissions Report (this report)). The indicative layout would be further developed during detailed design and details would be provided as part of the Stage 2 State significant development (SSD) applications.

This report will be exhibited for the public to review and make further submissions before NSW DP&E grants approval of the Stage 1 SSD application for the Project. LCC and the community will also have the opportunity to provide further comment during the Stage 2 SSD application process. This Stage 1 SSD only relates to development on the Moorebank site, and if approved, the Stage 1 SSD approval would only approve the Project's 'concept' on the Moorebank site. Approval to construct and operate an IMT across either the SIMTA or the Moorebank site would be considered and assessed during the Stage 2 SSD application process.

Updated management and mitigation measures (as a result of the changed site layout and selection of the southern rail access option) are provided in Chapter 9 – *Revised environmental management measures* of this report. Subsequent Stage 2 SSD applications will provide further assessment of the required management and mitigation measures once the detailed design for the precinct has been developed and the environmental impacts associated with this design can be assessed.

5.1.3 Recent announcement of MIC/SIMTA Agreement

LCC states that it welcomes the announcements made on 5 December 2014 regarding the agreement between MIC and SIMTA to develop the Moorebank precinct but notes the lack of certainty in the current applications and commitment to the delivery of infrastructure for the site. LCC notes that if approved by SIMTA's board and the Australian Government, the precinct would provide an initial import export (IMEX) terminal with capacity for 1.05 million containers a year and an interstate capacity of 500,000 containers per year. This is well beyond the potential 500,000 TEU approved under the Concept Approval for SIMTA. The announcement indicates that further planning approvals will be sought for the combined precinct if the agreement receives the required Commonwealth and Board approvals.

MIC response

As noted above, the Moorebank and SIMTA concept proposals are being developed as stand-alone proposals and the planning and environmental impacts are being independently assessed. The SIMTA project received its concept approval in September 2014 with the approval placing a 250,000 TEU initial capacity cap and a 500,000 TEU total capacity cap on the project. The Moorebank IMT project is seeking concept approval for 1.55 million TEU (1.05 million IMEX and 500,000 TEU interstate). Chapter 2 – *Assessment of the issues raised by the NSW Planning and Assessment Commission* of this report provides a further discussion on the recent PAC determination of the SIMTA site, with a specific focus on the implications for the Moorebank site. In particular, section 2.2 provides a discussion on the precinct approach to the two sites and section 2.3 discusses why the demand at Moorebank well exceeds the capacity cap placed on the SIMTA project by the PAC.

MIC will continue with its existing application for Stage 1 SSD concept approval (incorporating early works) for the Moorebank IMT site and SIMTA will be responsible for obtaining all other approvals required under the EP&A Act, to build all stages of the Project.

SIMTA has received approval under the EPBC Act for the construction and operation of an IMT comprising a one million TEU IMEX facility and 300,000 sq. m of warehousing. SIMTA has also received concept approval from the Planning Assessment Commission (PAC) under the (then) Part 3A of the NSW EP&A Act for the development of an IMT. In approving the development however, the PAC granted concept approval only for a 250,000 TEU IMEX facility until the local road infrastructure is upgraded to support increased capacity. The PAC stipulated that' subject to more detailed traffic assessment, an ultimate 500,000 TEU capacity could be provided and that this should be adequate to 'meet the Government's objectives for rail freight from Port Botany well into the future'. This is less than the one million TEU that was sought by SIMTA. The PAC approved the 300,000 sq. m of warehousing proposed.

SIMTA is now in the process of obtaining development approval (DA) to construct and operate Stage 1 of its development being:

- a 250,000 TEU IMEX facility; and
- a rail connection to the SSFL at the southern end of the Moorebank site.

The agreement between MIC and SIMTA is subject to certain contractual conditions between the two parties. These conditions include that:

- project approval be obtained by SIMTA for the IMEX terminal on the SIMTA site; and
- a staged DA be obtained by MIC for terminal development on the Moorebank site.

The agreement between MIC and SIMTA considers the planning pathway if the conditions of the agreement are met. The planning pathway would incorporate the current approval that has already been obtained by SIMTA, and would include the following milestones:

- SIMTA obtains Stage 1 DA development approval for its site (current);
- MIC obtains staged DA - including Stage 1 Early Works for its site (current);
- SIMTA obtains all subsequent DAs for each stage of the precinct development including any necessary modifications to approval conditions granted to both sites to secure an integrated 1.55 million TEU single IMT.

5.1.4 Infrastructure contributions and commitments

LCC states that rezoning and development of this scale typically requires a Voluntary Planning Agreement to ensure the delivery of appropriate infrastructure and that Council has not been given an opportunity to negotiate the delivery of infrastructure during this process. LCC also states that it is apparent from the exhibited documentation that existing public infrastructure is inadequate to support the proposal.

LCC further states that the concept application fails to address the wide traffic network implications of the development. Any approval for the rezoning and concept plan would result in an immediate burden on local government to deliver the necessary infrastructure to support the proposal.

LCC recommends that if concept approval is given, that MIC should enter into a Voluntary Planning Agreement regarding the delivery of infrastructure to support the proposal.

MIC response

MIC acknowledges the traffic network implications of the Project and the concerns raised by LCC and members of the local community. The traffic modelling prepared for the EIS shows road network upgrades would be required to maintain all intersections in the vicinity of the Project site to an acceptable level of service. The traffic impacts of the Project have been assessed as detailed in Chapter 11 – *Traffic, transport and access* of the EIS and *Technical Paper 1– Traffic, Transport and Accessibility Impact Assessment* (EIS Volume 3). Traffic impacts on the wider network, including local roads have been assessed using intersection performance modelling software (Signalised and unsignalised Intersection Design and Research Aid (SIDRA)) for a number of intersections within and surrounding the Project site.

An additional traffic impact assessment has been conducted to further identify the measures required to mitigate the traffic impact of the Project on intersections in the surrounding area and to assess the traffic impacts as a result of the changed concept layout. This assessment has determined whether the intersections will operate better or worse than without Project traffic. MIC is in the process of discussing the results of the traffic impact assessment with TfNSW and RMS and if agreed will contribute to the cost of intersection upgrades in proportion to the extent that the Project contributes to the traffic through that intersection. The results of these assessments are reported in Chapter 7 – *Proposed amendments to the development* of this report and the revised Traffic Impact Assessment (revised TIA) provided in Appendix E of this report.

As indicated in Chapter 2 – *Assessment of the issues raised by the NSW Planning and Assessment Commission* of this report, the consent authority (DP&E) has the ability to impose conditions of consent that can limit impacts on the road network and require measures to mitigate impacts such as road intersection improvements before expansion can occur. MIC has indicated a willingness to accept this position and has suggested conditions of consent for consideration by the consent authority.

TfNSW (through RMS) has also been actively involved in the traffic management issues relating to the site including undertaking its own modelling and assessment. Any traffic impact on local roads caused by the Project would be mitigated to acceptable levels in consultation with RMS. An agreement with TfNSW will detail the agreed road/transport infrastructure upgrades required to mitigate impacts of the development of the state transport network and the timing of their delivery.

As noted in the planning proposal, it is proposed to insert a clause into the *Liverpool Local Environment Plan 2008* (LLEP) which requires satisfactory arrangements to be made for the provision of regional transport infrastructure required as required by the IMT, prior to consent being granted for approval of the Planning Proposal to rezone the land for the IMT. The proposed wording to be inserted into the LLEP includes:

7.36 Arrangements for regional transport infrastructure for certain land at Moorebank

(1) The objective of this clause is to require satisfactory arrangements to be made for the provision of regional transport infrastructure required as a result of the Moorebank Intermodal Terminal (IMT).

(2) This clause applies to land shown on the Key Sites Map.

(3) Despite any other provision of this Plan, the consent authority must not consent to development for the purposes of the IMT on land to which this clause applies unless the Secretary for NSW DP&E has certified in writing to the consent authority that satisfactory arrangements have been made to contribute to the provision of improvements to regional transport infrastructure and services reasonably required as a result of the development and operation of the IMT.

MIC does not believe that a Voluntary Planning Agreement is required with Council in addition to the Voluntary Planning Agreement that would be negotiated with NSW DP&E (to the satisfaction of RMS and TfNSW).

5.1.5 Peer review of EIS

LCC engaged consultants Cardno to undertake a peer review of the EIS. The review focused on statutory compliance, impact assessment and key issues (which they presented as reoccurring themes). It also established five key issues associated with traffic congestion, noise and vibration impacts, air quality impacts, hazards and human health impacts. The review also presented a number of reoccurring themes in relation to the strategic context, appropriateness of assumptions, cumulative impacts, project definition and commitments, consultation and consideration of alternatives.

MIC response

The EIS peer review raised a number of issues which have been addressed in Appendix B of this report. MIC's response to the five key issues is presented in the sections below.

MIC acknowledges the key issues (recurring themes) presented in the review and that these themes have been consistently raised by members of the community and government agencies. Our detailed response to these themes is presented in Appendix B and Chapter 6 – *Response to community submissions* of this Report. MIC presents the following comments in relation to each of the themes:

Existing and strategic context

Chapter 3 – *Strategic context and need for the Project* of the EIS and Chapter 2 – *Assessment of the issues raised by the NSW Planning Commission* in this report outlines the objectives for the Project and provides an assessment of the Project against the key Australian and NSW Government policies and publications. The Project is consistent with, and assists in meeting the key objectives of a number of key policies including the *National Land Freight Network Strategy*, *National Ports Strategy, National Infrastructure Priorities – Infrastructure for an economically, socially and environmentally sustainable future, NSW 2021, State Infrastructure Strategy, NSW Long Term Transport Master Plan, Draft Sydney Metropolitan Strategy for Sydney to 2031, Railing Port Botany's Containers, South West Subregion: Draft Subregional Strategy* and *NSW Ports and Freight Strategy*.

Chapter 27 – *Cumulative impacts* of the EIS assesses the cumulative impact of both the Moorebank IMT in conjunction with the SIMTA IMT and other planned or proposed developments in the local area. Chapter 7 – *Proposed amendments to the development* of this report, re-assess the cumulative impacts given the proposed changes to the concept layout. In recognition of community and approval agencies concerns regarding the prospect of both projects being developed in some way; three scenarios (as detailed in section 27.1 of Chapter 27 – *Cumulative impacts*), were assessed in the EIS (assuming a combined IMT precinct across both sites). The cumulative scenarios assessed in the EIS were developed through discussions with NSW DP&E with consideration of the capacity of the SSFL and freight demands. For the concept layout changes, four scenarios (as detailed in section 7.10 of this report) were assessed.

As mentioned above, MIC acknowledges the traffic network implications of the Project and the concerns raised by Council. Additional traffic impact assessment is currently being undertaken to identify the measures required to mitigate the traffic impact of the Project on intersections in the surrounding area, the results of which are discussed in section 7.9.3 of this report. These investigations aim to ensure the intersections would operate no worse than they would without the Project.

In terms of local strategies, the Liverpool Industrial Land Strategy (Liverpool City Council 2007) identifies Moorebank as a suitable location for future industrial development. The Moorebank, Warwick Farm and Prestons areas are identified in the *Liverpool Industrial Land Strategy* as LCC's preferred locations for a business park that restricts unsightly or unpleasant operations; however, the strategy also acknowledges the strategic need for a future key freight sector strategy to increase handling of freight by rail.

In terms of the comment regarding LCC's vision for expansion of the Liverpool CBD across the Georges River, MIC is not aware of any strategic policies/plans that document this vision and LCC's submission does not refer to or reference any policies or plans where this vision is defined.

Appropriateness of assumptions

The Project is seeking staged development consent and as such a number of assumptions are required for the assessment as detailed design has not yet been completed. The Project will be progressively developed over a 15 year period. The EP&A Act recognises that for significant projects that are to be developed over a protracted time period, a staged approach to environmental assessment and approval may be appropriate. This would involve an initial approval of a high level concept for the overall proposal (termed stage development consent), followed with assessment and approval of detailed components over time. The community will have an opportunity to review and comment on future development applications, which will be produced once the detailed design work is completed for each phase of development.

The SIMTA Project has received concept approval, so the cumulative assessment scenarios are based on indicative construction and operating schedules that take account of SIMTA's SSD application for its first stage.

Cumulative impact

It is acknowledged the SIMTA Project has a capacity cap of 500,000 TEU as part of its conditions of approval. As described in Chapter 2 – *Assessment of the issues raised by the NSW Planning and Assessment Commission* of this report, MIC is seeking approval for 1.55 million TEU to meet the Australian Government's objectives, with a commitment that only one IMEX terminal will be built (either on the MIC site or on the SIMTA site, but not on both). In other words, despite the two concept proposals only one IMEX terminal will be built (throughput will not exceed 1.05 million TEU), together with one interstate terminal (capacity for 500,000 TEU) resulting in total precinct capacity of 1.55 million TEU.

Therefore, for the purpose of assessing the cumulative impacts of the revised site layout, the following approach to the cumulative assessment has been adopted:

- Continue to recognise there is a maximum of 1.55 million TEU (IMEX plus interstate freight) for the entire Moorebank precinct.
- Continue to consider alternate scenarios whereby all IMEX capacity is built on the SIMTA site or the Moorebank site but not both.
- Introduce a new cumulative scenario (C1) reflecting a potential Stage 1 development that matches the current SIMTA Stage 1 DA (250,000 TEU) in conjunction with a likely first stage of development of the Moorebank site (500,000 TEU).

- Introduce a new cumulative scenario (C2) reflecting a Full Build (2030) with 500,000 TEU on the SIMTA site (reflecting the cap placed on SIMTA's concept approval) and with the remaining 1.05 million TEU capacity (consisting of 550,000 TEU IMEX and 500,000 TEU interstate) on MIC's site.

Further discussions regarding the demand for freight in the Moorebank catchment and a discussion on the capacity cap placed on SIMTA by the Planning Assessment Commission (PAC) is provided in Chapter 2 – *Assessment of the issues raised by the NSW Planning and Assessment Commission* of this report. In summary, MIC believes the demand at Moorebank is consistent with the Australian Governments objectives for the Project that is to seek approval for 1.55 million TEU at Moorebank.

Project definition, uncertainty and commitments

MIC acknowledges that the provision of three rail access options in the EIS created uncertainty and that each of the rail access options had distinct environmental impacts. Since exhibition of the EIS, the southern rail access has been selected as the preferred option for the Project. The environmental impacts associated with the southern rail access option are documented in the EIS (at a concept level) and will be assessed in detail during Stage 2 SSD applications.

It is noted that LCC has raised comments in relation to the 'Statement of Commitments'. A Statement of Commitments is a requirement under the then Part 3A of the EP&A Act. As outlined in Chapter 4 – *Planning and Statutory Requirements* of the EIS, the Project is being assessed under Part 4, Division 4.1 of the EP&A Act as a SSD application. A formal Statement of Commitments is not required under the Part 4 SSD requirements. MIC is currently in discussion with the consent authorities regarding appropriate conditions of approval for the Stage 1 concept.

Chapter 28 – *Environmental management framework* of the EIS provides a list of environmental management and mitigation measures for the Project. This has been updated as a result of the proposed amendments to the development and is provided in Chapter 9 – *Revised environmental management measures* of this report. This list includes mandatory measures which are firm mitigation commitments as well as those that will be subject to review during the Stage 2 SSD approvals and/or detailed design. The detailed design of the Project will consider innovative solutions to increase efficiency and reduce environmental impacts. Subsequently, the management and mitigation associated with these innovations will be explored during Stage 2 SSD applications. At the concept stage, practical and feasible management and mitigation has been considered. This staged approach to developing management and mitigation measures has been discussed and agreed as appropriate with the relevant regularly authorities (NSW DP&E and DoE).

It will be a requirement of the IMT operator to undertake construction and operation of the IMT in accordance with the Project approvals (Stage 1 and 2 SSD approvals) (stated mitigations) and any conditions of approvals.

Consultation

Community consultation for the Project began in 2010. MIC (and before MIC was established, the Commonwealth Department of Finance) has provided community members with information about the Project via its website, community newsletters and in community information sessions held in 2012, 2013 and 2014.

MIC has met regularly with relevant stakeholders, including LCC and has presented to the Council's No Intermodal Committee, along with other community and special interest groups. MIC has also met one-on-one with some highly engaged community members. Community awareness of the Project is high and public discourse has been wide over a significant period of time. MIC's community consultation on the EIS has exceeded the requirements set out in NSW DP&E's *Guidelines for Major Project Community Consultation*, October 2007).

MIC's community consultation for the EIS has included:

- a community brochure (delivered to over 12,000 homes in Wattle Grove, Moorebank and Casula);
- the MIC website (which recorded 2,733 views and 1,780 new users during the exhibition period);
- a 24-page EIS booklet (available at libraries and other community spaces with the EIS, and community information sessions); and
- three community information sessions (attended by 74 community members).

As well as conventional engagement methods, MIC adopted innovative approaches to engage members of the local community, including through a Citizens' Jury. The Citizens' Jury was formed to develop a public benefits package to increase the benefits of the terminal for people living nearby. Use of the Citizens' Jury also represented an innovative approach to raising awareness of the Project and its benefits, as well as promoting understanding of the Project's impacts among a representative sample of community members.

In addition to developing the scope and approach for the health impact assessment (HIA) report undertaken for the EIS, the Department of Finance (and subsequently MIC) convened a stakeholder working group that included both LCC and CCC, as well as key state agencies, to ensure transparency and stakeholder input to health impact assessment for the Project.

Interpreting services are available to community members and these services were specifically advertised during the EIS exhibition via the MIC website and the community brochure. The MIC website also has a 'Google Translate' function. That said, information from the bureau of statistics indicates that, although a significant proportion of the local community is from linguistically and culturally diverse backgrounds, English literacy levels are strong. This is supported by the fact that the 'Translate' function on the MIC website was not used during the EIS exhibition period and the interpreting service was used once in 2014.

In addition to the consultation undertaken with the local community, MIC also undertook communication with the broader community regarding the EIS. Advertisements were published in the *Daily Telegraph*, the *Liverpool Leader* and the *Liverpool Champion*, on the NSW DP&E website and via the Project website. A media release was issued at the start of the exhibition period, which generated news articles in the local papers notifying readers about the EIS exhibition, the information session times and details on how to make a submission.

Consideration of alternatives

A large number of community submissions raised concerns about the proposed location for the Project site. The need for an IMT in south-western Sydney was described in detail in Chapter 3 – *Strategic context and need for the Project* of the EIS, with section 3.3 detailing why the Moorebank site was selected.

The Moorebank site was selected for its strategic positioning, with access to existing major freight and rail corridors (SSFL, the M5 Motorway and near to the M7 Motorway and Hume Highway), and its central location relative to major freight markets in the west and south-west of Sydney. The size of the site was also a significant factor in site selection, with the requirement to accommodate interstate trains that can be up to 1,800 m long and the need for the site to be large enough to handle the number of containers expected.

MIC acknowledges that Badgerys Creek has been suggested by many community members as a suitable alternative site for the IMT, however this site would be located too far west of existing Sydney freight markets to be commercially viable as an intermodal facility, and it does not currently have adequate road or rail supporting infrastructure. Predicted demand in containerised goods suggests that a number of intermodal facilities will be required and that Eastern Creek and Badgerys Creek may be suitable future intermodal sites. Given that the demand for a western Sydney intermodal exists now, the Moorebank IMT site is considered the most appropriate site for an intermodal facility.

Other alternative sites suggested include Chullora, Eastern Creek and Enfield. As noted in section 3.1.1 of Chapter 3 – *Strategic context and need for the Project* of the EIS and Chapter 2 – *Assessment of the issues raised by the NSW Planning Commission* in this report there is an estimated shortage of IMEX and interstate capacity at existing and other planned IMTs in Sydney, even with these other facilities operating.

Table 2.3 in this report illustrates there would be a shortfall in IMEX capacity taking into account existing and planned capacity at Yennora, Minto, Villawood and Enfield under the Low Port Growth Scenario, the IMEX shortfall in 2020 would be around 186,000 TEU p.a. The proposed Stage 1 of the precinct (i.e. 250,000 TEU p.a.) would partly satisfy this shortfall under the Low Port Growth Scenario, the full precinct capacity (1.05 million TEU p.a.) would enable the target to continue to be achieved in 2030 and 2040 with some precinct capacity to spare. Under the High Port Growth Scenario, additional capacity will be needed to meet the target (in addition to that planned to be provided at Moorebank) from 2020 and beyond.

5.2 Campbelltown City Council submission

5.2.1 Precinct master plan

CCC has stated it is concerned about the lack of an overall master plan for the development of the Moorebank precinct as well as the lack of coordination between SIMTA and MIC. In particular, CCC is concerned by the uncertainty about the location of the proposed rail access, the road and traffic impacts and the commitments to address site infrastructure needs. CCC notes the recommendation by the NSW Freight Infrastructure Advisory Board that a master plan be developed for the Moorebank precinct to guide the development of future freight facilities at Moorebank. CCC quoted and agreed with the PAC conclusions (in relation to the SIMTA concept approval) on the issue.

CCC also expressed its concern that the rail access to the site would be fundamental to the successful operation of the terminal and in realising the traffic and environmental impacts of the Project. CCC do not consider it acceptable to issue approval for an IMT with three potential rail access routes and leave the selection of a route to later discussions. CCC also referred to the recent PAC comments that the southern rail access option was preferable in order to promote coordinated development of an IMT at Moorebank.

Despite the identification of a single rail access option, CCC remains concerned about the commitment to and timing of, construction of the rail link. CCC’s view is that the rail link should be operational before the start of terminal operations.

MIC response

MIC acknowledges CCC's comments and the issues raised by the PAC with respect to a precinct master plan. As discussed above, prior to the EIS exhibition, MIC developed the Moorebank IMT proposal as a stand-alone project and the SIMTA proposal for an IMT was also being pursued separately, with its own planning and environmental approvals being sought. Since the exhibition of the EIS, an agreement has been reached between MIC and SIMTA for an integrated precinct-wide intermodal facility and associated warehousing across both the MIC and SIMTA sites.

Despite the coordinated approach, the SIMTA and Moorebank IMT proposals are still being independently assessed. The SIMTA project received its concept approval in September 2014, subject to a number of conditions discussed further in Section 2.2 in Chapter 2 – *Assessment of the issues raised by the NSW Planning and Assessment Commission.*

MIC acknowledges the statements made by CCC and PAC regarding the three rail access options presented in the EIS, and the preference for the southern rail access option. Since exhibition of the EIS, a preferred site layout and the southern rail access option have been selected for the combined precinct as described in section 7.4 of this report. The indicative layout would be further developed during detailed design and details would be provided as part of the Stage 2 SSD applications. The Response to Submission Report will be exhibited for the public to review and make further submissions prior to NSW DP&E approval of the Stage 1 SSD application approval for the Project. CCC and the community will also have the opportunity to provide further comment during the Stage 2 SSD application process.

MIC acknowledges the concern from CCC regarding the construction timing of the rail link. The EIS presented that the rail link needed to be constructed consecutively with the terminal construction. It was determined there was no economic or environmental benefit in building the rail access link in advance of construction for the terminal site. The Moorebank EIS presented a construction schedule that provided for one direction of the rail link to be operational prior to commencement of terminal operations, with the second link to be constructed 10 to 12 years later. The construction timing for the rail link has been further considered in conjunction with the new concept master plan for the precinct, as presented in section 7.5 of this Response to Submission Report, will be constructed in both directions before the start of terminal operations on the Moorebank site.

5.2.2 Traffic impacts

CCC noted that it remains concerned about the potential road impacts of the Project, specifically on Cambridge Avenue. CCC further quotes PAC's recent comments in relation to the SIMTA Project concept approval and agrees that a more detailed assessment of Cambridge Avenue is required, not just for monitoring vehicle numbers but to provide measures to prevent heavy vehicles accessing residential streets.

MIC response

MIC acknowledges the traffic network implications of the Project and the concerns raised by CCC and members of the local community, particularly in relation to Cambridge Avenue. The traffic modelling prepared for the EIS shows road network upgrades would be required to maintain all intersections in the vicinity of the Project site to an acceptable level of service. The traffic impacts of the Project have been assessed as detailed in Chapter 11 – *Traffic, transport and access* of the EIS and Technical Paper 1– *Traffic, Transport and Accessibility Impact Assessment* (EIS Volume 3). Traffic impacts on the wider network, including local roads have been assessed using SIDRA for a number of intersections within and surrounding the Project site.

As noted, an additional traffic impact assessment has been completed to further identify the measures required to mitigate the traffic impact of the Project on intersections in the surrounding area and to assess the traffic impacts as a result of the changed concept layout. This assessment has determined whether the intersections will operate better or worse than without Project traffic. MIC is in the process of discussing the results of the traffic impact assessment with TfNSW and RMS and if agreed will contribute to the cost of intersection upgrades in proportion to the extent that the Project contributes to the traffic through that intersection. The results of these assessments are reported in Chapter 7 – *Proposed amendments to the development* of this report and the revised Traffic Impact Assessment (revised TIA) provided in Appendix E of this report.

The upgrade of Cambridge Avenue is not being considered as part of the Project as the traffic modelling concluded that only low volumes of light vehicles associated with staff movement would use Cambridge Avenue to access the Project site. Access into and out of the Moorebank terminal site will be via the intersection of Moorebank Avenue and Anzac Road. The intersection will be signalised with physical barriers to prevent heavy vehicles from turning right onto Moorebank Avenue. This will force all vehicles particularly heavy vehicles to turn left onto Moorebank Avenue to access the M5 Motorway/ Hume Highway. Similar measures will prevent trucks from entering the site from the south along Moorebank Avenue. As such, trucks associated with the terminal will be unable to access the southern end of Moorebank Avenue and Cambridge Avenue. In the event of an accident on the M5 Motorway/ Moorebank Avenue north of the terminal, the terminal will need to shut down until the traffic is cleared.

5.2.3 Infrastructure needs

CCC has sought assurance that all on and off-site infrastructure needs will be identified and met, at no cost to CCC, before concept approval, and that clear responsibilities will be established for individual components of the infrastructure task. CCC has requested that a Planning Agreement be entered into to upgrade Cambridge Avenue and construct a new road link between the Glenfield Road overbridge and Campbelltown Road linking to the F5 Freeway, to ensure that traffic relating to the development does not pass through residential areas.

MIC Response

Conditions of approval for the Project will include measures to mitigate the traffic impacts on the surrounding road network. As noted in section 5.1.4. MIC acknowledges CCC's request for a Planning Agreement regarding the upgrade for Cambridge Avenue; however, as discussed in section 5.1.4 of this report, MIC does not consider that a Voluntary Planning Agreement with Council is necessary given that a Voluntary Planning Agreement will be negotiated with NSW DP&E (to the satisfaction of RMS and TfNSW).

Other mechanisms are in place to secure future road upgrades such as conditions of approval. Furthermore, as discussed above, there are no plans to upgrade Cambridge Avenue, as the Project does not impact on Cambridge Avenue. Mitigation measures will force all vehicles exiting the terminal site to turn left onto Moorebank Avenue. Physical barriers and signalised intersections will prevent vehicles from turning right and accessing the southern section of Moorebank Avenue and Cambridge Avenue.

5.3 Hurstville City Council submission

HCC reviewed the EIS with respect to the Project's impact on the Hurstville Local Government area. While the Project is not expected to have any immediate environmental impacts, HCC is concerned that it will have an adverse impact on water quality of Georges River during early works, construction and operation. HCC is also concerned that the clearing of the riparian vegetation and the loss of the riparian corridor will expose topsoil and have immediate impacts on work quality adjacent to and downstream of the site.

The HCC submission argues that the IMT site would have a large impervious surface which is likely to increase the stormwater load (up to 300% increase in peak flows to sub-catchments) to Georges River. This will also increase the potential erosion and reduce the water quality downstream of the site. Due to the industrial natural nature of the site, the quality of the stormwater is also of concern. In particular, elevated levels of nitrogen and phosphorous can lead to degraded water quality and algal blooms which will negatively impact aquatic ecosystems. HCC also expressed concern that the existing water quality sampling program will only last for two years and recommended that the program be extended to enable monitoring to take place during the construction of the project.

MIC response

MIC acknowledges HCC's concern regarding the water quality in the Georges River and its associated riparian zone. The Georges River has been modified as a result of habitat degradation and changes in abiotic condition such as water flow volumes, velocities, increased nutrients, chemical pollution and invasive species. Annual monitoring reported in the Georges River Health Report Card 2013–14 states the overall river health is of 'fair' condition.

Chapter 16 – *Hydrology, groundwater and water quality* of the EIS, confirms that water quality of the Georges River has been identified as an important issue for the management of the Project. The Project will be subject to stringent mitigation measures at all stages of development that will include riparian vegetation management and revegetation, bridge design based on NSW Fisheries fish passage requirements for waterway crossings, and appropriately designed stormwater management measures based on further ongoing water quality monitoring. Further investigations would be undertaken as part of the Stage 2 SSD application and would include detailed modelling and subsequent management of stormwater quality of the Georges River and Anzac Creek waterways.

An area of high flood risk is identified along the lower terraces of the Georges River where there is significant riparian vegetation. This area exceeds the 1% annual exceedance probability (AEP) for a significant flood event. As such, no development is proposed in this area and the area will be retained as a 'conservation area'. No vegetation clearing in this area is proposed.

In response to the concern raised regarding the impact on aquatic ecosystems, Chapter 13 – *Biodiversity* of the EIS provides a summary of the potential impacts of the Project on the existing biodiversity within and surrounding the Project, which is based on the findings of the *Ecological Impact Assessment* contained in Volume 4 of the EIS. The Project would result in vegetation clearing and habitation disturbance, the impacts of which are irreversible. Table 29.6 in Chapter 29 – *Environmental risk analysis* of the EIS identifies that, without mitigation, the consequence of the impacts are major. However, the impacts are expected to reduce to 'moderate' if the mitigation measures as detailed in the EIS are put in place. This includes retention of the conservation area along the Georges River, measures to minimise the likelihood of flora and fauna injury or mortality and development and implementation of a biodiversity offset strategy. A revised biodiversity offset strategy developed in accordance with the NSW *Biodiversity Offset Policy for Major Projects 2014*, is provided in Chapter 8 of this report.

5.4 Fairfield City Council

FCC provided a written submission stating that it has concerns regarding the amenity impacts on Liverpool residents due to increased truck movements as a result of the Project.

FCC states that it supports LCC's position regarding the Project.

MIC response

The impact of the Project on the amenity of the surrounding areas has been discussed in detail throughout the EIS (noise, traffic, air, human health etc.). Overall, the EIS concluded that provided the mitigation measures specified in the EIS are applied and effectively implemented during the design, construction and operational phases, the identified environmental impacts would not be significant and were found to be acceptable.

MIC's response to LCC's submission is provided in section 5.1 of this report.

5.5 Bankstown City Council

BCC provided a written submission stating their concerns relating to traffic and transport, water quality, biodiversity and flooding. The issues raised and MIC's response is provided in the sections below.

Furthermore, BCC submission requested that clear communication channels are established and maintained between MIC and BCC throughout construction and operation of the Project. Council also requests that air and noise in the surrounding areas of the Project site are closely monitored throughout the construction and operation. BCC requests that this information be placed on the website and certified by an independent consultant.

MIC response

Community consultation for the Project began in 2010 and has been ongoing since that time. MIC offered EIS briefing sessions to a number of local councils and local members for parliament, including the BCC Mayor. MIC will continue to consult with BCC as the Project develops and as part of future Stage 2 SSD applications.

MIC has been monitoring ambient noise and air quality at the site and surrounding areas since March 2014 and the results of this monitoring are available on the MIC website (http://www.micl.com.au/environment/monitoring-results.aspx). This monitoring program is expected to continue throughout the construction and operation of the project. MIC would be prepared to receive a condition of approval that requires the noise and air quality monitoring results be placed on its website and certified by an independent consultant.

5.5.1 Traffic and transport

BCC submission argues that heavy vehicle movements generated by the Project are likely to have an impact on major arterial roads in the Bankstown Local Government Area (LGA) such as Henry Lawson Drive and Stacey Street.

The BCC submission argues that these roads are already operating at capacity and will require significant infrastructure upgrades to accommodate additional traffic. Council requests that along with other proposed traffic mitigation measures that funding to upgrade Henry Lawson Drive (intersection with Milperra Road) and Stacey Street to accommodate increased traffic flow associated the IMT.

MIC response

The impacts of traffic generation by the Moorebank IMT development have limited impact on the Bankstown LGA. Only traffic associated with warehousing operations are likely to represent a difference in overall traffic impact. This is because containers are already travelling from Port Botany to destinations in the Bankstown local government area on trucks via the Bankstown road network. These containers will continue to be transported to Bankstown LGA, however, with the Moorebank IMT; trucks will travel from Moorebank to their destination in Bankstown instead of from Port Botany to Bankstown.

Truck movements along Henry Lawson Drive will decrease between the M5 Motorway and Milperra Road as some container trucks now approach from the west along Newbridge Road/Milperra Road. In the 2030 AM peak hour the project traffic from Moorebank is represented by 37 truck movements approaching this intersection from the west. Of these approximately half is new traffic. Less than 20 trucks per hour are not expected to have an appreciable impact on the operation of the intersection.

Stacey Street is a significant distance from Moorebank IMT site, most of the Project traffic is heading to the North West so the impact on Stacey Street would be negligible.

5.5.2 Water quality

The BCC submission raises concern relating to the management and treatment of stormwater runoff and the impact on water quality in the Georges River. Council recognises the need for measures to mitigate the risk of rubbish and litter entering Georges River.

MIC response

As discussed on section 16.2 of Chapter 16 – hydrology, groundwater and water quality of the EIS, water quality has been identified as an important issue for the management of the Project. Further investigations would be undertaken as part of the Stage 2 SSD applications and this would include detailed modelling and subsequent management of stormwater quality to ensure there is no impact to Georges River.

Chapter 26 – *Waste and resource management* of the EIS provides an assessment of the waste likely to be generated from the IMT during construction and operation of the Project. This assessment includes litter, paper and food waste generated from a range of sources. Section 26.3 of Chapter 26 – *Waste and resource management* outlines the mitigation measures and the key principles of waste management which includes reduction, re-use, recycling and recovery. Dedicated recycling storage areas and recycling bins would be located throughout the Project site to reduce the amount of rubbish being produced and subsequently entering Georges River.

The condition and health of Georges River has been monitored since July 2013, and the water quality monitoring results have been published on the MIC website (http://www.micl.com.au/environment/monitoring-results/water-quality.aspx). This monitoring program is expected to continue throughout the construction and operation of the project.

5.5.3 Biodiversity

BCC is concerned with the loss of high value intact vegetation and biodiversity corridors as a result of the Project. In addition, BCC states that no aquatic habitat assessment and aquatic habitat surveys have been undertaken.

MIC response

Chapter 13 – *Biodiversity* of the EIS provides a summary of the potential impacts of the Project on the existing biodiversity within and surrounding the Project, which is based on the findings of the *Ecological Impact Assessment* contained in Volume 4 of the EIS. The Project would result in vegetation clearing and habitation disturbance, the impacts of which are irreversible. Table 29.6 in Chapter 29 – *Environmental risk analysis* of the EIS identifies that, without mitigation, the consequence of the impacts are major. However, the impacts are expected to reduce to 'moderate' if the mitigation measures as detailed in the EIS are put in place. This includes retention of the conservation area along the Georges River, measures to minimise the likelihood of flora and fauna injury or mortality and development and implementation of a biodiversity offset strategy.

In response to the comment regarding the ecological surveys, the *Ecological Impact Assessment* contained in Volume 4 of the EIS was prepared in accordance with NSW Office of Environment and Heritage (OEH) guidelines and the surveys were based on desktop analysis. This approach was endorsed by DP&E and is compliant with the Project SEARs. Detailed surveys of aquatic habitat would be undertaken in preparation of the Stage 2 SSD application(s).

Impacts associated with vegetation clearing have been assessed in accordance with state and federal legislation. The Project will be subject to stringent mitigation measures at all stages of development that will include riparian vegetation management and revegetation, bridge design based on NSW Fisheries fish passage requirements for waterway crossings, and appropriately designed stormwater management measures based on further ongoing water quality monitoring. Further extensive biodiversity offsetting in accordance with state and federal guidelines will ensure the Project adequately achieves appropriate biodiversity outcomes.

5.5.4 Flooding

BCC is concerned that the Project is proposed in a high risk flood zone.

MIC response

As shown on Figure 16.2 in Chapter 16 – *Hydrology, groundwater and water quality* of the EIS, the Project's operations on the site will be located out of the high and medium flood risk zones of the Georges River catchment. An area of high flood risk is identified along the lower terraces of the Georges River. This area exceeds the 1% AEP for a significant flood event. As such, no development is proposed in this area and a conservation zone will be developed. Detailed investigation to address any pre-existing flooding issues beyond the site boundary was not required as part of the SEARs for the Stage 1 SSD application. If required these studies would be considered in further detail as part of the Stage 2 SSD application process, once the site layout has been confirmed. Further modelling may also be completed to confirm issues such as flood vulnerability of roads adjacent to the site (including Cambridge Avenue).

In addition, the internal site drainage system has been designed to convey the 10% AEP flood, in accordance with the LCC Drainage Design Specification Section D5.04. For events above the 10% AEP, the site will be designed to safely convey overland flow to the detention ponds which will be designed to attenuate the runoff from the site to pre-development levels up to the 1% AEP.

5.6 Other government agency submissions

Table 5.1 below identifies the key issues raised by government agencies and key stakeholders. Issues have been organised into themes, reflecting the headings of the EIS chapters (e.g. biodiversity and traffic, transport and access). These issues, along with MIC's response, are discussed in more detail in Appendix B (Table 2).

The NSW Office of Environment and Heritage (OEH) in their submission raised a number of issues in relation to biodiversity and specifically the application of NSW Biodiversity Offset Policy for Major Projects 2014 (Offset Policy 2014). MIC met with OEH to discuss the issues raised in their submission and following this discussion, it was agreed to update the biodiversity offset strategy (BOS) to outline the steps involved with offsetting vegetation loss through a combination of on-site and off-site strategies.

An updated BOS has been prepared in accordance with the Offset Policy 2014 and the NSW Framework for Biodiversity Assessment 2014 (FBA) and has been included in Chapter 8 – *Additional technical investigations since the EIS* of this report.

Table 5.1 Summary of key issues raised by government agencies and key stakeholders

Theme	Key issues raised (refer to Appendix B (Table 2) for MIC's response to issues raised
Office of Environment and Heritage	
Biodiversity	Concerned with: • the loss of threatened ecological communities and threatened species habitats within the Project site; • the reliability of the biodiversity assessment of losses and gains; and • the level of flexibility proposed in the EIS in regards to proposed offsets and suggests there is a shortfall in offsets for certain vegetation species.
	States the boundary of the conservation area does not align with the biodiversity values present within the Project site.
	States all attempts need to be made to avoid and minimise impacts on biodiversity.
	States the Ecological Impact Assessment does not meet the Offsets Policy 2014 (with the policy requiring reasonable steps to locate like-for like offsets).
	Does not agree to use of a Conservation Agreement under the *National Parks and Wildlife Act 1974* as a mechanism to secure the protection of the offset areas.
	Identifies inconsistencies in the extent of the conservation area shown in the EIS and the area shown in the Ecological Impact Assessment.
	Recommends: • the use of the E2 Environmental Conservation Zone for land within the defined 'conservation area' as opposed to the proposed E3 Environmental Management; • addressing further matters in the Ecological Impact Assessment in regards to two threatened flora species (*Grevillea parviflora ssp. Parviflora* and *Persoonia nutans*); • that the EIS should address matters related to the impacts on William Howe Regional Park and the Guidelines for developments adjoining land and water managed by Office of Environment and Heritage (OEH); and • that the 'area available for potential development' should not form part of the proposed 'offset area'.

Theme	Key issues raised (refer to Appendix B (Table 2) for MIC's response to issues raised
Aboriginal and European heritage	Refers to previous comments provided by OEH as part of their review of the EIS during adequacy. Key issues noted at that stage included: • concern regarding the subsurface test excavation program; • recommends that options to avoid harm to areas assessed to have high levels of significance should be considered; • recommends that areas of the 'Georges River Corridor and Terrace' which have been assessed and recommended for conservation should be appropriately nominated for inclusion on the Commonwealth Heritage Listing; • recommends that further information be provided on how the perpetual and ongoing protection of any Aboriginal cultural heritage sites cited within the 'conservation zone' will be managed; and • recommends that any interpretation strategy should integrate the archaeological significance with Aboriginal cultural significance of the lands as well as the geomorphological and non-Indigenous history of the land.
Hydrology, water quality and groundwater	Refers to previous comments provided by OEH as part of the review of the EIS during adequacy. Key issues noted at that stage included: • recommends that further investigation be undertaken into potential afflux caused by the bridge structure over Georges River; and • argues that there is a need for an emergency management plan.
Environment Protection Authority	
General	Does not support a rail link through the Glenfield Landfill unless it can be clearly demonstrated that the rail access would not compromise the effectiveness of the landfill pollution control and monitoring systems. This applies to both the southern and central rail access options.
	No objections to the northern rail access option as long as wastes are managed in accordance with the NSW *Protection of the Environment Operations Act 1997* and Waste Regulation.
	Recommends: • that targeted intrusive investigations be undertaken to determine contamination pathways for the central and southern rail access options; and • additional information is provided if the central or the southern rail access options are selected.
Local and regional air quality	Identifies inconsistencies in the emission estimates between the regional and local air quality assessments (in relation to emission loads).
	States it is unclear if a 'worst case' scenario has been considered for the cumulative impacts of the Project with the SIMTA Project.
	Seeks clarification on the exceedance of PM_{10} (24-hour average) for the cumulative scenarios (including SIMTA).
	States the Local Air Quality Impact Assessment contains air quality criteria that differs from the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (DEC 2005).
	Recommends: • that a detailed ozone assessment be provided as part of the EIS; • further details be provided on the air quality impacts of Early Works; and • that a more refined statement of commitments be developed for the Project.
Cumulative impacts	Recommends a revised cumulative assessment considering the SIMTA site (approved capacity) and the Moorebank IMT at full capacity.

Theme	Key issues raised (refer to Appendix B (Table 2) for MIC's response to issues raised
Noise and vibration impacts	Argues that the frequency of occurrence of light winds should have included analysis of day, evening and night-time periods not just seasonal wind conditions.
	Questions the use of the F stability category in the Noise and Vibration Assessment.
	Concerned with: • the feasibility and viability of the mitigation measures; and • level of control of the IMT operation over the rail rolling stock and the use of locomotives that comply with the EPA Railway Systems Activities Licences.
	Recommends: • that additional commitments be provided including: > the use of alternatives to tonal movement alarms (e.g. reversing cameras, in-cab proximity alarms); > the use of best practice latest technology plant and equipment for container handling impact noise; > the use of alternatives to signalling by vehicle horns; and > the installation of track lubrication devices if curve squeal becomes an issue; • the site layout maximise forward movements of trucks to minimise beeper noise; • limiting construction hours to standard hours, with an exception for activities that need to be completed during a rail or road possession, or works resulting in noise levels not more than 5 dBA above Rating Background Levels; and • the use of bored or vibratory piling instead of impact piling where practicable.
Contamination and soils	Argues the contamination assessment has not adequately addressed the issue of polychlorinated biphenyls in soils, associated with the site at 1 Bapaume Road, Moorebank (ABB site).
	Recommends that a site auditor be engaged to issue a Section A Site Audit Statement for the subject site.
Transport for NSW	
Traffic, transport and access	Concerned that traffic movements to and from the site may not be consistent with those predicted within the EIS (with much of the traffic occurring outside of peak periods).
	Recommends: • that additional modelling be undertaken to examine the local and area wide traffic impacts on the greater operation of the strategic road network; • that a Statement of Commitments be included that identifies the scope and timing of future road infrastructure upgrades; • that any conditions of approval include the requirement to: > implement a driveway monitoring regime (monitors all vehicle movements into and out of the site) and requirements to adopt shift changeover times outside of AM and PM peak periods; > develop a workplace travel plan for the future operational stages; and > provide bus turnaround facilities with direct pedestrian access paths and pedestrian facilities on Moorebank Avenue. • that any conditions of approval state that future road works will not be at the cost of RMS; and • that an overall strategic framework be established with a Construction Traffic Management Plan for each stage of the work.
	Supports the proposed 'satisfactory arrangements' clause in the Planning Proposal for contributions to be made towards regional transport infrastructure. Recommends that MIC enter into a Planning Agreement with State government for road upgrades.

Theme	Key issues raised (refer to Appendix B (Table 2) for MIC's response to issues raised
	Identifies a typographical error in Chapter 11 in regards to passenger car unit (PCU) factors.
	Seeks clarification on: • some of the assumptions and model validation checks for the traffic assessment; • the distribution plots in Technical Paper 1 (Appendix J); and • the assumption of 100% utilisation for the pallets to vehicle conversion for semi-trailers and rigid trucks not listed in the EIS.
Noise and vibration impact	Recommends: • that conditions of approval include requirements: > to allow only use of modern rolling stock; > to adopt curve noise countermeasures and effective lubrication techniques; and > to provide a report into the use of hybrid trains for port shuttle operations.
	Argues that: • locomotives approved under EPA's licence regime have variable noise performance and alone would not be sufficient to achieve best practice performance in terms of noise; and • appropriate noise control would need to be examined to ensure the SSFL meets its project approval conditions.
Land use and property	Seeks confirmation on the potential impact on the East Hills Railway Line. Notes that landowners consent would be required by Sydney trains if this occurs.
	Recommends: • That any conditions of approval: > include a requirement to identify the property requirements to accommodate road infrastructure upgrades; and > prohibit access across the northern boundary of Lot 100 DP 1049508 onto the South Western Motorway.
	Notes that Interlink Roads Pty Ltd will require maintenance access to the proposed GPT pit in the sliver of land adjacent to Moorebank Avenue (dedicated as public road but not used for road purposes).
Local and regional air quality	Recommends a number of conditions of approval in relation to measures to improve air quality (related to locomotives, vehicle idling, trucks and vehicles).
Fire and Rescue NSW	
Hazards and risks	Argues the EIS does not identify and discuss some types of unplanned incidents which may potentially pose risks (i.e. fire incidents and hazmat incidents). Identifies additional potential fire hazards including: a) vehicle or train refuelling fire; b) vehicle or train refuelling spill; c) plant and equipment fire; d) stored container fire; e) stored container hazardous materials spill; f) vehicle collision causing a fire or hazardous materials spill; and g) train collision or derailment causing a fire or hazardous materials spill.
	Recommends a number of conditions of approval in relation to hazards and risks.

Theme	Key issues raised (refer to Appendix B (Table 2) for MIC's response to issues raised
NSW Rural Fire Service	
Hazards and risks	Argues the appropriate bushfire protection issues have been considered in the EIS.
	Notes that appropriate asset protection zones would need to be considered in more detail at later stages.
Sydney Catchment Authority	
N/A	States the Project is located outside of the Sydney Catchment Authority operational areas and the authority has no comments on the proposal.
NSW Department of Primary Industries (including comments from NSW Office of Water sand Fisheries NSW)	
Biodiversity	Notes: • that it is important that fish habitat is maintained during construction; and • the importance of the implementation measures described in Chapter 28 – *Environmental management framework* of the EIS, particularly those in regards to erosion and sediment control and clearing of vegetation.
	Requests detailed plans of the three rail access options be provided.
	States the northern rail access option is preferred on the basis that this is argued to result in minimal loss of riparian vegetation, both in area and length along the river
	Argues the ecological value of the function of the vegetated riparian zone has been overlooked.
	Identifies inconsistencies in regards to the width for the proposed conservation area/riparian area throughout the EIS.
	States that adequate mitigation is required to ensure that Anzac Creek downstream of the site is not degraded.
	Recommends: • amending the EIS and Management Plan for Restoration of the Riparian Zone of the Georges River to include clarify riparian widths (minimum 40 m); • retaining the Amiens wetland; and • that if the southern rail access option is selected, consideration should be given at detailed design to locate the rail access further west, avoiding disturbing remnant vegetation.
Hydrology, water quality and groundwater	Seeks clarification on whether bridge piers would be located within the river channel. Preference for these to be located outside.
	Recommends a zoning of E2 – *Environmental Conservation* for the conservation area, rather than the proposed E3 – *Environmental Management* zoning.
General	Recommends that only one bridge structure be provided for the SIMTA project and the Moorebank IMT.
	States that a condition of approval should be to include an assessment of the potential impacts on groundwater and groundwater dependent ecosystems during detailed design.
NSW Health	
Human health risks and impacts	Notes the proximity of the IMT to residential housing and states that health effects are plausible.
	States that a further health impact assessment could include consideration of creation of employment opportunities and local employment.

Theme	Key issues raised (refer to Appendix B (Table 2) for MIC's response to issues raised
Local and regional air quality	Agrees with the basic framework for the assessment of additional air impacts appears to be sound.
	Argues the Local Air Quality Assessment only includes vehicle movements on-site and has not taken into account vehicle movements off-site that will be using the terminal. States that truck and vehicle movements along Moorebank and the M5 Motorway should be included.
	Notes it is difficult to find the air modelling data and estimated impacts for individual receiver sites.
	States that transport refrigeration units (TRUs) need to operate 24 hours a day and if power to these units is from a diesel generator, then the potential impacts could be greater than anticipated in the EIS.
	Generally supports the mitigation options proposed in the EIS.
Noise and vibration impacts	Argues that the different limits in the guideline documents (I*ndustrial Noise Policy, Rail Infrastructure Noise Guideline* and the *Road Noise Policy*) create confusion inadequate accounting of cumulative noise impacts.
	Notes the NSW *Industrial Noise Policy* provides a guide of a 15 dB(A) exceedance of background noise as a screening tool to trigger a more detailed assessment for possible sleep disturbance. States the noise at receivers is just on the threshold (13 db(A)) and argues that a more detailed assessment should be made given that there would be noise impacts from other sources (i.e. the rail access).
	Notes that specific mitigation measures may need to be negotiated and made a requirement of consent.
NSW Ports	
General	Supports the development of an IMT at Moorebank as part of a greater network of intermodal terminals.
	Highlights the importance of planning for road and rail connections to and from the Ports well ahead of the demand to that there is sufficient time to gain approvals, secure finance, undertake procurement processes and construct the infrastructure.
	Emphasises the importance of an intermodal terminal in catering for growth at Port Botany.
	States that Port Botany's total container volumes have doubled over a 10 year period, growing from approximately 1 million TEUs in 2002 to approximately 2 million in 2011. This is an average growth rate of 7.3%. Container volumes are expected to grow and expected to reach nearly 2.9 million TEUs in 2018. Forecasts expect that by 2030, 7 million TUEs could be handled by the Port of Botany.
	Notes that it is NSW Ports' objective to ensure that all rail infrastructure is capable of handling 3 million TEUs over the next 30 years.
	States that the Moorebank IMT is critical to achieve the objective of increasing rail's share of freight distribution and will be required to handle at least 1 million TEUs. Notes that additional terminals are also required at other locations in Sydney, including Eastern Creek.
	States that the project would also assist in reducing the growth of truck transport movements to and from Port Botany.

Chapter 6
Response to community submissions

6. Response to community submissions

Chapter 6 of this Response to Submissions Report (this report) details the key issues and sub-issues raised in the community submissions received during the exhibition period of the Environmental Impact Statement (EIS). Moorebank Intermodal Company's (MIC) response to each of the issues raised is provided throughout this chapter.

This chapter has been structured to reflect the order of the EIS, with issues relevant to the chapters of the EIS grouped together and sub-issues grouped under each key issue. This order does not reflect the number of times a particular issue was raised. MIC's responses reference a number of sections, chapters and technical papers within the EIS. The structure and contents of the EIS is shown in Figure 1.2 in Chapter 1 - *Introduction* of this report.

6.1 Strategic context and need for the Project

A range of issues were raised in relation to the strategic context and need for the Project. These are detailed below:

6.1.1 Local community benefit

A number of submissions raised concerns regarding the benefits of the Project, with some submissions arguing the local community would not experience or receive any benefits, and would be subject to the adverse impacts.

In particular, some submissions state very few local jobs would be generated, as the additional jobs the Intermodal Terminal (IMT) would create may not suit the local population skills and experience base. Others argue that jobs are awarded based on skills and experience, not on where a person lives.

A number of submissions claim the employment opportunities from an alternative proposal would provide greater local and regional benefits. Examples given include a technology park or a commercial development/light industry which were considered more suited and could provide more employment opportunities than an IMT. In particular, submission 223 argues that light industrial complexes are more labour intensive than warehousing as these could contain a number of businesses (i.e. motor mechanics, panel beaters, kitchen installers). Submission 223 states that where a 10 unit light industrial block may employ 20–25 people, one warehouse would employ two people and most.

Submission number(s)

10, 98, 125, 138, 142, 145, 153, 178, 216, 223 and 224.

MIC response

The Project is in the public's best interest as its residual impacts will be localised and managed; however its benefits will be significant and widespread for the entire community. The benefits include a major contribution to jobs and productivity growth, supply chain efficiency and reduced congestion growth. The local community will receive a share of these benefits as well as a local benefits program. In addition, the public interest is also served by the IMT in terms of its contribution to government policy, the lack of suitable alternative sites; and the unique characteristics of the site which are not needed for other land uses but make it ideal for an IMT. While some local community members oppose the Project, the broader community interest is reflected by strong support from government and industry stakeholders.

Given the clear suitability of the Project site for an intermodal terminal, and the lack of economically efficient alternatives, it would be inappropriate and mostly inefficient to use the site for an alternative purpose (e.g. residential or commercial), as these land uses would have greater impacts on the local environmental and community While MIC acknowledges the suggestions for alternative uses of the Project site these alternatives have not been assessed in any level of detail for the following reasons:

- As detailed in Chapter 15 – *Contamination and soil* of the EIS, the site is contaminated and is not suitable for sensitive land development (such as residential development). With the current levels of contamination, the site is only suitable for industrial or commercial land uses. While former Defence land has in the past been remediated for residential development (e.g. at Wattle Grove), the cost of doing so is substantial and would affect the value of the land, were it sold for residential development.

- Development for residential purposes could house more than 40,000 people in 16,500 dwellings, which could generate around 3,154 passenger vehicle trips (inbound and outbound) in the morning peak hour (based on Roads and Maritime Services (RMS) methodology as discussed in section 4.4 of Technical Paper 1 – *Traffic, Transport and Accessibility Impact Assessment* of the EIS). This compares to the Project which, at full capacity, would generate around 422 vehicle trips (inbound and outbound) in the morning peak hour. Traffic generated by the terminal during peak hours would be a fraction of the traffic that would be generated by a residential development. This proportion would be higher at other times of the day (as the intermodal terminal spreads heavy vehicle traffic across the day, while residential traffic is focused on the peak hours.

- Development for commercial/light industrial purposes could generate around 888 passenger vehicle trips (inbound and outbound) in the morning AM peak hour. Traffic generated by the terminal during peak hours would be a fraction of the traffic that would be generated by a commercial development. This proportion would be higher at other times of the day (the intermodal terminal spreads heavy vehicle traffic across the day), while commercial traffic is focused on the peak hours.

The comprehensive site assessment undertaken in the EIS conclusively demonstrated the suitability of the proposed site for the proposed intermodal activities; the essential requirement for the decision making.

A further discussion of public benefits is provided in section 2.5 of Chapter 2 – *Assessment of the issues raised by the NSW Planning Assessment Commission.*

6.1.2 Viability of short haul freight for Moorebank

Questions were raised with regards to the viability of providing a freight rail link between Port Botany and Moorebank as opposed to trucks, given the distance between the two locations.

Submission number(s)

Form letter 2, 142, 208 and 223.

MIC response

A business case was prepared for the Project which assessed the Project's feasibly and determined that an IMEX facility with capacity for approximately 1.05 million TEU at Moorebank would be economically viable. The business case considered, among other things, the distance to freight markets, containers destinations and costs of development of the Project. Chapter 2 – *Assessment of the issues raised by the NSW Planning Assessment Commission* of this report, provides a further justification of the demand for intermodal capacity in the Moorebank precinct.

As noted in section 3.4 of Chapter 3 – *Strategic context and need for the Project* of the EIS, Deloitte's demand analysis (2013) determined that rail transport via Moorebank should be cost competitive compared to road transport and also compared with rail via other IMEX terminals in Sydney. Moorebank's main catchment area is predominantly south-west and western Sydney. For these areas, the modelling indicates it should be cost competitive to move containers by rail to Moorebank, with a final short road movement to the north or west using the M5 and M7 Motorways.

6.1.3 Container destinations and freight demands

A series of submissions raised concerns with regards to the location of the freight market and the final destination for freight through the Moorebank IMT. Issues include:

- concerns the IMT is being built where there is insufficient demand. In particular, one submission (224) states that 45% of the freight goes to Eastern Creek and argues that once Eastern Creek, Enfield, Minto and the southern intermodals are operational; there should be no need for the Moorebank IMT;
- submission 163 argues that a modelling study undertaken on behalf of the community showed that two thirds of all containers from Port Botany are destined for the western suburbs, approximately 26 to 35 km west of the Moorebank IMT. This is not consistent with MIC claims that the majority of containers would be delivered within a radius of 20 km from the IMT; and
- inconsistencies in the annual growth rates for containers referenced in the Technical Report 1 – *Traffic, Transport and Accessibility Impact Assessment* (with one figure of 4.2% and another of 7%). Submissions 223 and 224 refers to the Freight Infrastructure Advisory Board, Transport for NSW (TfNSW) and the Department of Transport and Regional Services growth rates, which are said to be around 4%.

Submission number(s)

25, 37, 41, 125, 142, 153, 160, 163, 184, 223 and 224.

MIC response

The Moorebank precinct needs to be developed to a total intermodal capacity of 1.55 million TEU, comprising 1.05 million TEU in IMEX capacity and 500,000 TEU in interstate freight capacity for the following reasons:

- To achieve the NSW Government rail share target beyond 2020. The current NSW 28% rail mode share target will be most effectively achieved by maximising the efficient use of existing IMTs and by investing in additional intermodal capacity in locations that are attractive to the freight market. These measures would fill the shortfall between the future capacity of existing terminals and the capacity needed to handle 28% of Port Botany's total throughput.

- No other site has been identified that is practicably feasible in the timeframe required and able to deliver the same operational efficiency (including the efficiency benefit of competition between terminal users under the terminal open access arrangement). Therefore, only the Moorebank precinct creates an opportunity to increase Sydney metropolitan container movements by rail.

- The full IMEX capacity of 1.05 million TEU will be needed if the rail mode share from Port Botany is permitted to grow in line with demand, or if the NSW Government were to pursue a higher target (e.g. 40%, as recommended by the Freight Infrastructure Advisory Board) beyond 2020 to enable the Port to continue to grow. A cap of 500,000 TEU on IMEX throughput would:

  - limit the ability of importers and exporters to choose the most efficient freight transport mode for their needs;

  - reduce the efficiency of planned investment in intermodal capacity at Moorebank, requiring further investment before it is economically efficient, and potentially discouraging investment in intermodal capacity;

  - be inconsistent with NSW and Commonwealth Government objectives to increase freight transfers by rail to reduce reliance on the road network, enabling continued growth in Port Botany throughput and encourage productivity growth; and

  - only be warranted if the environmental impacts beyond the cap could not be managed, which other parts of this report, and the EIS, demonstrate is not the case.

- The Moorebank precinct also needs to provide 500,000 TEU of interstate capacity (i.e. in addition to the 1.05 million TEU of IMEX capacity). The Commonwealth Government has been investing heavily in the freight rail network to increase its reliability and transit times. A network of large, modern intermodal facilities, including at Moorebank is required to complement this investment and encourage more interstate freight to travel by rail. An improved interstate rail freight network would compete on cost and reliability with road, thereby encouraging more interstate freight to travel by rail.

- An assessment of the cumulative impacts of the Moorebank precinct on the road network, notes there are a number of intersections that, as a result of background traffic growth will operate at an unacceptable level of service. As such, a series of intersection mitigation measures have been presented that demonstrate that, providing the treatments are undertaken, a precinct wide total of 1.55 million TEU as well as 600,000 sq. m of warehousing can be accommodated for all assessed cumulative scenarios.

- The interstate freight rail network has adequate capacity for the 500,000 TEU of interstate freight planned for the Moorebank precinct. An assessment of the freight rail line between Port Botany and Moorebank found that an upgrade (construction of two new passing loops) is needed to enable it to handle the 1.05 million TEU of IMEX freight planned for Moorebank, on top of demand from other users. ARTC is already planning these upgrades, which are considered practically and economically feasible and will be required by around 2020.

In response to the comment on annual containerised freight growth rates, there are two figures referenced in the EIS:

- average growth in rates in container movements in NSW over the last 15 years, which has been around 7% per annum (NSW Government 2013); and

- forecast container trade through Port Botany which is expected to grow at an annual growth rate of 4.25% by 2030 (Australian Government's Bureau of Infrastructure, Transport and Regional Economics (BITRE) forecasts).

The first figure relates to annual growth rates from past years while the second figure relates to the predicated growth rates up to 2030.

For further response relating to the viability of an IMT at Moorebank, refer to section 6.1.2 of this report.

6.1.4 Economic viability of the proposal

Some submissions question the economic viability of the Project if the same capacity restrictions were placed on the Moorebank IMT as have been placed on the SIMTA project. The SIMTA concept plan was approved by the Planning Assessment Commission (PAC) subject to a restriction on the capacity of 250,000 TEU per year, with an additional 250,000 TEU per year if the road network can accommodate the volume of heavy traffic.

Submission number(s)

Form letter 2 and 142.

MIC response

MIC notes the capacity restrictions placed on the SIMTA Project (which relate to IMEX freight only), recognising that these restrictions relate to the potential impacts of the IMT, most notability the impacts on the road network. Section 2.3 in Chapter 2 – *Assessment of the issues raised by the NSW Planning Assessment Commission* of this report presents an analysis of the Moorebank precinct demand for both IMEX and Interstate intermodal capacity with a specific focus on the conclusions made by the PAC in their assessment report for the SIMTA concept approval. The analysis draws upon and expands on the demand assessment presented in Chapter 3 – *Strategic context and need for the project* in the EIS and aligns these with the NSW Government objectives to double the proportion of container freight moved by rail through NSW Ports by 2020.

As noted in section 2.2 of Chapter 2 - *Assessment of the issues raised by the NSW Planning Assessment Commission* of this report, an agreement has been reached for a precinct-wide IMT facility to be developed by SIMTA on the MIC and SIMTA sites. In recognition of freight catchment demands, and capacity constraints of the Southern Sydney Freight Line (SSFL), the precinct-wide development proposes an IMEX terminal with a maximum capacity of 1.05 million TEU per year and an interstate terminal with a maximum capacity of 500,000 TEU per year (refer to section 7.3 of this report).

The PAC's decision on the SIMTA site has a number of implications for this Project, the most significant being the suggested cap on intermodal capacity that would restrict the precinct as a whole to a long-term capacity cap of 500,000 TEU per annum. The cap relates to the PAC's concerns about the ability of the road network to accommodate a greater throughput and a perception that such a cap would be sufficient to accommodate long term demand and therefore meet the Government objective of a doubling of rail freight mode share (currently 14% for freight entering Port Botany) by 2020.

The PAC additionally expressed regret that a more integrated approach (including a master plan) has not to date been provided for the precinct.

6.1.5 Funding of infrastructure upgrades

Concern has been raised with regards to the costs of the Project, with questions raised about who would fund the cost of the upgrades. Submissions mainly focused around upgrades required for local roads and key transport networks (i.e. the M5 Motorway).

Some community submissions were concerned that the costs of the Project have not been adequately considered, including the costs of infrastructure maintenance. Others argue that greater transparency of total costs is required.

Submission number(s)

25, 41, 138, 145, 147, 153, 189, 190, 213, 219, 220, 221, 222, 223, 224, 235, 237 and form letter 3.

MIC response

An additional traffic impact assessment has been conducted to further identify the measures required to mitigate the traffic impact of the Project on intersections in the surrounding area and to assess the traffic impacts as a result of the changed concept layout. This assessment has determined whether the intersections will operate better or worse than without Project traffic. MIC is in the process of discussing the results of the traffic impact assessment with TfNSW and RMS and if agreed will contribute to the cost of intersection upgrades in proportion to the extent that the Project contributes to the traffic through that intersection. The results of these assessments are reported in Chapter 7 – *Proposed amendments to the development* of this report and the revised Traffic Impact Assessment (revised TIA) provided in Appendix E of this report.

A Voluntary Planning Agreement with TfNSW will detail the agreed road/transport infrastructure upgrades required to mitigate the impacts of the development of the state transport network and the timing of their delivery. A commitment to an agreement is normally required as part of the concept approval with the detail agreement being part of the Stage 2 State significant development (SSD) approval application.

As identified in section 4.2.1 of Chapter 4 – *Planning and statutory requirements* of the EIS, the estimated capital cost of the Project is approximately $930 million. This estimate has been prepared by a qualified quantity surveyor based on the concept design. The estimate will be refined at the following Stage 2 SSD approval stage(s).

6.1.6 Project benefits

Some submissions generally agree with the idea of an IMT on the basis that it would provide benefits by:

- using rail as opposed to road and therefore reducing congestion and energy consumption;
- creating employment opportunities; and
- addressing freight and logistic demands in Sydney.

However, these submissions do not necessarily provide support for the IMT at Moorebank, but rather support the concept of an IMT in general.

Submission number(s)

147, 188, 189, 190, 196, 199, 213 and 237.

MIC response

The Moorebank IMT will significantly benefit Sydney, NSW and Australian communities, particularly at its full proposed capacity of 1.55 M TEU p.a. As outlined in Chapter 3 – *Strategic context and need for the project,* the Project's benefits relate to:

- its contribution to productivity, reduced business costs, reduced road congestion and environmental outcomes – these benefits have been estimated at around $9 billion;
- the unique characteristics of the terminal site, which provide a once-in-a-generation opportunity for a transformative freight project;
- the project's consistency with Commonwealth, and State planning and infrastructure strategies and policies;
- The terminal will have some local impacts and, for this reason, some members of the local community oppose the Project. However, once the effect of mitigation measures is taken into account, the residual impact will be relatively minor and within established criteria and regulatory requirements. In addition, a package of local benefits will be progressed in consultation with the local community. On balance, therefore, the project is in the public interest.

As discussed in section 6.1.1, the Project is in the public interest because its residual impacts will be localised and managed but its benefits will be significant and widespread for the entire community. The benefits include a major contribution to jobs and productivity growth, supply chain efficiency, and reduced congestion growth. The local community will receive a share of these benefits as well as a local benefits program. In addition, the public interest in the IMT is reflected by its contribution to government policy; the lack of suitable alternative sites; and the unique characteristics of the site which are not needed for other land uses but make it ideal for an intermodal. While some local community members oppose the Project, the broader community interest is reflected by strong support from government and industry stakeholders.

A further discussion of public benefits is provided in section 2.5 of Chapter 2 – *Assessment of the issues raised by the NSW Planning Assessment Commission.*

6.2 Planning and statutory requirements

A number of issues were raised in relation to the Project approval and assessment process, as discussed below:

6.2.1 Concern regarding the approval process

Some submissions state that as the Moorebank IMT and the SIMTA projects are being assessed separately, this has created confusion in the community, with the impacts of the Projects not being fully understood by community members. Coupled with the Australian Government's support for a joint SIMTA and Moorebank Project, which was confirmed during the exhibition phase of the EIS, one submission (237) argues that both projects should be placed on exhibition again so that community members are given another opportunity to respond to the IMT precinct.

One submission (208) raises concerns in relation to the staged approval process and argues that environmental impacts should be assessed upfront, with the design planned and modelled. Other concerns related to the fact that the Project is seeking full approval for Early Works, without having received an overall approval for the Project.

Submission number(s)

99, 136, 142, 150, 208 and 237.

MIC response

Prior to the EIS exhibition, the Moorebank IMT project was being developed as a stand-alone project and was therefore necessary to assess the environmental impacts independently of the SIMTA project within the EIS. This assessment approach was a requirement of the NSW Secretary's Environmental Assessment Requirements (SEARs) and the Department of Environment's (DoE) EIS guidelines.

Chapter 27 – *Cumulative impacts* of the EIS assessed the cumulative impacts of both the Moorebank IMT in conjunction with the SIMTA IMT and other planned or proposed developments in the local area. In recognition of community and approval agencies concerns regarding the prospect of both projects being developed; three scenarios (as detailed in section 27.1 of Chapter 27 – *Cumulative impacts*), were assessed in the EIS (assuming a combined IMT precinct across both sites). The cumulative scenarios assessed in the EIS were developed in consultation with NSW Department of Planning and Environment (NSW DP&E), and in consideration of the capacity of the Southern Sydney Freight Line (SSFL) and freight demands (which were developed in consultation with Transport for NSW (TfNSW)).

Since the exhibition of the EIS, an agreement has been reached between MIC and SIMTA for an integrated precinct-wide intermodal facility and associated warehousing across both the MIC and SIMTA sites. This Response to Submission Report incorporates proposed amendments to the development, including details on the proposed layout and associated impacts of a precinct-wide intermodal facility (including the selection of the southern rail access option for the combined precinct) (refer to Chapters 7 to 9 of this Response to Submissions Report (this report)). The indicative layout would be further developed during detailed design and details would be provided as part of the Stage 2 State significant development (SSD) applications. This report will be exhibited for the public to review and make further submissions before NSW DP&E grants approval of the Stage 1 SSD application for the Project. The community will have the opportunity to provide further comment during the Stage 2 SSD application process. This Stage 1 SSD only relates to development on the Moorebank site, and if approved, the Stage 1 SSD approval would only approve the Project's 'concept' on the Moorebank site.

Approval to construct and operate an IMT across either the SIMTA or the Moorebank site would be considered and assessed during the Stage 2 SSD application process.

Updated management and mitigation measures (as a result of the changed site layout and selection of the southern rail access option) are provided in Chapter 9 – *Revised environmental management measures* of this report. Subsequent Stage 2 SSD applications will provide further assessment of the required management and mitigation measures once the detailed design for the precinct has been developed and the environmental impacts associated with this design can be assessed.

MIC acknowledges the comments provided in submission 208 in relation to the staged approval process and the suggestion that all environmental impacts should be assessed up front, with the design planned and modelled. While it is recognised this would provide greater certainly to the community if the design of the IMT was completed for the entire Project, in practice this approach is not appropriate given the complexity and detail of the work involved in completing the design (time, cost and resource) required to support a detailed assessment and approval process. The Project would be progressively developed over 15 years. The NSW *Environmental Planning and Assessment Act 1797* (EP&A Act) recognises that for significant projects such as this one, a staged approach is necessary to allow for detailed design to occur progressively as development phases arise over time. The community will have an opportunity to review and comment on future Stage 2 SSD applications, which will be produced once the detailed design work is completed for each stage.

Approval for the Early Works is being sought without the need for further approval, to facilitate demolition and relocation works, contaminated land remediation, utility terminations and diversions, establishment of the conservation area and heritage impact mitigation works. As such, the impacts of the Early Works activities have been specifically detailed in the EIS, providing the community with certainty on the type of activities and impacts of this phase of development. These impacts are identified within each technical assessment chapter (Chapters 11–26 of the EIS). The Early Works development phase includes some site remediation activities which would have positive long-term environmental impacts.

6.2.2 Recommends that a master plan be prepared

A number of submissions recommended that a master plan should be prepared for the Moorebank precinct (which was also recommended by the Freight Advisory Board), to provide greater clarity around both the SIMTA project and the Moorebank IMT. It is suggested that a Master Plan would have been useful for residents to better understand the impacts of the Project.

Submission number(s)

Form letter 2, 142 and 175.

MIC response

As noted in section 6.2.1 above, this report contains proposed amendments to the development which details the proposed layout and associated impacts of a precinct-wide intermodal facility. However, it's important to note that the SIMTA and Moorebank IMT proposals are still being developed as stand-alone proposals and the environmental impacts are being independently assessed. The SIMTA project received its concept approval in September 2014, subject to a number of conditions discussed in section 6.1.4.

This Response to Submissions Report will be exhibited for the public to review and make further submissions prior to NSW DP&E approval of the Stage 1 SSD approval for the Project. Furthermore, this Response to Submissions Report is being exhibited in parallel with the SIMTA Stage 1 SSD application (for its first stage of development), further allowing for the development of the two sites to be considered together.

6.2.3 Confusion over the DNSDC project

Some confusion has arisen in the community over the Defence National Storage Distribution Centre (DNSDC) relocation project and its relationship to the Moorebank IMT Project. Some submissions note this has led to the misconception that the Moorebank IMT Project has already commenced.

Submission number(s)

Form letter 2 and 142.

MIC response

As noted in the EIS Executive Summary (section 10.1), section 2.2 of Chapter 2 – *Site context and environmental values*, and in Chapter 8 – *Project development phasing and construction* of the EIS, the DNSDC has until recently occupied a substantial portion of the SIMTA site, to the east of Moorebank Avenue and it is currently in the process of being relocated to a site in West Wattle Grove. The relocation of the DNSDC is not part of this Project, and does not directly affect the Moorebank IMT site. It is therefore not assessed as part of the EIS.

In addition, the School of Military Engineering (SME) which currently occupies the Project site is being relocated to the nearby Holsworthy Barracks with training facilities, offices, facilities for explosive detection dogs, classrooms and accommodation to be provided at this new site. As noted within section 8.1 of Chapter 8 – *Project development phasing and construction* of the EIS, this is also a separate Project that has been subject to a separate approval process.

6.2.4 Concerns regarding transparency and adequacy of impact assessments

Some submissions raised concerns regarding the transparency and adequacy of the EIS impact assessments. Some submissions argue the full impacts of the Project have not been adequately described in the EIS.

Submission number(s)

136, 186, 189 and 190.

MIC response

The EIS was prepared by experienced professionals in accordance with all relevant environmental and planning legislation and other relevant procedures and guidelines required by government agencies, including the NSW Secretary's Environmental Assessment Requirements (SEARs) and the Department of Environment's (DoE) EIS guidelines. Independent technical peer reviews were also undertaken for selected technical studies to endorse the assessment process and findings of the technical assessments. Four technical peer reviews were completed for local air quality, human health impact, noise and vibration impact and traffic and transport assessment. Letters from peer reviewers endorsing the technical papers are provided in Appendix G of the EIS (Volume 2).

Finally, the health impact assessment undertaken for the EIS was scoped and undertaken under the direction of a working group consisting of representatives of Liverpool City Council (LCC), Campbelltown City Council (CCC) and key state agencies, further enhancing the rigour and transparency of the study.

6.2.5 Accuracy of ownership and property details

One submission states the property details provided in the EIS do not include a description of land owned by other parties which may need to be acquired for the Project.

Submission number(s)

150.

MIC response

Section 23.2.1 of Chapter 23 – *Property and infrastructure* of the EIS identifies the land required temporarily (for construction of the IMT) as well as land required permanently for operational of the facility and associated rail access option. Figures 23.2–23.4 show the land requirements associated with each rail access options and IMT layout.

6.3 Community consultation

A number of community submissions raised some concerns with regard to the adequacy of consultation activities, including those undertaken to date and future (planned) consultations. Details of the issues raised are provided below.

6.3.1 Adequacy of community consultation

Some community members raised concerns about the information sessions, noting timing issues (i.e. timing of information sessions and community members not feeling they had adequate time to ask the questions they wanted answers to) and consistency in information. In particular, the community felt that the figures and statistics presented at community information sessions were not consistent across all sessions (i.e. different messages were presented).

One submission (237) argues that further time should have been provided for the community to review and respond to the EIS (more than 60 calendar days).

In addition, one submission argues that community engagement has been low and that there are many people who do not speak English and have therefore not been engaged in the consultation process.

Submission number(s)

Form letter 2, 142, 175, 178, 185 and 237.

MIC response

MIC's community consultation on the EIS has exceeded the requirements set out in NSW DP&E's *Guidelines for Major Project Community Consultation* (NSW DP&E 2007). These guidelines outline the community and stakeholder consultation expected from major projects prior to, during and after assessment of an EIS. As outlined in Chapter 5 – *Stakeholder and community consultation* of the EIS, a comprehensive community consultation program was implemented for the Project prior to and during the exhibition of the EIS.

Consultation activities during the exhibition are presented in Chapter 3 – *Consultation* of this report, in summary, information on the EIS was made available via a number of channels:

- the EIS itself was available online and in hard copy at community centres;
- information boards were available to view and topic specialists were available to speak with (either one-on-one or in question and answer sessions) at three information sessions;
- a 24-page booklet was available at the information sessions and in community centres;
- a brochure was distributed to 12,000 homes in Wattle Grove, Moorebank and Casula two weeks before the first information session; and
- further information was available on the MIC website.

Questions or feedback could also be provided via email through the MIC website (http://www.micl.com.au/contact-us.aspx), or by telephone to the Project information line (1300 382 239).

The information sessions were held on different days, at different times and were scheduled to run between two and three hours, although all sessions ran significantly over time to allow plenty of opportunity for participants to have their questions answered. For example, the final session closed three hours after the scheduled finish time.

The figures and data presented at the community sessions, along with all other material, were thoroughly reviewed by MIC and its advisers to ensure consistency with the EIS. MIC is not aware of any inconsistencies and no specific examples have been provided in the submission. The discussion and question time for each of the three community sessions were slightly different in response to the different questions raised.

The NSW DP&E guidelines specify that an environmental assessment for a major project must be publically exhibited for a minimum of 30 calendar days. DoE requires an EIS to be exhibited for 40 business days. In recognition of the scale and complexity of the EIS and considering the statutory requirements from both NSW DP&E and DoE, the Moorebank EIS was placed on public exhibition for 60 calendar days.

Interpreting services are available to community members interested in the Project with the services specifically advertised during the EIS exhibition period via the MIC website and the community brochure. The MIC website also has a 'Google Translate' function to provide immediate translation of information on the website. Section 3.4 of this Response to Submission Report provides further discussion on the issue of translation services.

6.3.2 Response time to complaints/concerns during operation

One submission argues that a 24 hour response time to any complaints or concerns raised by members of the community is reasonable. Submission requests confirmation that this would be met by the future operators of the IMT.

Submission number(s)

228.

MIC response

The IMT operator will adopt a complaints system to respond, in a timely manner, to any complaint or concern raised by members of the community. This complaint system will operate during both construction and operation of the terminal.

6.3.3 Adequacy of Citizens' Jury

One submission raises concerns regarding the Citizens' Jury as follows:

- Compensation package is not adequate to address the impacts of the Project.
- Selection area for panel members was too broad. Argues that people as far away as 10 km were provided with the opportunity to apply to be on the panel.

Submission number(s)

237.

MIC response

The Moorebank Intermodal Citizens' Jury was asked to develop a package of measures to benefit people living near the future Moorebank IMT. The proposed local benefits package recognises that the terminal will benefit the wider community through billions of dollars in productivity gains and lower traffic growth in parts of Sydney. The public benefits package is not intended to address the impact of the terminal, which will be addressed through mitigation measures (e.g. local intersection upgrades, noise walls and locomotive standards to reduce noise and diesel emissions). Appropriately, the value of these mitigation measures will go far beyond the funding that MIC allocates to local public benefit measures.

MIC decided to deliver a public benefit package in recognition that people living near the terminal will experience most of its impacts but receive the same share of the terminal's broader benefits as other parts of Sydney. Because of MIC's decision, people living near the terminal will receive:

- a share of the broader benefits of the terminal – e.g. jobs growth, reduced congestion growth, increased productivity; and
- all of the benefit of the MIC's contribution to local programs and services – i.e. the public benefits package.

The Citizens' Jury was independently appointed and randomly selected from suburbs near the terminal site. Half the participants were drawn from people living within a 5 km radius of the site and half from within a 10 km radius. These boundaries were chosen so the jury would comprise people with a range of views, but with the focus being on people who live close by. Around 4,000 people were invited to participate in the jury and the final group of participants was matched to a profile of the community (based on age, gender, location etc.).

Members of the community were also invited to make a submission to the jury on what they see as a positive benefit for those most affected. Certain meetings of the Citizens' Jury were open to interested members of the community.

6.4 Project alternatives

A number of submissions questioned the need for an IMT at Moorebank and made suggestions for alterative locations or options to meet Sydney's freight demands. These are outlined in the sections below:

6.4.1 Alternative sites for IMT

Community submissions suggest a number of alternative sites for an IMT, including Badgerys Creek, Eastern Creek, Chullora, Mittagong, Auburn-Clyde-Granville, Enfield and Port of Newcastle.

Alternative site at Badgerys Creek

A total of 106 submissions argue that the IMT should be located at Badgerys Creek as opposed to Moorebank. Submitters provide a number of arguments for the Badgerys Creek, including that:

- Badgerys Creek is located near a planned Airport and therefore more suitable as a freight intermodal;
- it is located within an non-residential area and therefore avoids impacts to residents;
- the airport would require substantial road and rail infrastructure and the IMT could utilise this infrastructure, resulting in cost savings (i.e. economies of scale);
- it is located 21.9 km from Eastern Creek which represents a large proportion of where containers are destined;
- there are no existing traffic congestion issues at Badgerys Creek;
- there is surplus land at Badgerys Creek, with room to expand the IMT in the future if required (greater land supply than Moorebank);
- the area already has good road connections, with access to the M7 and M5 Motorways and the planned WestConnex project;
- it represents an opportunity for an 'agglomeration of industry';
- it is strategically located in an area where a new rail line is planned for the airport;
- an IMT would create jobs in close proximity to new developments such as Leppington;
- Badgerys Creek would be more suitable when taking a more holistic view of freight logistics;
- It is located in close proximity to the Western Sydney Employment Area and future industrial areas (this is where two-thirds of container freight is destined; and

- the land is already owned by the Australian Government.

Submission number(s)

5, 6, 7, form letter 1, 16, 25, 40, 44, 45, 46, 51, 52, 54, 56, 57, 59, 60, 64, 65, 69, 70, 71, 73, 76, 77, 78, 81, 84, 85, 87, 88, 89, 91, 92, 93, 94, 96, 101, 105, 109, 111, 112, 113, 114, 116, 120, 122, 123, 124, 126, 127, 128, 130, 131, form letter 2, 134, 135, 136, 137, 139, 140, 141, 142, 144, 147, 153, 154, 157, 158, 159, 160, 162, 164, 170, 171, 175, 180, 185, 187, 189, 190, 191, 197, 202, 203, 205, 206, 207, 208, 209, 210, 212, 213, 214, 216, 219, 220, 221, 222, 228, 229, 234, 235, 238, 239, 240 and form letter 3.

Alternative site at Eastern Creek

Some submissions argue it would be more appropriate to locate an IMT at Eastern Creek on the basis that this is where the majority of freight is destined and the land is appropriately zoned.

Submission number(s)

81, 138, 147, 153, 189, 190, 211, 213 and 235.

Capacity of Chullora

Some submissions argue that the capacity of the existing Chullora IMT site should be further investigated. Submitters note Asciano's announcement in 2014 that it would increase capacity at Chullora up to 800,000 TEU.

Submission number(s)

Form letter 2, 137, 142, 153, 159, 175, 187, 197 and 228.

Alternative location at Mittagong

One submission argues there is capacity at Mittagong to provide for an IMT to service Sydney's freight demand.

Submission number(s)

53.

Alternative site at Auburn-Clyde-Granville

One submission argues that an IMT at Auburn-Clyde-Granville site would be suitable for maritime containers and road/rail connections.

Submission number(s)

129.

Capacity of Enfield

One submission notes that Enfield IMT is expected to provide capacity for 300,000 TEU. The submission states that NSW's freight target of 28% would be met once Enfield is operational.

Submission number(s)

223.

Capacity of Port Newcastle

One submission suggests that freight destined for Newcastle or northern areas of NSW could go through this port, reducing the need for IMTs in Sydney. This submission suggests further investigations should be undertaken to investigate this alternative. The submission also questions why the capacity restriction on Port of Newcastle is so low.

Submission number(s)

224.

Alternative location for IMT – general

Some submissions raised general concerns regarding an IMT at Moorebank. These submissions reasoned that an:

- IMT at Moorebank is not suitable and should be located at an alternative site; and
- IMT should be located in a non-populated area/residential area.

Submission number(s)

2, 7, 53 and 241.

MIC response (combined response to all issues relating to alternative sites)

The need for an IMT in south-western Sydney was described in detail in Chapter 3 – *Strategic context and need for the Project* of the EIS, with section 3.3 in particular detailing why the Moorebank site was selected.

The Moorebank site was selected due to its strategic positioning, with good access to existing major freight and rail corridors (SSFL, the M5 Motorway and near to the M7 Motorway and Hume Highway), and is centrally located relative to major freight markets in the west and south west of Sydney. The size of the site was also a significant factor in site selection, with the requirement to accommodate interstate trains which can be up to 1,800 m long and the need for the site to be large enough to handle the number of containers expected (a total throughput capacity of 1.55 million TEU a year including up to 1.05 million TEU a year of IMEX).

The MIC notes that Badgerys Creek has been suggested by many community members as a suitable alternative site for the IMT. However, this site would be located too far west of current Sydney freight markets to be commercially viable as an intermodal facility and does not currently have adequate road or rail supporting infrastructure.

MIC is not aware of any existing Commonwealth land in the vicinity of Badgerys Creek that is currently suitable for an intermodal facility as the new airport site is unlikely to have spare space for this purpose. A new freight rail line would also need to be constructed in addition to the planned passenger line. It would not be practical for freight trains to share the planned passenger line to the new airport since passenger trains receive priority on the passenger network, which would undermine the efficiency and reliability of a rail freight service via Badgerys Creek. Even if land was available at Badgerys Creek, the planning and environmental approval process to assess the sites' suitability from an environment, social and economic perspective can take years. Given the demand for intermodal facilities in western Sydney the Moorebank IMT site is considered the most appropriate to service the current demand.

Predicted demand in containerised goods suggests that a number of intermodal facilities will be required and that Badgerys Creek may be suitable long-term future intermodal sites. Given the demand for a western Sydney intermodal exists now, the Moorebank IMT site is considered the most appropriate site for an intermodal facility, as described in Chapter 6 – *Project development and alternatives* of the EIS and in Chapter 2 – *Assessment of the issues raised by the NSW Planning Commission* of this report.

Other alternative sites suggested in community submissions include Chullora, Eastern Creek and Enfield. As noted in section 3.1.1 of Chapter 3 – *Strategic context and need for the Project of* the EIS and in Chapter 2 – *Assessment of the issues raised by the NSW Planning Commission* of this report, IMTs serve a defined geographic catchment and there is clear demand for Moorebank from a catchment area that is different to that served by existing IMTs. Also, Sydney's estimated total future IMEX intermodal capacity at existing terminals is not sufficient to meet government rail freight targets or expected rail freight demand at Port Botany. This includes the potential future capacity provided by the Yennora, MIST (Minto) and Villawood terminals approved capacity at the Enfield IMT and the recently announced new IMEX capacity at Chullora.

If the NSW rail freight target of 28% is to be met, almost 800,000 TEU would be transported to and from Port Botany by rail by 2020, increasing to almost 1.18 million TEU by 2030 and to 1.64 million TEU by 2040. Under a conservative set of assumptions, the shortfall in IMEX intermodal capacity needed to achieve this target would be around 415,000 TEU in 2020. The proposed Stage 1 of the precinct (i.e. 250,000 TEU capacity) would partially satisfy this shortfall. By 2030, the shortfall would be a little over 530,000 TEU and by 2040, it would be around 810,000 TEU. Under a less conservative scenario, the shortfall would be around 1.3 million TEU in 2030 and 1.7 million TEU in 2040. Additional capacity therefore will be required (on top of the 1.05 million TEU Moorebank IMEX terminal) to maintain the 28% rail share target, possibly before 2030. Further capacity will be required if a rail freight target of 40% is pursued, consistent with the NSW Freight Infrastructure Advisory Board recommendation in 2005. If this occurs, the 1.05 million TEU IMEX terminal will be needed at Moorebank soon after 2030, under conservative assumptions, and well before 2030 under less conservative forecasts.

MIC is aware of the announcements made last year by Asciano highlighting an investment to upgrade the Chullora IMT to handle 600,000 TEU by 2015, and 800,000 TEU in the longer term, as referred to in a number of the community submissions. MIC acknowledges future plans for Chullora could have an impact on the timing and development of an interstate facility at Moorebank however, sensitivity testing undertaken as part of the forecasting reported by Deloitte (2013) predicted that even if Chullora remains operational with a capacity of approximately 350,000 TEU, there would still be demand for handling up to 107,000 TEU for the interstate market through the Project site in the short to medium term. While MIC recognises the intention to upgrade Chullora to handle 600,000 TEU, no commitment has been made regarding the timing for the upgrade. Chullora would also be subject to a rigorous planning and assessment process before upgrade works can commence. It is not clear whether any additional capacity at Chullora would service the interstate or IMEX markets (or both).

In terms of an Eastern Creek facility, an IMT at this site has been proposed; however, it is yet to be confirmed. Even if an IMT was to be developed at this location, taking into account container destinations, we expect that this facility would largely service its local market around the west and north-west of Sydney. As such, there would still be a need for a facility in south-western Sydney.

Mittagong is not a current intermodal facility. Additionally, MIC is not aware of any planned intermodal sites at Auburn-Clyde-Granville. The NSW long-term transport master plan and the NSW State Infrastructure strategy has not identified Auburn-Clyde-Granville or Mittagong as a future intermodal faculties. Therefore MIC has not considered these sites within the EIS.

One community submission suggests that the Port of Newcastle should be considered as alternatives to the Project site. As discussed in section 3.4 of Chapter – *Strategic context and need for the Project* of the EIS, approximately 93% of import containers traded through Port Botany are destined for locations within the Sydney greater metropolitan area. On this basis, even if the capacity of Port of Newcastle was increased (which MIC is not aware of any plans to do so), this site would not be suitable as would be too far away from containers destinations.

Furthermore, while a number of sites and options have been considered (as discussed above), the obligation on proponents and decision makers is to assess the impacts associated with the proposed development. Therefore, the EIS has focused on the impacts of the Project at the Moorebank IMT site.

6.4.2 Suitability of IMT at Moorebank site

68 submissions argue that the SME site at Moorebank is not suitable for the purposes of an IMT for the following reasons:

- Proximity of site to an existing residential area and the impacts on surrounding residents (noise, air, traffic, health, quality of life, visual);
- Surrounding area contains a high number of schools, child care centres and aged care facilities;
- Located within an area where the roads are already congested;
- The site is constrained by environmental assets (Georges River), with no space to expand in the future;
- IMT at the Project site may not be economically viable due to the SSFL restrictions and the limits placed by the PAC for the SIMTA site;
- Air quality is already an issue for this area and an IMT would exacerbate this;
- There is no access to public transport, forcing staff to drive to work;
- Significant infrastructure upgrades would be required to surrounding infrastructure, which would be costly;
- Issues associated with traffic safety, with trucks leaving and entering the M5 Motorway to access the Project site; and
- IMT would impact on recreational areas and community facilities (Casula Powerhouse and Parklands).

Submission number(s)

10, form letter 1, 18, 25, 40, 51, 60, 62, 64, 66, 71, 75, 78, 79, 85, 87, 91, 94, 95, 96, 97, 98, 99, 100, 105, 112, 113, 114, 118, 121, 122, 123, 124, form letter 2, 137, 142, 146, 147, 148, 150, 153, 159, 160, 161, 165, 166, 174, 175, 180, 187, 189, 190, 197, 208, 210, 211, 213, 218, 219, 220, 221, 222, 223, 224, 228, 232, 237, 239 and 241.

MIC response

MIC notes that many submissions argue the Project site is not suitable given its proximity to existing residential development and the associated impacts on residents, existing congestion issues and environmental constraints.

In determining the suitability for an IMT at the Moorebank site, MIC engaged a number of technical specialists to prepare and assess the social, environmental and economic impacts of the IMT in this location. The findings of the impact assessments were presented in the EIS (Chapters 11–26 of the EIS), with detailed discussion provided on the unmitigated and mitigated environmental risks.

The EIS assessed a range of impacts including traffic and transport, noise and vibration, human health, air quality, heritage and others, and determined that while impacts would occur, there would be no more than moderate residual impacts once mitigation measures are implemented. MIC has also committed to ongoing monitoring to investigate and implement new or additional measures as required.

In addition, responses provided throughout this Response to Submission Report address many of the arguments raised by community members in relation to the suitability of the site for the purposes of an IMT. In particular:

- section 6.4.1 discusses the site selection process and the positioning and size requirements for the IMT;
- section 6.7.6, section 6.11.6 and section 6.17.1 addresses proximity to and impact on sensitive receptors;
- section 6.6.4 addresses traffic congestion;
- section 6.8.2 and section 6.10.2 addresses the impacts to Georges River;
- section 6.11.2 addresses concerns relating to existing air quality;
- section 6.1.5 addresses requirements for, and costs of, infrastructure upgrades;
- section 6.15.1 addresses recreational impacts; and
- section 6.1.4 addresses the economic viability of the Project given capacity restrictions imposed by PAC on the SIMTA project.

6.4.3 Alternative uses for SME site

A number of submissions make alternative suggestions for the future use of the SME site. Suggestions include:

- Development of land for residential purposes to address the housing crisis identified in the draft Metropolitan Strategy for Sydney. The site is suitably positioned for residential development being adjacent to a watercourse.
- Establishing the area as a public recreation/conservation area alongside the Georges River.
- Use of the site for the purposes of a commercial hub in close proximity to residential development.

Submission number(s)

9, 69, 81, 105, 121, 122, 125, form letter 2, 136, 137, 142, 147, 148, 150, 153, 159, 160, 161,162, 178, 189, 190, 197, 213, 228, 229, 235, 237, 239 and form letter 3.

MIC response

Chapter 3 – *Strategic context and need for the Project* of the EIS provides a detailed description of the need for an IMT at the Moorebank site, this discussions is expanded in Chapter 2 – *Assessment of the issues raised by the NSW Planning Commission* of this report.

While MIC acknowledges the suggestions for alternative uses of the Project site, these alternatives have not been assessed in any level of detail for the following reasons:

- As detailed in Chapter 15 – *Contamination and soil* of the EIS, the site is contaminated and is not suitable for sensitive land development (such as residential development). With the current levels of contamination, the site is only suitable for industrial or commercial land uses. While former Defence land has in the past been remediated for residential development (e.g. at Wattle Grove), the cost of doing so is substantial and would affect the value of the land, were it sold for residential development.
- Development for residential purposes could house more than 40,000 people in 16,500 dwellings, which could generate around 3,154 passenger vehicle trips (inbound and outbound) in the AM peak hour (based on RMS methodology as discussed in section 4.4 of Technical Paper 1 – *Traffic, Transport and Accessibility Impact Assessment* of the EIS). This compares to the Project which, at full capacity, would generate around 422 vehicle trips in the AM peak hour (inbound and outbound). Traffic generated by the terminal during peak hours would be a fraction of the traffic that would be generated by a residential development. This proportion would be higher at other times of the day (because the intermodal terminal spreads heavy vehicle traffic across the day, while residential traffic is focused on the peak hours.
- Development for commercial/light industrial purposes could generate around 888 passenger vehicle trips (inbound and outbound) in the morning AM peak hour. Traffic generated by the terminal during peak hours would be a fraction of the traffic that would be generated by a commercial development. This proportion would be higher at other times of the day (the intermodal terminal spreads heavy vehicle traffic across the day), while commercial traffic is focused on the peak hours.
- Converting the entire site into a recreation/conservation area is not economically viable as this land use would generate little economic return and would require ongoing maintenance.

No other known site in Sydney has the same unique characteristics to efficiently accommodate the type of activities being proposed. The availability of the site for development represents a once-in-a-generation opportunity for a transformational freight infrastructure project. Given the clear suitability of the Project site for an IMT and the lack of economically efficient alternatives, it would be inappropriate and mostly inefficient to use the site for an alternative purpose (e.g. residential or commercial), as these land uses would have greater impacts on the local environment and community.

6.4.4 Confusion over combined proposal for SIMTA and Moorebank IMT

Submissions argue that the way the Project has been presented to the community has created confusion, particularly in regards to how the Projects would operate with the SIMTA project.

Submission number(s)

Form letter 1, 125, form letter 2, 142, 150, 153, 175, 189, 190, 210, 237, and 239.

MIC response

Response to this issue is covered in MIC's response in section 6.2.1.

6.4.5 Capacity restrictions for SIMTA proposal

Submissions note the capacity restrictions placed on the SIMTA project by the PAC, being 250,000 TEU and an additional 250,000 TEU subject to the ability of the road network to cater for the additional traffic. Some submissions question the economic viability of the Project if the same limits that were placed on SIMTA were placed on Moorebank IMT.

Submission number(s)

25, 37, 43, form letter 2, 142, 175 and 228.

MIC response

Response to this issue is covered in MIC's response in section 6.1.4 and in Chapter 2 – *Assessment of the issues raised by the NSW Planning Assessment Commission* of this report. In summary, should the same initial capacity restrictions be placed on the Project, the Project would remain economically viable and MIC/SIMTA would seek to increase the capacity of the terminal to the maximum capacity through future planning approvals and ongoing discussions with NSW DP&E and TfNSW regarding infrastructure upgrade requirements.

6.4.6 Need for a whole of precinct approach

Submissions argue that the Project needs to be considered in combination with the SIMTA development, and that a collaborative approach should be taken to presenting the development of an IMT on both sites.

Submission number(s)

125, form letter 2, 142, 153, 185 and 188.

MIC response

As noted in section 6.2.1, since exhibition of the EIS, MIC and SIMTA have reached in-principle agreement (subject to certain conditions) for SIMTA to develop and operate a precinct-wide intermodal facility and associated warehousing across the Moorebank and SIMTA sites. SIMTA would develop and operate both sites under a commercial agreement with MIC. As part of that agreement, the Australian Government would retain ownership of the Moorebank site, with SIMTA occupying the site under a long-term lease. However, it's important to note that the SIMTA and Moorebank proposals are still being developed as stand-alone proposals and the environmental impacts are being independently assessed. Further details on this approach are provided in Chapter 7 – *Proposed amendments to the proposal* of this report.

6.4.7 Capacity of the SSFL

One submission questions whether the SSFL can feasibility achieve the 1 million TEU IMEX capacity and notes that the Port Botany freight rail lines only have capacity in the vicinity of 480,000 TEU per year. The submission then further states that MIC claims that two passing lanes on the current rail lines will rectify this situation and increase the capacity to 1 million.

Submission number(s)

25.

MIC response

As noted in section 1.6.2 of Chapter 1 – *Introduction* of the EIS, the SSFL has capacity to accommodate the rail movements generated by the Project. In 2014, MIC completed a rail capacity study of the freight line from Port Botany to Moorebank which concluded that additional passing loops would be required to accommodate the final throughput planned for the Moorebank precinct. The study was completed by specialist rail consultants and involved detailed modelling of the current and future timetable on existing and future infrastructure. Subsequently Australian Rail Track Corporation (ARTC) has completed its own study and concluded that passing loops are required, which is consistent with MIC's study. Both studies are internal reports and are not publically available documents. ARTC is responsible for the planning, design and construction of these passing loops. Any work on these passing loops will require their own planning approvals.

6.4.8 Electrification of the SSFL

One submission suggests the electrification of the SSFL should be considered as a means to reduce air quality impacts and facilitate the use of clean electric locomotives.

Submission number(s)

98.

MIC response

MIC is not aware of any plans for the electrification of the SSFL. This matter is therefore outside of the scope of the EIS.

6.5 Project development phasing and construction

The following issues were raised in regards to the Project's proposed phasing, timing and construction:

6.5.1 Concern regarding 24 hour IMT operations

Some submissions were concerned with the proposed 24 hour, 7 day a week operations of the IMT, with some submissions arguing that the impacts of 24 hour operations would be unbearable for some residents.

Submission number(s)

105, 211, 237 and 238.

MIC response

The IMT is required to operate 24 hours a day, 7 days a week to meet the demands of the freight market. It is noted that heavy vehicles would only access the site for 16 hours a day, 5.5 days per week until the Project reaches Full Build, at which time trucks would also access the site 24 hours day, 7 days a week.

In recognition of the 24 hour operations, a range of mitigation measures are proposed to mitigate the impacts of 24 hour operations on the surrounding community, particularly the impacts at night. These mitigation measures include:

- minimise light spill to surrounding areas including:
  - designing lighting to minimise impacts;
  - the use of shields on luminaire lighting to minimise brightness effects;
  - selecting asymmetric light distribution-type floodlights as part of the proposed lighting design;
  - the use of low-reflection pavement surfaces to reduce brightness; and
  - minimising the quantity of light and energy consumption in parts of the IMT site.
- minimise noise impacts including:
  - design/layout to minimise noise (e.g. procurement of mechanical plant with lowest available noise emissions, use of noise reduction barriers, restricting track turn radii);
  - ongoing community consultation/complaints management system;
  - ongoing monitoring to continually evaluate Project noise emissions and, as required, implement additional noise mitigation; and

> measures to control potential wheel squeal including:
  - The turn radius of curved track sections would be greater than 500 m to reduce tight turns in the alignment.
  - Track greasing systems would be investigated on curved sections of track to lubricate and reduce friction at the wheel–rail interface.
  - The track maintenance system would include measures such as grinding to remove rail roughness, treatment of roughness on the wheels of locomotives and wagons, and adjustment of bogie-suspension tracking and brake system set up.

6.5.2 Concerns regarding construction period

Two submissions raised concerns regarding the time period/length of construction works, occurring over many years.

Submission number(s)

9 and 150.

MIC response

The IMT would be constructed progressively in line with market demand. Construction of each phase of development would commence only once it can be demonstrated that there is sufficient demand for additional IMT capacity.

Therefore, as shown in Figure 8.3 in Chapter 8 – *Project development phasing and construction* of the EIS, and in Figure 7.3 of Chapter 7 – *Proposed amendments to the development* of this report, construction would not be continuous, but rather phased up until 2030. There will be significant periods of time when no construction activity would occur. The proposed construction activity described in Section 7.5 of this report avoids the need for land disturbance/impacts prior to there being the need/demand for the next phase of the IMT and the intensity of construction activities would be reduced (i.e. intensity of impacts would be greater if the entire IMT was constructed at one time).

6.6 Traffic, transport and access

Many submissions raised concerns relating to the traffic transport and access impacts of the Project. This included impacts on local roads and major arterials and the associated social, environmental and economic impacts. These are discussed below:

6.6.1 Impacts on local roads

Submitters raised concerns about the traffic and congestion impacts on local roads including Cambridge Avenue, Newbridge Road, Moorebank Road, Nuwarra Road, Anzac Road, Wattle Grove Drive and Heathcoat Road. There is also some concern that drivers will use local roads and suburbs to avoid congestion on the M5 Motorway (i.e. rat runs).

Questions were raised around the upgrades required for local roads and whether these would be provided as part of the Project. In particular, a number of submitters questioned why no upgrades have been proposed for Cambridge Avenue. One submitter (90) suggested upgrading Cambridge Avenue to a four lane road to cater for an increase in light vehicle traffic.

Submission number(s)

1, 3, 7, 10, 90, 95, 96, 98, 99, 100,105, 115, form letter 2, 142, 153, 178, 224, 208, 237 and 239.

MIC response

The traffic impacts of the Project have been assessed as detailed in Chapter 11 – *Traffic, transport and access* and Technical Paper 1 – *Traffic, Transport and Accessibility Impact Assessment* of the EIS. The traffic study was undertaking in consultation with and input from TfNSW and RMS. An independent peer review of Technical Paper 1 – *Traffic, Transport and Accessibility Impact Assessment* has been undertaken and a letter endorsing the technical paper and the approach is included in Appendix G of the EIS (Volume 2).

Traffic impacts on the wider network, including local roads have been assessed using intersection performance modelling software (Signalised and unsignalised Intersection Design and Research Aid (SIDRA)) for a number of intersections within and surrounding the Project site including the:

- Hume Highway and Orange Grove Road;
- Hume Highway and Elizabeth Drive;
- Hume Highway and Memorial Avenue;
- Hume Highway, Hoxton Park Road and Macquarie Street;
- Hume Highway and Reilly Street;
- Moorebank Avenue and Newbridge Road;
- Moorebank Avenue and Heathcote Road;
- Moorebank Avenue and Industrial Park Access;
- Moorebank Avenue and Church Road;
- Heathcote Road, Wattle Grove Road and Nuwarra Road;
- Newbridge Road and Nuwarra Road;
- Newbridge Road, Governor Macquarie Drive and Brickmakers Drive;
- Moorebank Avenue and M5 Motorway interchange;
- Hume Highway and M5 Motorway interchange;
- Cambridge Avenue, Canterbury Road, Glenfield Road and Railway Parade;
- Moorebank Avenue and Bapaume Road;

- Moorebank Avenue and Anzac Road;
- Moorebank Avenue and Defence Support access;
- Moorebank Avenue and DNSDC access;
- Moorebank Avenue and Chatham Avenue; and
- Moorebank Avenue and proposed Moorebank IMT accesses.

The SIDRA modelling rates intersection performance based on a Level of Service (LoS). Table 6.1 below shows this LoS criteria (also found in Table 11.2 in Chapter 11 – *Traffic, transport and access* of the EIS.

Table 6.1 LoS criteria for intersections

LoS	Average delay (seconds per vehicle)	Traffic signals, roundabout	Give-way and stop signs
A	Less than 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	Greater than 71	Unsatisfactory with excessive queuing.	Unsatisfactory with excessive queuing; requires other control mode.

Source: RMS *Guide to Traffic Generating Developments*, Version 2.2, 2002

The results of the modelling are provided in Table 11.16 of Chapter 11 – *Traffic, transport and access* of the EIS. MIC acknowledges that the traffic modelling shows road network upgrades would be required to maintain all intersections in the vicinity of the Project site to an acceptable level of service, except the Hume Highway and Reilly Street intersection and Moorebank Avenue and M5 Motorway interchange. These upgrades are required to accommodate future background traffic growth (without the Project); however, there are no significant changes to intersection performance between the 'with and 'without' Project scenarios as the network in 2030 is predicated to be congested based on background growth associated with urban and population growth in the region.

As noted in section 6.1.5, further investigations have been conducted to identify measures required to mitigate the impact of traffic generated from the Project on intersections in the surrounding area. The results of this investigation are presented in Chapter 7 – *Proposed amendments to the development* of this report and the revised Traffic Impact Assessment (revised TIA) provided in Appendix E of this report. This assessment has determined the level of service that the affected intersections will operate at with and without the Project traffic. The analysis additionally shows for each affected intersection what treatment would be required by when, to ensure that for intersections operating at below LoS D, the 'with Moorebank' performance at 2030 is maintained at or below the 'without Moorebank' LoS. This assessment has determined whether the intersections will operate better or worse than without Project traffic. MIC is in the process of discussing the results of the traffic impact assessment with TfNSW and

RMS and if agreed will contribute to the cost of intersection upgrades in proportion to the extent that the Project contributes to the traffic through that intersection.

The upgrade of Cambridge Avenue is not being considered as part of the Project as the traffic modelling concluded that only low volumes of light vehicles associated with staff movement would use Cambridge Avenue to access the Project site. Access into and out of the Moorebank terminal site will be via the intersection of Moorebank Avenue and Anzac Road. The intersection will be signalised with physical barriers to prevent heavy vehicles from turning right onto Moorebank Avenue. This will force all vehicles particularly heavy vehicles to turn left onto Moorebank Avenue to access the M5 Motorway/ Hume Highway. Similar measures will prevent trucks from entering the site from the south along Moorebank Avenue. As such, trucks associated with the terminal will be unable to access the southern end of Moorebank Avenue and Cambridge Avenue. In the event of an accident on the M5 Motorway/ Moorebank Avenue north of the terminal, the terminal will need to shut down until the traffic is cleared.

Section 11.2.1 of Chapter 11 – *Traffic, transport and access* of the EIS notes that a number of 'rat-runs' have developed through the area to avoid the M5 Motorway. In particular, turning volumes from Cambridge Avenue to Moorebank Avenue indicate it is used as an alternative to the M5 Motorway for access from the Hume Highway and suburbs further south. In addition, Anzac Road may be used to access Heathcote Road to avoid using the M5 Motorway. While MIC recognises the use of these local roads will continue into the future, the IMT will be subject to road network restrictions that will require all truck traffic to access the site via Moorebank Avenue from the north. Travel along Moorebank Avenue and Cambridge Avenue for heavy vehicles would be prevented through intersection design and road rules. Light traffic, including staff vehicles, may access the wider network, depending on the origins of light freight and IMT employees, however the impacts are not likely to be significant.

More extensive modelling is currently being planned (to be undertaken and reported as part of the Stage 2 SSD application) to examine rat running and the changes to traffic routes as a result of the presence of Project traffic on the network. This modelling will identify what mitigation measures are required to reduce the likelihood of rat running through residential areas. For truck traffic, MIC is proposing to introduce a ban on heavy vehicles (except for access) along the eastern section of Anzac Road. Details of the form of this control are to be confirmed.

6.6.2 Traffic impacts on the M5 Motorway

The following concerns were raised in relation to the traffic impacts on the M5 Motorway:

- Concerned with existing traffic levels on the M5 Motorway and the impact the Project will have on traffic congestion.
- Concerned trucks will ‘bank up’ along the M5 Motorway.
- Concerned the Project will result in more trucks on the M5 Motorway than without the Project.

Submission number(s)

3, 51, 54, 72, 75, 81, 100, 105, 108, form letter 2, 213, 230 and 235.

MIC response

The Project would result in an increase in trucks travelling along the M5 Motorway during both construction and operation of the Project. As illustrated in Figure 6.6 and Figure 6.7 of Technical Paper 1 (EIS Volume 3) – *Traffic, Transport and Accessibility Impact Assessment*, it is anticipated that around 65% of the truck traffic from the Project would use the M5 Motorway to the west of Moorebank Avenue. MIC recognises that this part of the M5 Motorway is forecast to experience congestion resulting from background traffic growth and the inadequate weave distance between Moorebank Avenue and the Hume Highway without the presence of Project traffic. MIC is cooperating with TfNSW in its consideration of potential solutions to this and other regional traffic issues caused by the general growth in traffic. More sophisticated traffic modelling is being prepared to investigate this issue in greater detail.

The results of the traffic modelling presented in section 11.4.3 of Chapter 11 – *Traffic, transport and access* of the EIS show that the increase in traffic volumes on the M5 Motorway (between Heathcote Road and the Hume Highway) due to the Moorebank development is less than 3% of total M5 Motorway traffic during the 2030 AM and PM peak hours. This modelling considers predicted traffic growth of the region until 2030. The contribution of Project traffic to future M5 Motorway traffic is detailed in Table 6.6 of Technical Paper 1 – *Traffic, Transport and Accessibility Impact Assessment*. The impact on the operation of the network and traffic conditions on the strategic road network would be examined in greater detail at the next stage of approval (Stage 2 SSD application) once further details of the Project layout and phasing are confirmed.

The number of trucks on the M5 Motorway to the west of Moorebank Avenue will increase with the Project, however, as illustrated in Figure 6.3 of *Technical Paper 1 – Traffic, Transport and Accessibility Impact Assessment,* the Project also removes a significant number of truck movements from other parts of the Sydney road network which benefits users of the M5 Motorway east and M4 Motorway in particular.

6.6.3 Impacts on the Hume Highway

Some submissions argue that the Hume Highway is already congested and are concerned that the Project will increase congestion on this road corridor.

Some submissions argue that the Hume Highway in Liverpool has the worst accident spot in the area and that, as the EIS shows, 25% of all trucks will travel through this ‘accident spot’.

Submission number(s)

4, 81, 223 and 224.

MIC response

As presented in Figure 6.11 of Technical Paper 1 – *Traffic, Transport and Accessibility Impact Assessment,* the majority of the intersections along the Hume Highway are suffering from traffic congestion in 2030 even without the presence of Project traffic. The impact of Project traffic on the Hume Highway traffic is demonstrated in Figure 6.12 and Figure 6.13 of Technical Paper 1 – *Traffic, Transport and Accessibility Impact Assessment*. Elizabeth Drive, Hoxton Park Drive and Reilly Street are all forecast to be over capacity in the AM peak hour of 2030, even without the Project. The results suggest there would be minimal changes to the AM and PM performance of the Hume Highway intersections, and additional capacity would be required at all intersections to cater for future traffic growth.

As noted in section 6.1.5 investigations are currently underway to identify the measures required to mitigate the impact of Project traffic on intersections in the surrounding area. These investigations will determine the intersections that will deteriorate as a result of the Project (and those that will be unaffected). Should the intersections require extra mitigation measures to resolve congestion caused by the Project, MIC will discuss these with TfNSW and RMS and, if agreed, will contribute to the cost of these upgrades (in proportion to the extent that the Project contributes to the traffic through that intersection.

The presence of an accident blackspot on the Hume Highway is an issue for the RMS to resolve and MIC would work with the RMS in support of any safety treatment proposed.

6.6.4 Traffic congestion

Many submissions made a general comment about existing traffic congestion and the impacts the Project will have on traffic congestion on local roads and major arterials. Some submissions were concerned that traffic congestion would be 'moved' from Port Botany to Moorebank.

Some submissions noted that previous statements from Labour Minister Anthony Albanese claimed that the Moorebank IMT would take trucks off the M5 Motorway.

Submission number(s)

11, form letter 1, 16, 18, 23, 31, 40, 50, 58, 60, 65, 67, 68, 71, 74, 75, 77, 85, 90, 93, 97, 99, 109, 114, 117,118, 119, 130, 131, form letter 2, 136, 141, 142, 147, 148, 153, 154, 155, 156, 159, 162, 175, 178, 197, 206, 208, 210, 211, 216, 219, 220, 221, 222, 224, 228, 232, 233, 236, 237, 238, 239 and form letter 3.

MIC response

MIC recognises there are existing traffic congestion issues along some of the local roads and regional arterials within the vicinity of the Project. In particular, the M5 Motorway near the Moorebank Avenue interchange acts as a bottleneck within the motorway network. This is an issue outside of the scope of this Project and needs to be addressed on a regional basis.

Truck movements from the IMEX and interstate operations are not new trips. Without the Project, these movements would be associated with trips taken to and from Port Botany and, therefore, would already be on the highway network.

Analysis of existing (2014) intersection performances indicates that intersections along Moorebank Avenue between Cambridge Avenue and the M5 Motorway are already near or at capacity. Future year background traffic growth on Moorebank Avenue resulting in increased traffic volumes on Moorebank Avenue would also result in deterioration in intersection performance. MIC recognises that the Project would place additional pressure on existing intersections along Moorebank Avenue and as such an upgrade to Moorebank Avenue between the M5 Motorway and Anzac Road is included as part of the Project.

As explained within Chapter 11 – *Traffic, transport and access* of the EIS, the Project is predicted to result in reductions in vehicle kilometres travelled (VKT) on the Sydney regional road network. By transferring freight movements to the Project site by rail for distribution, the regional network would experience reductions of approximately 56,125 truck VKT a day and 1,265 truck vehicle hours travelled a day. This is also expected to contribute to reducing heavy vehicle-related crashes.

A revised Traffic Impact Assessment (revised TIA) report is presented in Appendix E and the results are discussed in section 7.9.3. This revised TIA presents the changes in traffic impacts as a result of changes to the proposed development (these changes are presented in section 7.4 to 7.6 of this report). In addition to the proposed amendments to the development, further research into intermodal operations has resulted in modifications to some of the underlying assumptions about the rates of traffic generation. As a result, although the components of the development at 2030 are consistent with those in the EIS, the level of traffic generation has changed, for example the peak generation has increased slightly, but overall daily traffic generation has reduced.

As noted in section 6.6.1, additional modelling investigations are currently underway to identify measures required to mitigate the impact of traffic generated from the Project on intersections in the surrounding area. These investigations aim to ensure the intersections would operate no worse than they would without the Project. Should the intersections require extra mitigation measures to resolve congestion caused by the Project, MIC will discuss these with TfNSW and RMS and if agreed will contribute to the cost of these upgrades (in proportion to the extent that the Project contribute to the traffic through that intersection).

6.6.5 Traffic safety issues

The following comments were made on traffic safety:

- Concerned with trucks 'weaving' onto and off the M5 Motorway, causing a 'black spot' when driving which could be fatal.
- Concerned with trucks parking and using local roads will make the area unsafe.
- Concerned there will be additional westbound heavy vehicles travelling from Moorebank Avenue and moving right onto the M5 Motorway on an uphill grade, while westbound M5 Motorway traffic would be crossing the same lanes to exit the Hume Highway.
- Concerned with traffic queues on Moorebank Avenue from trucks waiting for arrival time slots.

Submission number(s)

Form letter 1, 60, 77, 78, 108, 115, form letter 2, 137, 142, 153, 160, 162, 206, 210, 217, 219, 220, 221, 222, 224 and 234.

MIC response

In response to the 'weaving' issue on the M5 Motorway, refer to MIC's response in section 6.6.2.

The indicative IMT layout provides a truck parking and holding area on site to accommodate up to 25 trucks, to serve as a layover facility for trucks that arrive early and need to wait for their allocated time slot. This would avoid the need for trucks to queue on Moorebank Avenue.

For truck traffic, MIC is proposing to introduce a ban on heavy vehicles (except for access) along the eastern section of Anzac Road. Details of the form of this control will be discussed with LCC and RMS and are yet to be confirmed.

6.6.6 Traffic impacts on Moorebank Avenue/M5 Motorway intersection

Two submissions raised general concerns relating to the traffic impacts on the Moorebank Avenue/ M5 Motorway intersection.

Submission number(s)

25 and 108.

MIC response

Section 11.4.3 of Chapter 11 – *Traffic, transport and access* of the EIS shows the results of the modelling of the Moorebank Avenue/M5 Motorway intersection. The intersection would operate at a LoS of B (good with acceptable delays and spare capacity) during the AM peak with or without the Project, and at a LoS of C (satisfactory) during PM peak with or without the Project. As such, no mitigation measures are considered necessary.

As noted in the sections above, additional investigations are being undertaken to identify the measures required to mitigate the impact of Project traffic on intersections in the surrounding area.

6.6.7 Traffic impacts as a result of trucks

A number of submissions raised concerns relating to the impacts of trucks using local and regional arterial roads. Submissions discussed matters including traffic congestion, safety issues and other impacts such as noise and air emissions.

Submission number(s)

31, 58, 63, 67, 97, 100, 105, 108, 115 and 208.

MIC response

These issues have been discussed in detail under other transport related sub-issues including 'traffic congestion', traffic safety issues' as well as issues related to noise and vibration and local air quality (refer to section 6.6.4, section 6.6.5, section 6.7 and 6.11 in this report).

More extensive modelling is currently being planned (to be undertaken and reported as part of the Stage 2 SSD applications) to examine the issue of 'rat running' and the changes to traffic routes as a result of the Project. This modelling will identify what mitigation measures will be required to reduce rat running through residential areas. For truck traffic, MIC is proposing to introduce a ban on heavy vehicles (except for access) along the eastern section of Anzac Road. Details of the form of this control are to be confirmed.

As noted in the sections above, additional investigations are being undertaken to identify the measures required to mitigate the impact of Project traffic on intersections in the surrounding area.

6.6.8 Impact on travel times

Some submissions were concerned there would be increased waiting and travel time for commuters and workers, resulting in flow on social impacts.

Submission number(s)

55, 93, 161 and 237.

MIC response

MIC acknowledges that increases in travel time as a result of traffic congestion can have negative social and economic impacts to individuals, the local community and businesses. However, as discussed in section 6.6.4 in this report, there are already congestion issues on both local and regional arterials in the vicinity of the Project site and these issues need to be addressed on a regional basis which is outside of the scope for the EIS. The Project is expected to reduce VKTs on the Sydney regional road network which in turn will benefit traffic flow on major Sydney arterials.

6.6.9 Traffic impacts on emergency services

Three submissions argued that increased congestion would reduce the ability of emergency vehicles to respond to emergencies in a timely manner.

Submission number(s)

71, 81 and 228.

MIC response

The proposed upgrade of Moorebank Avenue as part of the Project and the reduction in VKT by trucks on the Sydney Road network; should have a positive impact on overall road safety and should reduce the likelihood of vehicle accidents.

In terms of response to incidents, most regional arterials including Sydney's motorways have shoulders or dedicated emergency lanes that can be used by emergency vehicles responding to an incident. This avoids these vehicles being caught in traffic. As a result, the Project would not impact emergency vehicle response.

For the works on Moorebank Avenue, an emergency response plan would be prepared to ensure all emergency vehicles have access to the Project site at all times and to provide for emergency vehicles that currently use Moorebank Avenue as a transport route.

6.6.10 Traffic impacts on the M7 Motorway

Two submissions were concerned with the existing traffic levels and the impact the Project would have on congestion on the M7 Motorway.

Submission number(s)

75 and 81.

MIC response

As discussed in section 11.4.2 of Chapter 11 – *Traffic, transport and access* of the EIS, while an increase in articulated truck flows is expected on the M7 Motorway, based on the modelling undertaken for the EIS, only a small impact on vehicle speeds is expected. The addition of approximately 80 trucks per hour onto the M7 Motorway is unlikely to have a noticeable impact on congestion experienced on the motorway.

6.6.11 Impacts on public transport/opportunities for improvements

Some submissions note that the Project site has no access to passenger rail and that IMT staff would be required to drive to work. One submission (90) suggests a public bus service should be introduced to travel via Moorebank Avenue to suburbs further south to reduce southbound traffic.

Submission 196 also suggests that a bus service should be provided between Moorebank Avenue and Liverpool Station to provide for workers from the terminal.

Some submissions request confirmation on whether the Project would impact on the passenger rail line and travel times for passengers.

Submission number(s)

90, 142, 147, 196 and 237.

MIC response

Pedestrians using public bus services that stop along Moorebank Avenue would be catered for during the construction of the Project through negotiations with bus operators and with consideration of safety issues.

It is acknowledged the site does not have direct access to passenger rail. As such, MIC would consider the need for, and viability of, establishing a proponent-funded bus service at the Stage 2 SSD application process.

Staff movements associated with operation of the terminal occur outside of the AM and PM peak hours which subsequently reduces the need for enhanced public transport links.

As noted in section 23.2.4 of Chapter 23 – *Property and infrastructure* of the EIS, there would be no impact on the operation of the passenger rail lines. The passenger rail line is located to the west of the SSFL and is completely separate from it.

6.6.12 Timing of traffic surveys and peaks

Three submissions raised concern about the traffic surveys. These are as follows:

- Form letter 2 and submission 142 states that intersection surveys were undertaken on Tuesday 7 December 2010 and Tuesday 18 March 2014 in peak hours only. Concerned that both surveys were undertaken on the same days and the December survey was near a holiday.
- Submission 90 suggests that PM peak starts at around 2.30 pm and not 4.00 pm. Suggests the timing is inconsistent with the 'shifts' of the proposed IMT where there is a 'shift' change at 2.00 pm.

Submission number(s)

90, form letter 2 and 142.

MIC response

The surveys are used primarily to obtain the traffic counts that produce the observed levels of congestion and traffic queues to validate and calibrate the traffic models accordingly. This process provides confidence that the resulting intersection modelling accurately reflects the forecast congestion. The RMS collects data throughout the year at numerous count stations around Sydney. At the time of preparing the Traffic Impact Assessment for the EIS, the data requirements for analysis resulted in the decision to use December traffic counts rather than delay the counts until February or March. December counts are not typically used as the monthly traffic flow is higher than average. In many respects, using the data from December represents a conservative assessment adding traffic to an above average baseline. Data suggests that particularly low flows are experienced in the last week of December and early January.

Additional modelling work is being planned (to be undertaken and reported as part of the Stage 2 SSD application) which will require the data collection process to be repeated over a larger geographic area. These new traffic surveys will comprise 24 hours of data collection.

The surveys conducted for the EIS is based around the RMS requirement to consider the impact on the surrounding road network for the AM and PM peak hours. Analysis of the traffic profiles indicates the shift change at 2.00 pm occurs when the background traffic is relatively light. As such, the traffic generated when the background traffic is high represents the busiest time on the network. As discussed above, the next round of analysis will be associated with 24 hour traffic counts so this off peak analysis can be undertaken if required by RMS.

6.6.13 Restriction on southbound heavy vehicle movements during construction

One submission notes that during operation of the IMT, it is proposed to introduce a restriction on southbound heavy vehicle movements from the Project site. The submission suggests that similar restrictions should be imposed for the construction period.

Submission number(s)

90.

MIC response

Construction traffic will be managed through a Construction Traffic Management Plan (CTMP). These plans commonly include restrictions on when traffic can enter and leave the site and the routes heavy vehicles must use. The details of the construction process and sequence are currently not known and so the details of the truck movements are conceptual only. The CTMP will be finalised and agreed with LCC, TFNSW and RMS and would reflect their requirements to protect the local community and network operation for the temporary duration of the construction process. The CTMP will be further developed as part of Stage 2 SSD applications.

6.6.14 Opportunity for a bridge over Georges River

One submission argues that as the Casula railway station lies opposite the proposed IMT site, that a bridge over the Georges River would be suitable (if the site was used for a residential suburb or alternative use as an industrial park).

Submission number(s)

98.

MIC response

Assessing this option is outside the scope of the EIS. As discussed in section 6.4.3, development of the site for residential purposes is not feasible and would create additional impacts particularly in relation to traffic generation.

6.6.15 Adequacy of traffic assessment

The following issues were raised regarding the adequacy of the traffic impact assessment:

- Modelling:
  - > Suggestions that the modelling does not include the predicted growth of the region.
  - > Questions about how the EIS arrived at the 3% figure for the increase in traffic volumes on the M5 Motorway.
  - > Discrepancies identified in the modelling approach between SIMTA and this Project.
- Figures:
  - > Some submissions argued that 8,160 heavy vehicles and 5,724 light vehicle trips referenced in the EIS (with the Project at Full Build in 2030) is too low.
  - > Some submissions argued traffic volumes are underestimated.

Submission number(s)

10, form letter 1, 60, 77, 81,100, 119, form letter 2, 142,153, 175, 210, 212, 219, 220, 221, 222, 223 and 224.

MIC response

The modelling undertaken for the EIS did take into account regional traffic growth. As explained in section 6.3.4 and presented in Table 6.8 of Technical Paper 1 – *Traffic, Transport and Accessibility Impact Assessment* (Volume 3 of the EIS), the modelling used growth rates supplied by RMS for the network in the vicinity of the Project site. These annual RMS growth rates reflect RMS' view on how the traffic will grow in the vicinity of the Project site in response to new developments and population increases. These growth rates were applied to the observed traffic counts, the majority of which were collected in 2014.

The derivation of the total change in M5 Motorway traffic is detailed in section 6.3.2 of Technical Paper 1 – *Traffic, Transport and Accessibility Impact Assessment*. The total generated traffic from the Project when compared to the forecast increase in background M5 Motorway traffic represents an increase of no more than 3% in either of the peak hours.

The SIMTA traffic analysis was undertaken by a different consultant modelling a different operation and so discrepancies are to be expected. Overall the two proposals are different. The Moorebank IMT proposal includes an interstate intermodal operation which is not included in the SIMTA development. There are differences in the assumed operation of the terminal and warehouses which impact on traffic. For example, MIC envisages a relatively uniform distribution of traffic over a 24 hour period, while SIMTA has assumed a higher concentration of traffic around specific peaks. The assessments undertaken for the Moorebank IMT EIS were conservative in their assumptions regarding container to pallet loading on trucks, while the SIMTA assessments have used a different approach based on their industry experience. While the daily totals of generated traffic between the Moorebank and SIMTA projects are different (for like terminal infrastructure), the AM and PM peak hour volumes are very similar.

Given the agreement between MIC and SIMTA to develop a precinct solution for Moorebank, as discussed in section 6.4.6, further research into the intermodal operations has resulted in modification to some of the underlying assumptions about the rates of traffic generation. As a result, levels of traffic generation had changed, these modifications are discussed in section 7.9.3.

In relation to traffic volumes, a key determinant of the rate of traffic generated per unit of warehousing floorspace is the nature of the warehousing that is expected to operate on the IMT site. The proposed warehouses would have a direct relationship and access to the container terminal and it is expected that this facility will be attractive to major distribution centres similar to the Big W distribution centre at Hoxton Park. These major distribution warehouses are not associated with the movement of small vans as they deal with the bulk movement of freight across their distribution chain. The assumed daily trip generation from warehouses is similar to the generation rates observed at the Big W distribution centre at Hoxton Park. The goods are moved by rigid or articulated vehicles only.

6.6.16 Potential spills during construction and operation

Two submissions were concerned about the safety issues as a result of potential spills during construction and operation.

Submission number(s)

108 and 211.

MIC response

Chapter 14 – *Hazards and risks* of the EIS identifies and assesses the potential hazards and risks arising from construction and operation of the Project. Spills/leaks of flammable and combustible liquids during transportation are identified as a potential risk. Measures to mitigate the risks are outlined in section 14.6 of Chapter 14 – *Hazards and risks* of the EIS and include:

- materials would be transported according to the Australian Dangerous Goods (ADG) Code and relevant standards and regulations; and
- contractors delivering Liquefied natural gas (LNG) and Liquefied Petroleum Gas (LPG) would be trained, competent and certified by the relevant authorities.

6.6.17 Degradation of road assets (pavements and bridge)

One submission was concerned about the potential for degradation of road assets.

Submission number(s)

108.

MIC response

MIC acknowledges that the increase in truck numbers may result in increased asset degradation; however, it is expected that the majority of truck movements will be on RMS roads which are designed to cater for truck movements. The impact of Project truck movements on local council owned roads will be assessed in detail in the next round of detailed traffic assessment, as part of the Stage 2 SSD approval application.

6.6.18 Traffic impact on the WestConnex project in combination with this Project

Some submissions stated that traffic figures do not take into account the WestConnex project and the implications on the M5 Motorway during construction.

Submission number(s)

Form letter 2, 142 and 224.

MIC response

WestConnex is included in the future year analysis as described in Chapter 5 of *Technical Paper 1 – Traffic, Transport and Accessibility Impact Assessment* (Volume 4) of the EIS. The road improvements assumed to occur by 2031 are presented in Table 5.2 which indicates that WestConnex is assumed to be operational in 2021.

6.6.19 Traffic impacts – general

There were general concerns in submissions regarding traffic impacts as a result of the Project.

Submission number(s)

1, 2, 5, 6, 10, 11, 36, 52, 56, 59, 73, 81, 95, 102, 103, 128, 137, 171,180, 185, 189, 190, 191, 212, 213, 214, 218, 226 and 234.

MIC response

The potential traffic impacts of the Project are discussed in detail in Chapter 11 – *Traffic, transport and access* of the EIS. These impacts were subsequently updated as presented in Chapter 7 – *Proposed amendments to the development* of this report in section 7.9.3.

As identified in Table 29.6 of Chapter 29 – *Environmental risk analysis* of the EIS, the traffic impacts of the Project (unmitigated) are likely to be moderate to high. This rating is acknowledging the expected increased traffic volumes from construction and operation and the associated impacts on the M5 Motorway and local roads. A number of mitigation measures are proposed and revised management of traffic and mitigation measures are presented in Table 9.1 of this report. Implementation of these measures, it is expected to reduce the overall impacts to 'low-moderate'.

6.6.20 Benefits to toll operators on the M7 Motorway

The Project would result in freight travelling by rail to Moorebank and then via the M7 Motorway up to Eastern Creek. Two submission questions whether a 'deal has been done' with the operators of the privately owned toll road.

Submission number(s)

223 and 224.

MIC response

MIC has not engaged in any discussion or negotiations with toll operators regarding the use of the M7 Motorway.

6.6.21 Impacts of induced traffic

Submission 224 argues the induced traffic that occurs between warehouses has not been included in the EIS.

Submission number(s)

224.

MIC response

All the traffic directly associated with the Project has been included in the assessment. Should other developments occur elsewhere in Sydney, these projects would be subject to separate assessment and approval. MIC is committed to complying with the Commonwealth and NSW regulatory requirements; however, assessment of (as yet unidentified) induced developments is outside of the scope of the EIS.

6.7 Noise and vibration impacts

Many submissions were concerned about the noise impacts of the Project, during both the construction and operational phases. The issues raised and MIC's response is provided below.

6.7.1 Noise impacts – general

A number of general concerns were raised about the noise impacts of the Project. Issues included:

- proximity of residential receptors to IMT;
- exceedance of noise assessment criteria; and
- noise impacts on the community – health and lifestyle.

Submission number(s)

5, 6, 9, 10, 11, 36, 45, 56, 59, 74, 87, 93, 96, 102, 109, 117, 128, 139, 153, 185, 191, 201, 206, 214, 234 and 238.

MIC response

It is acknowledged that a number of residents live close to the Project site and there is a concern regarding exceedance of noise assessment criteria and the impacts this has on health and lifestyle. Construction and operation noise from the Project would be regulated through the Project approvals (Stage 1 and Stage 2 SSD approvals) and in accordance to relevant acoustic legislation, policy and guidelines (including the NSW *Industrial Noise Policy*, the NSW *Road Noise Policy and the Interim Construction Noise Guideline*). The regulations have been developed to control noise levels in order to manage potential health impacts on the community.

To minimise noise emissions and comply with the Project approval and regulations, the Project would be designed and constructed with reasonable and feasible noise mitigation measures to control noise emissions within the surrounding communities. A number of noise mitigation measures were presented in the EIS and have been updated in Table 9.1 of this report. The appropriateness of the noise mitigation measures will be further assessed during the Stage 2 SSD applications, once the detailed design is developed and the mitigation measures can be adopted to reflect the final design.

6.7.2 Noise impacts at night

A number of submissions were concerned about the impact of IMT operations at night, arguing the Project has the potential to cause sleep disturbance.

Submission number(s)

Form letter 1, 25, 43, form letter 2, 142, 210, 212, 216, 217,219, 220, 221, 222, 228 and 237.

MIC response

As discussed in section 12.5 of Chapter 12 – *Noise and vibration* of the EIS, operations on the main IMT site were predicted to comply with sleep disturbance objectives at the nearest receptors in Casula, Wattle Grove and Glenfield. In regard to sleep disturbance caused by IMEX and interstate train movements on the rail access connection, the maximum noise levels are predicted to be within 80 dB(A) L_{Amax} (the commonly used maximum noise objective for rail) at the nearest receptors in Casula, Wattle Grove and Glenfield for the southern rail access connection layouts. As the southern rail access option is now the preferred option, impacts of the other rail access options (northern and central) have not been discussed further.

The design and construction of the Project will include measures to reduce and control night-time noise levels and specifically control noise from short lived or high noise events which may otherwise have the potential to disturb sleep (refer to section 12.4 of Chapter 12 – *Noise and vibration* of the EIS).

6.7.3 Noise impacts from IMT operations

Some submissions made particular comments on IMT operations, referring to specific activities that have the potential to generate noise. These are as follows:

- Concern with impacts from unloading/loading and movement of containers and locomotives idling.
- Concern with noise from the movement, breaking and shunting of trains.
- Concern with impact from truck movements and reversing beepers.

Submission number(s)

4, Form letter 1, 43, 60, 91, 98, 130, form letter 2, 142, 147, 150, 201, 210, 217, 219, 220, 221, 222, 230, 233 and 236.

MIC response

The EIS considers noise from IMT operations on the Project site, including the potential noise from unloading/loading and movements of containers and the breaking and shunting of trains. Events such as breaking and shunting of trains and dropping of containers would occur intermittently and are not expected to be a significant contribution above all other operational noise sources. In addition, noise from trains idling within the IMT site would not be a significant contribution to noise concentrations over and above other sources such as the gantry cranes, intermodal vehicles and trucks. The EIS recommends the application of noise control measures such as broadband alarms to control noise from reversing beepers and one-way routes to reduce the need for vehicles to reverse. These measures and other best practice mitigation measures would be considered during the planning and design of the IMT and will be assessed further during the Stage 2 SSD application.

To minimise noise emissions and comply with the Project approvals (Stage 1 and Stage 2 SSD approvals) and regulations, the Project would be designed and constructed with reasonable and feasible noise mitigation measures to control noise emissions within the surrounding communities, as detailed in section 12.4 of Chapter 12 – *Noise and vibration* of the EIS and updated in table 9.1 of this report. The appropriateness of the noise mitigation measures will be further assessed during the State 2 SSD applications once the detailed design is developed and the mitigation measures can be adopted to reflect what will actually be built on the site.

6.7.4 Wheel squeal

Some submissions were concerned about the potential noise impacts of wheel squeal and argued that mitigation measures would not be effective in reducing impacts.

Submission number(s)

Form letter 1, 43, 60, form letter 2, 142, 201, 210, 211 and 237.

MIC response

Section 12.4.3 of Chapter 12 – *Noise and vibration* the EIS recommends a range of noise control measures to limit the potential for noise from wheel squeal, including designing the Project to avoid tight radius curves and implementing track greasing systems.

The EIS has presented reasonable and feasible noise mitigation measures to control noise emissions within the surrounding communities. Once the detailed design is developed, the appropriateness of the noise mitigation measures will be further considered and assessed during the Stage 2 SSD approval application process. The actual noise and mitigation measured adopted for the Project will be designed based on what will be built, the level of noise being omitted during construction and operation and best practice mitigation.

6.7.5 Adequacy of noise assessment

A number of submissions raised issues relating to the accuracy of the noise assessment, and in particular, noise predictions.

In addition, submission 43 argues the use of the word 'hypothetical' doesn't give the community confidence in the reliability of the predicted impacts.

Submission number(s)

43, 100, 105 and125.

MIC response

The EIS is seeking approval of a concept design, (as a Stage 1 SSD application) and as such, the noise mitigation scenario is presented as a hypothetical mitigation. The EIS has presented reasonable and feasible noise mitigation measures to control noise emissions within the surrounding communities. Once the detailed design is developed, the appropriateness of the noise mitigation measures will be further developed during the Stage 2 SSD approval application. The actual noise and mitigation measured adopted for the project will be designed based on what will be built, and the level of noise being omitted during construction and operation.

6.7.6 Accuracy and adequacy of identifying/locating sensitive receptors

Some submissions identify issues with the selection of sensitive receptors:

- There are a number of sensitive receivers within Casula, Glenfield and Wattle Grove; however, only one receiver in Casula was used for the basis of assessment.
- Buckland Road, Casula is neither near the northern rail access option or the central rail access option.
- Questions why Buckland Road, Casula was the only noise monitoring location selected.
- Form letter 2 argues that noise measurements have been taken from areas along train lines and major roads, and are not representative of nearby sensitive receptors in Casula, Wattle Grove and North Glenfield.
- Some submissions suggest that Lakewood Crescent is an ideal location to measure noise as it is near the SSFL, the M5 Motorway and the proposed northern rail access option.

Submission number(s)

43, form letter 2, 186 and 237.

MIC response

The noise and vibration assessment for the Project was undertaken by firstly establishing the existing background noise levels and then assessing the impacts of the Project (impact of adding the Project noise to the existing background noise levels).

The long term noise monitoring locations used for the noise impact assessment were selected after an initial site visit to identify areas within Casula, Wattle Grove and Glenfield that were considered representative of the quiet noise environments. That is, a location where noise from the surrounding road and rail networks was not significantly influencing the measured background noise levels. By measuring noise levels at the quietest noise environments, the noise assessment criteria and the assessment of potential impacts are considered to be representative for the most sensitive communities. Only one sensitive receiver (e.g. Buckland Road, Casula) is required to measure background noise levels and this location is considered representative of all sensitive receivers, hence multiple monitoring locations within each suburb are not necessary to define background noise levels.

The determination of background noise levels has been based on two years' of noise monitoring data which has provided a robust and reliable dataset to determine daytime, evening and night-time noise background levels in the surrounding environment.

In response to the comment stating noise measurements have been taken from background along train lines and major roads and are therefore not a good representative of sensitive receptors. The noise monitoring locations were taken from the nearest residential communities. As described above, impacts from the Project site will decrease with increased distance from the site. The modelled outputs considered a range of receptors including nearest receptors and other locations further away from the site. An assessment of the noise impacts at the closest receivers provides a conservative assessment of impacts further away.

Lakewood Crescent would not be an ideal location as background noise levels are to be measured at locations representative of the more sensitive (quietest) noise environments, not higher noise environments adjacent to transport corridors.

6.7.7 Adequacy and feasibility of mitigations

Submissions seek clarification on what mitigation measures would be provided for nearby residents to mitigate noise, how effective these would be and how these would be enforced. Some submissions seek clarification on what operational changes would result if exceedances are encountered as a result of the ongoing noise monitoring.

Some submissions argue there has been no mitigation for noise from the SSFL operation and question the government's commitment to provide mitigation for this Project.

Submission 237 notes the EIS states that noise limits would be exceeded occasionally on days with average meteorological conditions. Submission seeks clarification on what 'occasionally' means.

Submission 147 notes that no noise mitigation has been proposed on the eastern side of Moorebank Avenue.

Submission number(s)

43, 105, 147, 185, 186, 189, 190, 196, 213 and 237.

MIC response

As discussed in Chapter 12 – *Noise and vibration* and Technical Paper 2 (EIS Volume 3) – *Noise and Vibration Impact Assessment* of the EIS, a range of reasonable and feasible noise mitigation measures can be implemented to control noise from the IMT and the associated rail freight movements. These measures include limiting source noise emissions, impeding the propagation of noise from the site through barriers and addressing specific noise issues such as wheel squeal from the freight trains.

MIC recognises the importance of the proposed noise mitigation and the future operator of the IMT would be required to implement the measures as required by the Project approvals (Stage 1 and Stage 2 SSD approvals) and any conditions of approval.

In terms of enforcement, it will be a requirement of the IMT operator to undertake the necessary noise monitoring from construction and operations. If an exceedance is detected, it is normal practice to report the exceedance to the relevant regulatory authority. The IMT operator will need to investigate the exceedance and if the exceedance is attributed to site practices, modify the operations to ensure compliance is maintained.

MIC is unable to comment on the proposed mitigation and management for the SSFL operation. We understand that the SSFL was approved subject to certain mitigation and management, and that the required management has been implemented in order for the project to operate in accordance with its approval conditions.

In response to the comment regarding the reference to 'occasionally' in the summary of findings in Chapter 12 – *Noise and vibration*, the EIS assessed the noise impacts at neutral and adverse metrological conditions during Full Build, assuming a worst case scenario, with all plant and equipment operating simultaneously. The outcomes of the assessment determined that at Full Build of the Project in approximately 2030, without any noise mitigation and under neutral metrological conditions for all three layout options, noise levels from operations at the main IMT site are predicted to exceed the noise assessment criteria at the nearest residential receivers in Casula and Wattle Grove. However, depending on activities undertaken, it is not likely that all plant and equipment would be operating at the same time and therefore the exceedances are only likely to occur occasionally (i.e. on days with all plant and equipment operating simultaneously). If the appropriate noise mitigation measures are implemented, which will be further explored during the Stage 2 SSD approvals process, then the likelihood of an exceedance would be low.

In response to the comment regarding mitigation requirements to the east of Moorebank Avenue, findings from the Noise and Vibration Assessment (Chapter 12 – *Noise and vibration)* indicate that noise levels at all non-residential areas would comply with the amenity noise criteria. This includes receptors directly east of Moorebank Avenue (all of which are non-residential land uses directly east of Moorebank Avenue). As such, noise walls are not considered necessary or proposed to the east of Moorebank Avenue. Other mitigation measures as detailed in section 12.5 of Chapter 12 – *Noise and vibration* of the EIS and in Table 9.1 of this report would be considered and implemented during detailed design and construction and operation to mitigate noise impacts for receptors immediately adjacent to the site and nearby communities (i.e. Wattle Grove).

6.7.8 Noise impacts during the day for people needing to sleep

Submission 86 argues there a number of shift workers who live in the surrounding area and that these people need to sleep during the day. This submission expressed concern with the daytime noise impacts form the Project.

Submission number(s)

86.

MIC response

An assessment of potential sleep disturbance noise impacts for the night-time was undertaken in accordance with NSW Environmental Protection Agency (EPA) guidelines and the NSW *Industrial Noise Policy*. The assessment determined that noise levels from transient and high noise generating activities would be expected to comply with the sleep disturbance guidelines. The assessment identified a requirement to further assess potential sleep disturbance impacts from rail freight operations during the detailed design phase when the location of the rail access connection has been confirmed.

The assessment of noise impacts during the daytime period determined that with the implementation of appropriate noise mitigation, the NSW *Industrial Noise Policy* noise criteria would be achieved at the surrounding communities. As such the daytime noise levels would achieve the NSW *Industrial Noise Policy* objectives to minimise disturbance and preserve acoustic amenity within the community. There are no specific regulatory noise criteria for sleep disturbance during the daytime as the majority of people within residential communities are awake between the hours of 7.00 am and 6.00 pm.

The design and construction of the Project would include measures to reduce and control noise levels during the day and night time and specifically control noise from short lived or high noise events which may otherwise have the potential to disturb sleep.

6.7.9 Impacts on surrounding suburbs and further afield

Form letter 2, submission 41 and submission 175 argued that Casula, Wattle Grove and North Glenfield are the closest communities to the Project site, but that these communities would not be the only locations affected by noise.

These submissions state that residents around Port Botany living as far as 3 km from the Port are affected, noting that residents in Chifley have been very vocal about sleep disturbance. Form letter 2 provides the example that the noise surrounding Port Botany, which was previously thought to meet the noise criteria, in fact exceed the sleep disturbance criteria.

Submission number(s)

Form letter 2, 41 and 175.

MIC response

The noise impacts of the Project were assessed at the nearest residential communities. Impacts from the Project site will decrease with increased distance from the site. As such, an assessment of the noise impacts at the closest receivers provides a conservative assessment of impacts further away. The noise mitigation measures have been identified to mitigate noise at the nearest residential receivers and as such would also mitigate noise further afield.

MIC is not able to comment on management and mitigation of noise emissions from the Port Botany site. The operations at Port Botany are different to the operations proposed at Moorebank as such, a direct comparison between the two projects is not possible. The EIS has presented reasonable and feasible noise mitigation measures to control noise emissions from the Project. Once the detailed design is developed, the appropriateness of the noise mitigation measures will be further developed during the Stage 2 SSD applications.

6.7.10 Noise impacts on the community

A number of submissions note that noise can have health impacts including annoyance, sleep disturbance, performance issue, cardiovascular health problems, hearing problems and mental health and general health impacts.

Submission number(s)

Form letter 2.

MIC response

MIC acknowledges the community is concerned about noise and the potential health impacts this may cause. The impact of noise on the community has been considered and discussed within Chapter 25 – *Human health risks and impacts* of the EIS and Technical Paper 15 (EIS Volume 9) – *Human Health Risk Assessment* (HHRA) and Technical Paper 16 (EIS Volume 9) – *Health Impact Assessment* (HIA) of the EIS.

The regulatory policy and guidelines applied in the Noise and Vibration Impact Assessment (Technical Paper 2 – *Noise and Vibration Impact Assessment* – EIS Volume 3) of the EIS have been developed with a primary objective of minimising the potential health impacts from unwanted noise. The guidelines are identified in section 12.3.1 of Chapter 12 – *Noise and vibration* of the EIS. As such, the Project would be designed and constructed to comply with the noise regulations and any off site noise from the Project is expected to minimise the potential for human health issues.

6.8 Biodiversity

Issues raised through the community submissions relating to biodiversity and the impacts of the Project on flora and fauna are discussed in the following sections:

6.8.1 Impacts on flora and fauna

A number of submissions were concerned about the impact of the Project on the flora and fauna within the Project site and surrounding area. In particular, concerns included:

- General concern that native flora and fauna would be impacted during construction and operation of the IMT. Submissions argue there are many wildlife species within Georges River and surroundings.
- Submissions argue the clearing of vegetation would have a significant adverse impact on vegetation including the riparian zone. Clearing would result in a significant loss of high value and intact vegetation and biodiversity.
- Some submissions argue the bridge piers would likely impact on vegetation connectivity, however, have not been considered in the connectively assessment.
- Some submissions argue there is no commitment to replace habitat lost from the removal of the existing detention basins and the EIS recommends exploring this at detailed design.
- Some submissions request confirmation that the offsets proposed would be provided – how will this be secured?
- Some submissions argue that flora and fauna to the west of the Georges River could be impacted through vibration, noise and disturbances.
- Some submissions state there is a lack of protection for Cumberland Plain Woodland.
- Some submissions argue that mitigation should be considered and agreed as part of this process.

In addition to the general comments provided above, specific comments provided by individual submissions included:

- Submission 150 argues the EIS lacks detail around the indirect impacts (i.e. impacts on the roosting and feeding habits of fauna species, impacts as a result of fine particles in the water).
- Submission 194 argues that no surveys have been undertaken for aquatic habitat and aquatic threatened species. Information relied on in the EIS is from previous studies. EIS assumes that aquatic habitat is in a degraded condition and native species are likely to be disturbance tolerant. Submission questions this assumption.

- Submission 194 notes that offsets proposed for the Alluvial Woodland (0.6 to 0.9:1) falls below the acceptable ratio of 2:1 to 2.6:1.
- Submission 194 notes that two plant species listed under the Commonwealth *Environment Protection and Biodiversity Act 1999* (EPBC Act) would be impacted: *Persoonia nutans*; and *Grevillia parviflora*. There are also other species with a moderate likelihood of occurrence at the site. The EIS states that translocation would be considered during detailed design. Submission argues this should be considered as part of the proposal concept.
- Submission 194 argues there are inconsistent statements in the EIS as section 3.5.2 states that there is low to moderate chance of threatened plant species occurring in the rail options; however the other sections note that the riparian zone contains threatened vegetation communities.

Submission number(s)

4, 9, form letter 1, 51, 87, 93, 142, 150, 153, 171, 178, 185, 194, 210, 212, 214, 228, 237 and 238.

MIC response

Chapter 13 – *Biodiversity* of the EIS provides a summary of the potential impacts on the existing biodiversity within and surrounding the Project, which is based on the findings of the Ecological Impact Assessment contained in Volume 4 of the EIS. The Project will result in vegetation clearing and habitation disturbance, the impacts of which are irreversible. Table 29.6 in Chapter 29 – *Environmental risk analysis* of the EIS identifies that without any mitigation the consequence of the impacts are major, however, the impacts are expected to reduce to 'moderate' if the mitigation measures as detailed in the EIS and updated in Table 9.1 of this report are put in place. This includes: retention of the conservation area along the Georges River; measures to minimise the likelihood of flora and fauna injury or mortality identified and implemented as part of the Construction Environmental Management Plan (CEMP); and development and implementation of a biodiversity offset strategy.

The indirect impacts of the Project on biodiversity and ecological communities are discussed in section 13.3.3 and 13.3.4 of Chapter 13 – *Biodiversity*. This includes consideration of indirect impacts to fauna within the Georges River and surrounds from noise, light spill, dust and fire, habitat fragmentation, turbidity and weeds. Mitigation measures as detailed in section 13.4 address both direct and indirect impacts.

In response to the comment regarding the aquatic surveys, the biodiversity of the lower reaches of the Georges River has been modified as a result of habitat degradation and changes in abiotic condition such as water flow volumes, velocities, increased nutrients, chemical pollution and invasive species. The degraded condition of this section of the Georges River has led to the presence of disturbance tolerant species which are less sensitive to alternations in environmental conditions. The Ecological Impact Assessment was prepared in accordance with NSW Office of Environment and Heritage (OEH) guidelines and the surveys were based on desktop analysis. This approach was endorsed by NSW DP&E and is compliant with the Project NSW SEARs. Detailed surveys of aquatic habitat would be undertaken in preparation of the Stage 2 SSD application(s).

Impacts associated with vegetation clearing have been assessed in accordance with state and federal legislation. The Project will be subject to stringent mitigation measures at all stages of development that will include riparian vegetation management and revegetation, bridge design based on NSW Fisheries fish passage requirements for waterway crossings, and appropriately designed stormwater management measures based on further ongoing water quality monitoring. Further extensive biodiversity offsetting in accordance with state and federal guidelines will ensure the Project adequately achieves appropriate biodiversity outcomes.

The impacts of the proposed development on *Persoonia nutans* and *Grevillea parviflora subsp. parviflora* have been assessed within Technical Paper 3 – *Ecological Impact Assessment* (EIS Volume 3) against relevant state and federal legislation. The potential impacts on these species have been proposed to be offset as outlined in the updated Biodiversity Offset Strategy presented in Appendix C of this report. The strategy identifies that the proposed offsets are proportional to the impacts on these species in both size and scale. The overall impact assessment on these species does not rely on translocation to allow legislative compliance. In short, translocation of these species is not required under legislation or the offset strategy, but is proposed to provide a greater conservation outcome.

In relation to the comments made in Submission 194, Section 3.5.2 of Technical Paper 3 (EIS Volume 3) – *Ecological Impact Assessment* specifically relates to habitat potential for threatened species of plants. This section correctly states that riparian areas associated with the rail access options contain low potential habitat for threatened species of plants. This statement is consistent throughout the Ecological Impact Assessment and EIS documentation. The three rail access corridors identified threatened ecological communities as stated under section 3.3.2.1 of Technical Paper 3 – *Ecological Impact Assessment* (EIS Volume 3) and consistently stated throughout the EIS. Submission 194 appears to have confused the definitions of a threatened species of plants as opposed to threatened ecological (vegetation) communities.

Bridge piles are proposed to be outside the Georges River channel bed. Section 4.2.2.1 of Technical Paper 3 – *Ecological Impact Assessment* has considered vegetation connectivity and stated:

> 'The Project is not likely to significantly fragment or isolate retained vegetation along the Georges River Corridor. The proposed rail link across the Georges River would create a break in the canopy of the riparian vegetation approximately 50 m in width. However, the detailed design for the rail link and bridge would explore opportunities to create conditions suitable for vegetation to be established underneath the structure and habitat connectivity features (e.g. fauna furniture, rock piles) to provide cover for terrestrial animals and elevated movement pathways for arboreal species'.

The requirements for offsetting provision have been updated and are provided in the revised Biodiversity Offset Strategy in Appendix C of this report. The requirements will be enforced through conditions of consent. As stated in section 8.1.4 of Chapter 8 – *Additional technical investigations since EIS*, MIC is committed to undertaking all reasonable steps to obtain like for like biodiversity offsets, these include:

- checking the BioBanking public register and placing an expression of interest for credits wanted for at least six months;
- liaising with OEH (or Fisheries NSW office for aquatic biodiversity) and relevant local councils to obtain a list of potential sites that meet the requirements for offsetting;
- considering properties for sale in the required area; and
- providing evidence of why offset sites are not feasible.

If MIC can demonstrate that all reasonable steps listed above have been undertaken but if specific ecosystem or species credit requirements still cannot be found, MIC will discuss the shortfall with the consent authority. If agreed by the consent authority that '*all reasonable steps to secure a matching ecosystem credit have been taken by the proponent'*, then alternative offset arrangements will be provided. These may include:

- variation of the offset rules for matching ecosystem credits, by allowing ecosystem credits created for a Plant Community Type (PCT) from the same vegetation formation as the PCT to which the required ecosystem credit relates to; or
- a supplementary offset for the PCT where the PCT is associated with an Endangered Ecological Community (EEC) or a Critically Endangered Ecological Community (CEEC).

In summary, the proposed BOS consists of a dual offsets approach including offsets within and outside the Project site to achieve an improved conservation outcome, which combines the long-term protection and/or enhancement of existing habitat in moderate to good condition with the restoration, rehabilitation, and re-establishment of habitat in poor condition.

In response to the comment regarding the offset requirement for Alluvial Woodland, ongoing negotiations in respect to Alluvial Woodland credit offset shortfalls are continuing with OEH and this issue will be further explored once further details of the Project are known.

Section 13.3.3 and 13.3.4 of Chapter 13 – *Biodiversity* address potential noise and vibration impacts on native fauna, including flora and fauna located west of the Project site. Short-term noise impacts associated with the construction phase and ongoing operational noise have been assessed as not likely to have a long-term impact on wildlife populations.

In regards to the comment made in relation to Cumberland Plain Woodland; no Cumberland Plain Woodland has been recorded from the subject site.

As discussed in Chapter 7 – *Proposed amendments to the development* of this report, the concept layout of the site has changed. Section 7.9.1 presents the assessment of biodiversity impacts as a result of this change, specifically the changes include:

- a narrowing of the proposed southern access rail corridor in the vicinity of the Georges river from 60 m to 30 m;
- a modified rail alignment utilising more of the existing disturbed lands associated with cleared lands, existing rails corridor and waste facility;
- a reduction in the impact to the Riparian and Alluvial vegetation presented in the EIS southern access option by approximately 4 ha; and
- the revised site layout has increased the width of the onsite Moorebank conservation area, extending east of the 1% flood line and therefore increasing the future Conservation and riparian corridor.

The mitigation measures presented in Table 9.1 of this report are feasible and would mitigate any impact. An updated biodiversity offset strategy (BOS) has been prepared in accordance with the NSW *Biodiversity Offset Policy for Major Projects 2014* (Offset Policy 2014) and the NSW Framework for Biodiversity Assessment 2014 (FBA) and has been included in Appendix C of this report. The BOS has been updated based on discussions with OEH and it was agreed to outline the steps involved with offsetting vegetation through a combination of on-site and off-site strategies. The BOS would be further developed during detailed design.

In relation to the Alluvial Woodland offsets, due to the change site layouts and selection of the southern rail access option, the estimated Alluvial Woodland credits for offsetting has decreased from 180 to 70 due to temporarily excluding the generation of credits on the proposed 'low condition' Alluvial Woodland in areas identified for rehabilitation. These areas will provide ecosystem credits, however the quantification of the credits requires further field assessment.

In terms of the removal of habitat from detention basins, this would also be considered in further detail once the extent of removal is known.

6.8.2 Impacts on Georges River

A number of submissions were generally concerned that the Project would impact on Georges River through impacts on the water quality, disturbance to habitat, and disturbance to and removal of flora and fauna.

In addition to general concerns, the following particular comments were made:

- Submission 197 argues that development of a bridge will impact habitat on the Georges River through overshadowing, altering the flow regime, increasing turbidity, potentially exacerbating erosion and scour of the river bank.
- Submission 185 argues the Georges River is in excellent condition and questions the impact of the Project on the river's condition.

Submission number(s)

Form letter 1, 142, 150, 178, 210, 212, 214 and 238.

MIC response

Section 13.3.3 of Chapter 13 – *Biodiversity* of the EIS notes the construction of the proposed rail access and bridge structure may result in a change to the amount of sunlight reaching the substrate of the river which would affect the ability of any submerged aquatic plants to photosynthesise. This may result in changes to the structure and extent of aquatic vegetation at that location and associated habitat for aquatic animals. Given the relatively small area affected, and the existing degraded condition of the river, this possible reduction in vegetation and modification of habitat is unlikely to be significant.

As discussed in section 16.2 of Chapter 16 – *Hydrology, groundwater and water quality* of the EIS, impacts on the Georges River in terms of water quality have been identified as an important issue for the management of the Project. Further investigations would be undertaken as part of the Stage 2 SSD application and this would include detailed modelling and subsequent management of water quality to ensure there is no impact to the Georges River and associated flora and fauna habitats.

In respect to the condition or health of the Georges River, annual monitoring reported in the Georges River Health Report Card 2013-14 states the overall river health is of 'fair' condition. The Project will be subject to stringent mitigation measures at all stages of development that will include riparian vegetation management and revegetation, bridge design based on NSW Fisheries fish passage requirements for waterway crossings, and appropriately designed stormwater management measures based on further ongoing water quality monitoring.

A water quality monitoring program for the Georges River and Anzac Creek is currently undertaken for the Project, with key results published on the MIC website (http://www.micl.com.au/environment/monitoring-results/water-quality.aspx) every month. This program commenced in July 2013 and would be expected to continue throughout the construction and operation of the Project.

6.8.3 Pest species and biosecurity risks

A number of submissions were concerned with the potential release of pest species into the environment. Some submissions requested further information on the risks of release of pest species through transportation and storage of containers.

Submission number(s)

147, 189, 190, 213, 228 and 236.

MIC response

Section 13.3 and section 13.4 of Chapter 13 – *Biodiversity* provide a discussion on the potential impacts as a result of pest species and section 13.4 identifies mitigation measures. The measures proposed are consistent with best practice management for pest species and have been successfully implemented at other intermodal and Port sites. Biodiversity monitoring of the site and surroundings would be undertaken which will also assess the effectiveness of the management measures and further measures would be put in place if required.

Specifically, section 13.4.1of Chapter 13 – *Biodiversity* states:

> 'The Biosecurity division of the Commonwealth Department of Agriculture would be consulted regarding the detailed design of the Project and its operation, to ensure that all legal requirements and appropriate management measures related to biosecurity are implemented to minimise the risk of the introduction of pest species.'

6.9 Contamination and soils

The following comments were made relating to contamination and soils:

6.9.1 Contamination impacts

- Concern raised in regards to the potential for runoff of contaminated material/water from the IMT site and the impact on water courses.
- Some submissions argue the EIS does not adequately demonstrate that contamination as a result of IMT operations would not pose risks to the surrounding environment.
- One submission (237) raises concerns with regards to the southern rail access option and the development on the Glenfield landfill, which has a high potential for contamination, with potential to expose contaminated fill, soils, groundwater, leachate and landfill gases.

Submission number(s)

211, 228 and 237.

MIC response

A detailed Environmental Site Assessment (ESA) has been prepared for the Project and was included in the EIS (Technical Paper 5 – *Environmental Site Assessment,* EIS Volume 5a and 5b). The ESA was reviewed by an independent site auditor accredited by the EPA under the NSW *Contaminated Land Management Act* 1997 (CLM Act) to provide certainty that the assessment is adequate and feasible.

The assessment considered the existing sources of contamination at the site (soils and groundwater) and the potential for the release of contaminated material through site remediation and construction and operation of the IMT. Findings from the assessment determined that the Project site was suitable for an industrial/commercial land use. While MIC notes the concerns raised in relation to the migration of contaminants from the site, a number of mitigation measures are proposed which would avoid and minimise the potential for contamination to low residual risks. Mitigation measures include:

- remediation of contamination 'hotpots' as identified in the Remediation Action Plan (RAP);
- further investigation of the depth and occurrence of Acid Sulfate Soil (ASS) materials;
- implementation of contamination contingency measures as detailed in the CEMP;
- further contamination investigations for the selected rail access connection option, as part of the Stage 2 SSD approval; and
- measures for storage/treatment/transportation of any hazardous materials, contaminated soil, and asbestos etc.

In addition, MIC has recently completed further geotechnical/contaminated site investigations on the SME site, in accordance with recommendations of the RAP. Analysis of the results is currently being undertaken and will be provided as part of the Stage 2 SSD applications for the Project.

In terms of the issues raised on the southern rail access option, MIC recognises that further investigation is required including targeted intrusive investigation to gather data on soils and groundwater quality so that the suitability of development of the rail access from a contamination perspective can be confirmed and the management and/or remediation options can be identified. This investigation could not be undertaken during preparation of the EIS (or this report) due to site access restrictions imposed by the landowner.

Spills and contamination, including groundwater impacts, are covered in section16.3.4 and in Chapter 15 – *Contamination and soils*. Section 16.3.4 of Chapter 16 – *Hydrology, groundwater and water quality* identifies a number of potential impacts including infiltration of contaminated surface runoff caused by accidental spills and sedimentation. The potential impacts would be considered during the development of the detailed design and, in most cases, mitigated at the detailed design phase.

6.10 Hydrology, groundwater and water quality

Comments made in relation to hydrology, groundwater and water quality are identified below:

6.10.1 Flooding impacts

- Concern the additional impervious surfaces proposed as part of the IMT development, which have the potential to change stormwater flows and exacerbate flooding impacts to surrounding areas. Submission 194 notes that the majority of the site is located in a significant flood risk area.
- Concern the stormwater system has not been adequately designed/sized to cater for heavy rainfall events. In particular, submission 197 notes the development has been catered to accommodate up to the 10% annual exceedance probably (AEP) event and that flows above this would surcharge the network.
- Concern the flooding impacts from the Georges River (during heavy rainfall events) on the IMT itself have not been adequately considered.
- Concern about potential flooding impacts on Cambridge Avenue and the issues this could cause if the bridge was closed.
- Submission 194 states the southern rail access option has the potential to exacerbate the flooding of the Glenfield landfill.

Submission number(s)

3, 167, 194 and 208.

MIC response

As shown on Figure 16.2 in Chapter 16 – *Hydrology, groundwater and water quality*, the IMT operations on the site will be located out of the high and medium flood risk zones of the Georges River catchment. An area of high flood risk is identified along the lower terraces of the Georges River. This area exceeds the 1% AEP for a significant flood event. As such, no development is proposed in this area and a conservation zone will be developed. Detailed investigation to address any pre-existing flooding issues beyond the site boundary was not required as part of the SEARs for the Stage 1 SSD application. If required these studies would be considered in further detail as part of the Stage 2 SSD application, once the site layout has been confirmed. Further modelling may also be completed to confirm issues such as flood vulnerability of roads adjacent to the site (including Cambridge Avenue).

The internal site drainage system has been designed to convey the 10% AEP flood, in accordance with the LCC Drainage Design Specification Section D5.04. For events above the 10% AEP, the site will be designed to safely convey overland flow to the detention ponds which will be designed to attenuate the runoff from the site to pre-development levels up to the 1% AEP.

The modelling of the Georges River was based on cross sections from the MIKE-11 model built for the 1999 Flood study. No additional hydrographic survey was collected for this stage of assessment; however, a two-dimensional hydraulic model would be completed in preparation of the Stage 2 SSD application to provide a more thorough understanding of flood behaviour. At Cambridge Avenue, the MIKE-11 model included twin culverts. These culverts were also included in the modelling for the Stage 1 SSD assessment. At this time, measures to reduce afflux (afflux refers to the increase in flood level as a result of a structure (such as a bridge) in a river or waterway) upstream of the Project area (including at Cambridge Avenue) will be further investigated as necessary. This level of assessment is considered appropriate for a Stage 1 SSD application and meets the NSW SEARs and Commonwealth EIS guidelines.

Cambridge Avenue is already prone to flooding and the road is closed with permanent gates when it is overtopped. The modelling undertaken as part of the Surface Water Assessment (refer Technical Paper 6 – *Surface Water Assessment,* Volume 6 of the EIS) indicated there would be an increase in flood levels at Cambridge Avenue for the 1% AEP event of up to 0.01 m for the southern rail access option. While the bridge is low-lying and currently flood prone, the predicted change in afflux as a result of the Project would not change the flood hazard and subsequent management of a flood event at Cambridge Avenue. Further assessment for the Stage 2 SSD application would address the predicted increase in flood levels and develop appropriate mitigation measures to minimise the increase and assist with addressing the current flood risk at Cambridge Avenue.

The Glenfield landfill site is currently located within a high risk flood risk area. Development of that site would take into account any existing flood risk management plan prepared by the current operators. Any afflux caused by the Project within the landfill site is unlikely to change the flooding characteristics of the landfill site as there would be no change to the flood risk for the site. Any required mitigation measures to address potential afflux in the landfill site caused by the Project would be assessed further at Stage 2 SSD application.

6.10.2 Impacts on Georges River

A number of submissions raised general concerns in relation to the impacts on water quality of the Georges River due to construction and operation of the IMT.

In addition, the following specific comments were made in submission 194:

- The clearing of riparian vegetation would increase sediment runoff. The construction of bridge piers would increase turbidity and sediments entering the waterway.
- The MUSIC modelling presented in the EIS shows an increase in annual load of Total Nitrogen into the Georges River. This is a concern given the potential for algal blooms and the impacts on flora and fauna.

Submission number(s)

4, 46, 51, 93, 109, 125, 153, 166, 194, 208, 228 and 239.

MIC response

As discussed in section 16.2 of Chapter 16 – *Hydrology, groundwater and water quality* of the EIS, water quality has been identified as an important issue for the management of the Project site. Further investigations would be undertaken as part of the Stage 2 SSD application and this would include detailed modelling and subsequent management of stormwater quality to ensure there is no impact to the Georges River and Anzac Creek waterways.

An area of high flood risk is identified along the lower terraces of the Georges River where there is significant riparian vegetation. This area exceeds the 1% AEP for a significant flood event. As such, no development is proposed in this area and the area will be retained as a 'conservation area'. No vegetation clearing in this area is proposed.

Construction of bridge piers would have a short term impact on turbidity and sediments of Georges River. Best practice sediment and erosion controls would be implemented to minimise increases in turbidity and sediment movement during construction both in the river and across the Project site.

MUSIC modelling does indicate an increase in the generation of nutrient loads, and MIC recognises this has the potential to generate algal blooms. For the Stage 1 SSD application, preliminary modelling was undertaken to provide an indication of the likely stormwater quality management measures. Further modelling will be completed during detailed design as part of the Stage 2 SSD application, which will consider the sensitivity of Georges River based on the ongoing water quality monitoring program and will confirm the appropriate stormwater management measures to ensure an increase in nitrogen loads in Georges River is minimised.

6.11 Local and regional air quality

A number of submissions made general and specific comments relating to the air quality impacts of the Project. These are as follows:

6.11.1 Air quality impacts – general

General concern with regards to impacts on air quality as a result of the Project. Issues include:

- air pollution from IMT operations;
- decline in air quality;
- health impacts on the community; and
- location of the Project site is within a basin which allows pollution to lie.

In addition, submission 237 discusses a comment made in the SIMTA EIS in relation to air quality impacts, stating the SIMTA EIS notes that health impacts may occur from IMT operations if a person is outside for longer than 90 minutes.

Submission number(s)

4, 5, 6, 9, 25, 36, 45, 56, 59, 65, 87, 96, 98, 109, 128, form letter 2, 139, 153, 185, 214, 233 and 237.

MIC response

The Local Air Quality Impact Assessment (LAQIA) (Technical Paper 7 – *Local air quality impact assessment*, EIS Volume 6) includes the assessment of the following air pollutants: particulate matter (including total suspended particulate (TSP), particulate matter less than 10 microns (PM_{10}) and particulate matter less than 2.5 microns ($PM_{2.5}$), nitrogen dioxide (NO_2), carbon monoxide (CO), sulphur dioxide (SO_2), benzene, toluene, xylenes, 1, 3-butadine, formaldehyde, acetaldehyde and polycyclic aromatic hydrocarbons (PAHs).

Emissions of these pollutants were quantified using the accepted published emission factors from a number of sources, including the NSW EPA, US EPA and National Pollution Inventory (NPI). A range of conservative assumptions were made, including the selection of worst case emission standard engine classes for locomotives, to provide an upper level estimation of emissions from the Project.

Emissions were quantified for various stages of the Project, including construction only, periods where construction and partial operation would occur as well as the Full build operational facility. Additionally, the cumulative emissions from operations on the Moorebank IMT and the SIMTA IMT Projects were also quantified and assessed. The southern, central and northern rail access options and associated site layouts were all assessed. In total, 15 emissions scenarios were assessed to quantify impacts in the surrounding environment. Therefore, it is considered that the air pollution from IMT operations has been adequately assessed as part of the EIS. The LAQIA for the EIS was technically peer reviewed by an independent expert who agreed with the approach, methodology and findings of the LAQIA. Letters from peer reviewers endorsing the technical papers are provided in Appendix G to the EIS (EIS Volume 2).

In order to predict air quality impacts arising from quantified air pollution emissions, atmospheric dispersion modelling was conducted using the US EPA-developed AERMOD dispersion model. Atmospheric dispersion modelling was undertaken in strict accordance with the NSW EPA Approved Methods for the Modelling and Assessment of Air Pollutants in NSW.

Model predictions were made over a 7 km by 7 km area centred on the Project site, with a grid resolution of 200 m. Ground-level concentrations arising from emissions released at the Project site were predicted across this domain to assess the potential impact to health and well-being. Additionally, 38 individual receptor locations, representative of the greater community, were included for more detailed model result analysis.

Local three-dimensional topographical and hourly-varying meteorological observation datasets were incorporated into the assessment to account for the local terrain effects on the dispersion of air pollution. The inclusion of these datasets in the dispersion modelling ensures that local conditions, including the referenced basin effect of the surrounding topography adversely influencing pollution dispersion, are accounted for in the model predictions.

The results of the dispersion modelling highlight that adverse impacts to the surrounding environment are not predicted for any modelling scenario or pollutant. The air quality impact associated with the emissions generated by the construction and operational phases of the Project is therefore predicted to be low.

The impacts on the health of the local community have been addressed in detail in Chapter 25 – *Human health risks and impacts* and Technical Paper 15 – *Human health risk assessment* (HHRA) and Technical Paper 16 – *Health impact assessment* (HIA) in Volume 9 of the EIS. More specifically, the HHRA has undertaken a quantitative assessment of the impacts of the Project on the health of the community due to changes in air quality. The quantification of health impacts included the calculation of the increase in the number of cases for the relevant health effects evaluated (refer to sections 4.4 and 4.5 of the HHRA in Volume 9 of the EIS). The change in the number of cases calculated was less than 0.2 per year which cannot be measured in any health data/statistics for the area.

In response to the comment about the impacts on a person outside for longer than 90 minutes, the Preliminary screening health risk assessment and literature review (Toxicology Consultants 2012) (as part of the Concept Plan application for the SIMTA Project) makes reference to 90 minutes (1.5 hours) in relation to whether or not a person is affected by a pollutant. Specifically, the report states (page 28):

> *Behaviour of the person:*
>
> *Whether or not a person is affected by a pollutant in air from an industrial source requires them to be present at the location at the same time the high concentration occurs. However people do not spend all their time in one spot, for example an average adult only spends 1.5 hours outdoors per day (US EPA 1997). Given that people also move around during the time they spend outdoors, the chance*

of being present when a very high concentration of pollutant from a point industrial source occurs only a few times per year is therefore quite low.

In this context the 1.5 hours (90 minutes) is given as an example of time spent outdoors and does not relate to the assessment of impacts. Nevertheless, it is noted that no adverse air quality impacts are predicted at the surrounding sensitive receptors, regardless of whether the averaging period is 1-hour, 24-hour or annual average.

6.11.2 Existing ambient air quality

The following concerns were raised in relation to ambient air quality:

- Air quality is already an issue in the Liverpool area and the Project would exacerbate the impacts.
- Submission 81 argues that existing levels are exceeding World Health Organisation (WHO) recommendations.

Submission number(s)

9, 41, 81, 105, 111, form letter 2, 142, 150 and 237.

MIC response

Existing air quality was taken into account in the LAQIA (Technical Paper 7 – *Local air quality impact assessment* in Volume 6 of the EIS) to assess the cumulative impacts with emissions from the Project and background levels. The baseline air quality characterisation study focused on data recorded by onsite monitoring equipment and the NSW OEH Liverpool air quality monitoring station monitoring station, located at Rose Street, Liverpool. Further analysis was conducted for data recorded at OEH stations at Chullora (13 km to the east north-east of Liverpool OEH), Earlwood (21 km east north-east of Liverpool OEH), Bringelly (13 km west of Liverpool OEH) and Campbelltown (18 km south-southwest of Liverpool OEH). The following points were noted from the analysis (refer to section 6 in Technical Paper 7 – *Local air quality impact assessment*):

- On average, the 2013 calendar year contained higher PM_{10} and $PM_{2.5}$ concentrations across the NSW OEH monitoring stations. 2013 was therefore selected as a conservative representation of baseline air quality.
- Comparison of same-day PM_{10} concentrations at the OEH Liverpool and onsite monitoring stations throughout 2013 showed strong agreement, despite the separation distance of 3 km between the two sites. The Liverpool station data was adopted as the most appropriate measure of baseline data.
- Annual average PM_{10} concentrations are below the EPA criterion (30 µg/m^3), with infrequent exceedances of the 24-hour reporting standard primarily coinciding with regional events (in particular October 2013 bush fires).
- The influence of the October 2013 bushfires in Greater Sydney contributed to higher than normal $PM_{2.5}$ concentrations (both annual and 24-hour average) during 2013. Analysis of same-day concentrations recorded at Liverpool, Chullora and Earlwood (two closest OEH $PM_{2.5}$ stations) show strong agreement through summer, early autumn and spring. Concentrations at Liverpool are however higher between late autumn and winter. Analysis of concentrations by month and time of day highlights that concentrations are highest during May through August and between the hours of

7.00 pm and 2.00 am. This analysis is strongly indicative of impacts from residential wood-fire heaters. Figure 1 highlights the trend in monthly $PM_{2.5}$ concentrations at OEH Liverpool. A mid-morning spike is notable for October 2013; however, this is attributable to the October 2013 bushfires.

- TSP, NO_2, SO_2 and CO concentrations during 2013 are below EPA air quality impact assessment criteria.

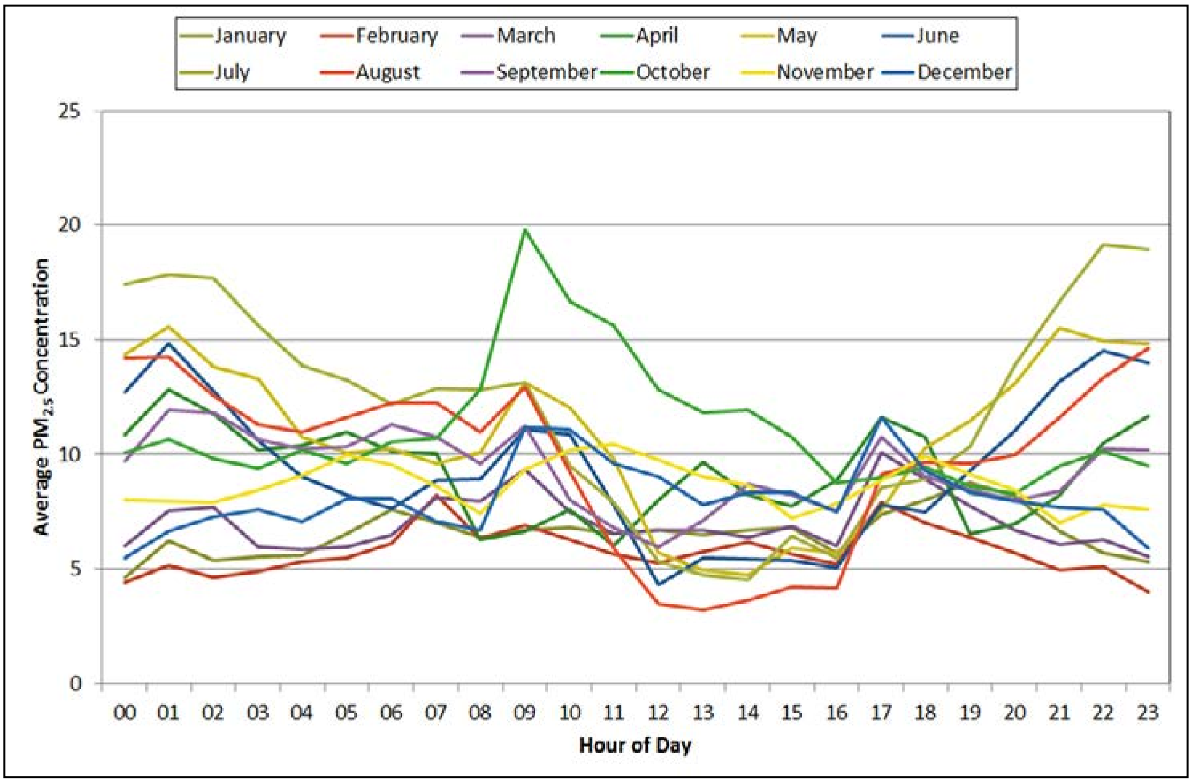


Figure 6.1 Monthly average PM2.5 concentration by hour of day – OEH Liverpool – 2013

The results show the predicted impacts in the surrounding environment from the Project (refer to section 10 of the LAQIA in Volume 6 of the EIS) are very low relative to the baseline air quality measured by local monitoring stations. As such, while it is recognised in some instances, the baseline concentrations for air quality are higher than normal (predominately due to bushfire activity), the additional impact as a result of the Project are low.

The WHO guidelines for PM_{10} and $PM_{2.5}$ are equivalent to, or less stringent than, NSW EPA assessment criteria. The exceedances of the NSW EPA assessment criteria during 2013 were directly attributable to extensive bushfire activities in the Greater Sydney region. No other WHO air quality guidelines are exceeded based on local air quality monitoring data.

6.11.3 Diesel fumes/emissions

A number of submissions raised issues/made comments about diesel fumes. These are as follows:

- Concerned with the impact of diesel fumes generated from locomotives, heavy vehicles and other equipment and associated health impacts.

- Diesel fumes and particular matter are carcinogenic and can also cause serious illness.
- Diesel locomotives and switch engines are significant contributors to air pollution.

Submission number(s)

Form letter 1, 40, 60, 98,105, form letter 2, 142, 147, 154,161, 185, 189, 190, 201, 208, 210, 211, 212, 216 and 238.

MIC response

The general concern regarding diesel combustion emissions is valid and underpins the reason for the assessment of such emissions from the Project. Emissions from Project operations, including locomotive and truck movements, were quantified using the accepted published emission factors from a number of sources, including the NSW EPA, US EPA and National Pollution Inventory (NPI). A range of conservative assumptions were made, including the selection of worst case emission standard engine classes for locomotives, to provide an upper level estimation of emissions from the Project. The results of the air quality modelling, which were based on the emission calculations, indicate that the potential for adverse impact in the surrounding environment from air pollutants generated by the Project would be very low.

The HHRA has evaluated health impacts associated with exposure to particulates from construction related dust and combustion sources (including diesel trucks and locomotives), as well as other emissions to air, specifically polycyclic PAHs from diesel engines and a range of air pollutants, including volatile organic compounds, derived from all combustion sources. As noted in section 4.2.2 of the HHRA (EIS Volume 6), the WHO cancer unit risk value (mean value of 3.4 x 10-5 per µg/m^3) has been used to evaluate potential excess lifetime risks associated with incremental impacts from diesel particulate matter exposures. The HHRA notes that while there is no guidance on what level of risk is considered to be acceptable in the community, a level of 10–4 for increased risk (one chance in 10,000) has generally been adopted by health authorities as a point where risk is considered to be unacceptable (i.e. consistent with established practice and regulation). An increased risk level of between negligible (10–6 (one chance in a million)) and unacceptable (10–4) is therefore considered tolerable or even acceptable. Findings from the HHRA indicate the risks associated with the exposure to diesel particulate matter are negligible for some health indictors with the remainder within the range of tolerable risks (refer to section 4.5.3 of the HHRA).

6.11.4 Air quality impacts on human health

The following comments were made about potential air quality impacts on human health:

- Concern that the construction and operation of the IMT would have adverse impacts on the health of the community.
- Concern with impacts from expose to pollutants and particulate matter.

Submission number(s)

Form letter 1, 16, 40, 60, 91, form letter 2, 147, 210 and 212.

MIC response

Air pollution emissions and associated impacts from the construction and operational phases of the Project have been addressed in the LAQIA (EIS Volume 6). Predicted impacts from the construction and operational phases are below applicable NSW EPA assessment criteria and have been developed to protect human health and well-being, at all surrounding receptor locations. Impacts from the construction and operation phases are predicted to be low.

The impacts of exposure to air pollutants on the health of the local community, during both construction and operational phases of the Project have been addressed in detail in accordance with Australian guidance in the HHRA. The HHRA has evaluated health impacts associated with exposure to particulates from construction related dust and combustion sources (including diesel trucks and locomotives). The HHRA has also evaluated other emissions to air, specifically PAHs from diesel engines and a range of air pollutants, including volatile organic compounds, derived from all combustion sources. The HHRA concluded the Project would not result in any significant impact on the existing health of the population.

6.11.5 Dust and odour during construction

Some submissions commented on the impacts from dust and odour during construction of the Project.

Submission number(s)

Form letter 1, form letter 2 and 210.

MIC response

Air pollution emissions and associated impacts from the construction phases have been addressed in the LAQIA. Predicted impacts from the construction phase are below applicable NSW EPA assessment criteria at all surrounding receptor locations. Impacts from dust generation during the construction phase are therefore predicted to be low.

On the basis of onsite soil sampling results, potential odorous emissions from the construction phase are likely to minimal (i.e. given the soil characteristics, odour is not likely to be a significant issue) and would be localised/contained within the Project site. Soil management measures as described in section 15.5 of Chapter 15 – *Contamination and soils* (including covering of onsite stockpiles) would avoid and minimise any potential odour emissions.

6.11.6 Adequacy of air assessment

The following comments were made on the adequacy of the air impact assessment:

- Some submissions suggested that an additional impartial report be done by another agency.
- Submission 185 notes the monitoring station is located on Reilly Street. Suggests that a more accurate measurement would be located on Lakewood Crescent.
- Submission 185 suggests that the EIS predictions are underestimates and favoured toward the proponent.

- Submission 25 argues that the predicted increase for $PM_{2.5}$ and PM_{10} appears to be low considering the number of additional train movements, trucks movements, operations and equipment.

Submission number(s)

25, 189, 190, 211 and 213.

MIC response

Local existing air quality was analysed through the collation of data recorded by onsite monitoring equipment and NSW OEH air quality monitoring stations in the surrounding area, with particular reference to the Liverpool monitoring station at Rose Street, Liverpool. A comparison between concurrent measurements at the onsite station and OEH Liverpool monitoring station highlighted a strong correlation between the two sites. This analysis highlights that ambient particulate matter concentrations do not vary substantially across the local area. Therefore, the data collected from the monitoring station on Reilly Street is considered appropriate for use in the air quality impact assessment.

Emission calculations and atmospheric dispersion modelling has been conducted in accordance with the NSW EPA *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*. The emissions calculations modelling conducted has accounted for a high level of conservatism in key assumptions to provide an upper level prediction of potential air quality impacts in the surrounding environment. The air quality technical assessment has therefore been adequately assessed and not underestimated. In addition, LAQIA (Technical Paper 7 – *Local air quality impact assessment,* EIS Volume 6) was prepared by technical experts who are specialists in their field and peer reviewed by an independent expert who agreed with the approach, methodology and findings of the LAQIA. Letters from the independent peer reviewers endorsing the technical papers are provided in Appendix G to the EIS. In addition, the EIS has been prepared in accordance with the NSW SEARs and the Commonwealth EIS guidelines and has also been reviewed by OEH and EPA (see Table 5.1 in Section 5.5 for the issues raised in the agency submissions and MICs response in Appendix B (Table 2)). It is not considered necessary to conduct another assessment by an independent agency.

Emissions of air pollutants from the Project, including PM_{10} and $PM_{2.5}$, were quantified using the accepted published emission factors from a number of sources, including the NSW EPA, US EPA and National Pollution Inventory. A range of conservative assumptions were made, including the selection of worst case emission standard engine classes for locomotives, to provide an upper level estimation of emissions from the Project.

The emission calculations account for all proposed construction activities, locomotive and truck movements and warehousing operations likely to occur at each key phases of the Project's development (section 8 of LAQIA). These emission calculations were inputted to an approved atmospheric dispersion model (section 9 of LAQIA), with the resultant ground level concentrations predictions analysed for comparison against NSW EPA assessment criterion (section 10 of LAQIA). The predicted concentrations attributable to the Project, accounting for all proposed operational activities, were shown to be significantly lower than existing air quality and the NSW EPA assessment criterion.

6.11.7 Adequacy and feasibility of mitigation measures

The following comments were made about the adequacy and feasibility of the mitigation measures proposed in the EIS in relation to air quality:

- Submission 189 and 190 argue that pollution from vehicles access and egressing the site would not be controlled by the IMT operator and this would be the choice of the individual operators. The submissions also note there is no plan to retrofit vehicles and no railway operator with plans to acquire the types of locomotives described as mitigation measures in the EIS.
- Submission 237 seeks clarification on what would be done if exceedances are detected during the air quality monitoring. Would the IMT be closed down until it returns to normal? How quickly would this happen?
- Submission 211 argues that no assurances are made to ensure emissions are within 'safe' levels for residents.

Submission number(s)

189, 190, 211, 213 and 237.

MIC response

Vehicles accessing and egressing the site for IMEX operations will be controlled by the IMT operator, however it is correct to note that vehicles accessing the warehousing facilities will not be controlled. The air quality monitoring requirements will be set for the whole IMT operations (including the warehousing facilities) and the IMT operator will be responsible for undertaking the monitoring and reporting the results against the required guidelines. The implementation of best practice air quality emission management practices for the operational facility would be investigated during the detailed design phase, assuming approval of the Stage 1 SSD. The identified management practices listed in section 17.4 of Chapter 17 – *Local air quality,* section 11 of the LAQIA and Table 9.1 of this report would form the basis for the development of air quality mitigation measures.

Monitoring of ambient air quality would continue through to the operational phases of the Project. Online reporting of monitoring results is currently presented on the MIC website (http://www.micl.com.au/environment/monitoring-results.aspx) which will continue and ambient air quality monitoring data would be used to track the environmental performance of the Project. An Air Quality Management Plan (AQMP) would be developed for the Project, highlighting air quality management practices and procedures.

If an exceedance is detected, it is normal practice to report the exceedance to the relevant regulatory authority. The IMT operator (who will be responsible for the monitoring and reporting of air quality data) will need to investigate the exceedance and if the exceedance is attributed to site practices, modify the operations to ensure compliance is maintained. The IMT would only be closed down, if the exceedance is significant to warrant this. Based on our understanding of the baseline and predicted air quality impacts, it is unlikely that the IMT would need to be closed down. If it did, operations could restart immediately once modification to operations has occurred to address the air quality exceedances.

As part of the Project approvals (Stage 1 and Stage 2 SSD approvals), the Project would be required to comply with ambient air quality criteria on an ongoing basis. The AQMP and ambient air quality monitoring would be key tools in demonstrating this compliance to ensure 'safe' levels for the nearby residents.

6.12 Greenhouse gas

6.12.1 Carbon footprint of proposal

Two submissions raised concerns about the carbon footprint of the Project. Submission 185 references a study by the National Aeronautics and Space Administration (NASA) in the US, which identified the transportation sector as the greatest contributor to atmospheric warming.

Submission number(s)

4 and 185.

MIC response

Chapter 19 – *Greenhouse gas assessment* provides a description of the potential greenhouse gas (GHG) emissions and impacts associated with the construction and operation of the IMT. The findings of the assessment determined that while the Project would result in the emission of GHG during both the construction and operational phases, the annual GHG emissions would represent only a very small proportion of national (approximately 0.02%) and NSW (approximately 0.09%) emissions. In addition, the Project as a whole would result in reductions in freight transport emissions, as a result of the mode shift from trucks to trains for IMEX freight travelling between Port Botany and the Project site.

6.13 Aboriginal and European heritage

6.13.1 Impacts on heritage sites

Submissions raised concerns about the impacts on Aboriginal and European heritage sites as detailed below:

- Concern with the impact on heritage sites of military and indigenous significance.
- Concern that removal of heritage features on the site would break ties for the community.
- Concern that the sandstone structures of the Royal Australian Engineers Chapel and Museum would be demolished, unless their significance is recognised.
- A view that the shrines within the current Defence boundaries (shrines for Vietnam and Korean and a shrine for bomb detection dogs) should be protected.
- Concern with the impact on other surrounding sites of historical significance including the Glenfield Farm Group.

Submission number(s)

Form letter 1, 93, 110, form letter 2, 142, 147, 171, 185, 189, 190, 210, 211, 212, 213 and 237.

MIC response

The Aboriginal and European heritage impacts as a result of the Project are identified and assessed in Chapter 20 – *Aboriginal heritage* and Chapter 21 – *European heritage* of the EIS. In summary, as identified in section 20.6 of Chapter 20 – *Aboriginal heritage*, the main construction footprint is located in areas considered to be of low aboriginal heritage significance. While the majority of identified Aboriginal recordings within the Project footprint would be directly affected, the areas of highest sensitivity (adjacent to the Georges River) would be largely conserved. The Project would affect less than a quarter of the Tertiary terraces within the Project site that are identified to be archaeologically sensitive. Appropriate management and mitigation measures are proposed including avoidance (within the conservation zone), salvage of significant items, and consultation with registered Aboriginal parties.

In relation to European heritage impacts, most of the sensitive heritage items would be relocated from the current SME site prior to construction of the Project, as part of the Moorebank Units Relocation (MUR) Project. Further details of the MUR Project are available at http://www.defence.gov.au/id/moorebank/.

While many of the intangible values (e.g. memorials, Chapel and Museum) would be transferred to the new SME site at Holsworthy, there would be residual values associated with the broader landscape setting, as well as more tangible elements of the landscape that would be affected as part of the Project. However, as identified in Table 29.6 of Chapter 29 – *Environmental Risk Analysis*, the impacts on European heritage would be reduced to low to moderate provided mitigation measures such as archiving, additional investigations and relocation where appropriate, are implemented.

Section 21.2 of Chapter 21 – *European heritage* recognises that the Royal Australian Engineers (RAE) Museum and the Memorial Chapel are significant heritage features due to their association with the history of the SME site. The RAE Chapel has been identified for partial relocation as part of the MUR Project, which includes the sandstone in the walls of the Chapel and plaques (as shown in Table 21.3 in Chapter 21 – *European heritage*).

As identified in Table 21.7 of Chapter 21 – *European heritage*, the RAE Museum sandstone wall will also be partially relocated as part of the MUR Project. As the MUR Project is separate to the Moorebank IMT project, the impacts are outside of the scope and have not been considered in the Moorebank IMT EIS.

Table 21.3 of Chapter 21 – *European heritage*, identifies a number of items to be relocated as part of the MUR Project. This includes the RAE Memorial and fountain, services dogs' memorial, the Vietnam Veterans Memorial and associated plaques and the Burma-Thai cross. In addition, the commemorative gardens/heritage park, and associated memorials and plaques will also be relocated as part of the MUR Project.

The Dog Cemetery (MH1) has been identified as a significant heritage item which meets the criteria for inclusion on the Commonwealth Heritage List. As identified in section 21.5.1 of Chapter 21 – *European heritage* the adaptive reuse or relocation of these items to another location is the next preferred option, and would be explored further during Stage 2 SSD detailed design.

Section 21.4.3 identifies that the southern rail access option would have an indirect impact on the Glenfield farm, however no direct impact is anticipated. The southern rail option connection would have a visual impact on the site, during construction of the new rail access and as a result of trains approaching the site. These views have already been considerably affected by the Glenfield Landfill site and the construction of the SSFL.

6.13.2 Adequacy of consultation with Registered Aboriginal Parties

One submission requests confirmation if consultation has been undertaken with the local Gandangara Aboriginal Land Council.

Submission number(s)

237.

MIC response

Section 3.3 of Chapter 3 – *Consultation* of this report, notes that consultation with the Gandangara Local Aboriginal Land Council has been undertaken through letters, emails and telephone calls, as well as participation in field survey and subsurface testing programs. Appendix 5 of Technical Paper 10 – *Aboriginal Heritage Assessment* (EIS Volume 7) contains a record of the consultation that has occurred with Aboriginal representatives.

Further subsurface testing was undertaken in August 2014 and Registered Aboriginal Parties were on site including a reprehensive from Gandangara Local Aboriginal Land Council. Following this, further consultation was undertaken with the Registered Aboriginal Parties during the scared tree assessment sampling. Concerns raised were acknowledged and addressed where possible. The results of the additional subsurface testing and scar tree assessment are found in Appendix J and I respectively of this report.

6.14 Visual and urban design

6.14.1 Light impacts

Submissions raised issues relating to lighting impacts of the IMT. These are discussed below:

- Concern that light spill impacts would have detrimental impacts on the community.
- Concerned about impacts on the behaviour of nocturnal animals.
- Concerned about the impacts from freight trains including headlights and rail signalling lights.
- Concerned that mitigation measures have not been designed as part of the EIS, but deferred to a later date.
- Request for information on the mitigation strategies for light spill impacts, including how these would be enforced.

Submission number(s)

65, form letter 2, 147, 175, 185, 186, 189, 190, 211, 213, 214, 216, 228, 237 and 238.

MIC response

Section 22.5 of Chapter 22 – *Visual and urban design* of the EIS identifies and assesses the light spill impacts. For some residential locations that overlook the Project site, there would be a noticeable change in the brightness of the area on clear nights. In foggy conditions, the brightness may be less; however, there would be a local sky glow effect. Transitory lighting from train headlights on trains leaving the Project site at night would potentially affect some residential locations with greater impacts associated with the northern and central rail access options, as these options are no longer being considered, the impacts are reduced. As outlined in section 22.7.2 of Chapter 22 – *Visual and urban design* of the EIS and Table 9.1 of this report, light spill mitigation measures would be considered during the detailed design and would include measures such as:

- designing lighting to minimise impacts;
- the use of shields on luminaire lighting to minimise brightness effects;
- selecting asymmetric light distribution-type floodlights as part of the proposed lighting design,
- the use of low-reflection pavement surfaces to reduce brightness; and
- minimising the quantity of light and energy consumption in parts of the IMT site that are not active.

For the northern and central rail access options, mitigation measures such as avoiding the use of high beam lights for trains leaving the IMT have been considered; however, as the southern rail access option has been selected by MIC as the preferred rail access option, the impacts of train headlights leaving the site to the residents of Casula have been eliminated.

Impacts on nocturnal animals, in section 13.3.4 of Chapter 13 – *Biodiversity* of the EIS notes that lighting impacts during operation may affect the foraging behaviour, reproduction and communication, as well as causing orientation towards or disorientation from artificial light sources of some faunal species. The assessment concludes the proposed vegetation restoration within the riparian corridor and landscape planting in the interior of the Project site could mitigate some light pollution through the screening effects of increased vegetation, combined with the other measures proposed as part of the light spill mitigations.

The design and layout of the lighting required for the Project is yet to be confirmed. As such, it is not appropriate for the mitigation measures to be designed at this stage. Rather, these would be assessed and confirmed during the Stage 2 SSD approval for the Project.

In terms of enforcement, the EIS commits to the monitoring of light spill during the operation of the Project to assess the impacts and modify, including introducing new measures (if required).

6.14.2 Visual impact of the IMT

The following concerns about visual impacts were raised:

- Concern about the visual impacts of the IMT.
- Request for information on the mitigation strategies for residential properties on Casula Links Estate, including how these mitigation measures would be enforced.
- Concern the viewpoints selected for the Casula residential area are not reflective of the topography as they are located too low and close to the River. Suggests using locations such as Marsh Parade and Dunmore Crescent.

- Concern there is currently no visual mitigation of the SSFL for residents.

Submission number(s)

45, 99, 117 and 186.

MIC response

The visual impacts of have been assessed with findings provided in Chapter 22 – *Visual and urban design* of the EIS. Impacts were assessed at a number of different locations/receptors surrounding the proposed IMT site, including parks and community facilities to the west and surrounding residential suburbs and public road reserves. During construction moderate to high impacts were predicted for many viewpoints due to the impact of tall construction equipment such as cranes that would be visible above the tree line during construction of both the IMEX and interstate IMT facilities. These impacts would be temporary. The EIS notes that at Full Build, the most significant visual impact would be on the public park and residential properties on the elevated areas to the west of the Georges River and residential properties backing onto the SSFL. These impacts range from negligible to moderate/high for different locations.

MIC has proposed a number of mitigation measures (presented in Table 9.1 of this report) that would be considered during detailed design phase and further information on these measures would be provided as part of the Stage 2 SSD application(s). These include:

- incorporation of urban design principles into Project design, including height controls that limit building heights to 21 m;
- visual mitigation measures such as landscaping, screening/ buffering of less attractive activities/infrastructure;
- localised earth mounding and native canopy tree planting in internal landscaped areas to mitigate visual impacts from residential areas; and
- designing lighting to minimise light spill (as discussed in section 6.14.1 of this report).

In terms of enforcement, the EIS commits to the monitoring of light spill during the operation of the Project to assess the impacts and modify, including introducing new measures (if required).

The management and operation of the SSFL is not part of the scope for this EIS. Any requirements for visual mitigation of the SSFL are part of the approval for that project.

6.15 Land use and property

6.15.1 Impacts on public open space/community facilities

Concerns were raised regarding the impact on the Casula Powerhouse Arts Centre. Submissions note that both the Casula Powerhouse Arts Centre and the surrounding parklands are important community assets, providing a range of social and environmental benefits for the community.

Submission number(s)

4, 87, 93, 98, 125, form letter 2, 142, 150, 153, 160, 175, 178 and 185.

MIC response

Section 24.3.4 and section 24.3.8 of Chapter 24 – *Social and economic impacts* and section and 23.2.3 of Chapter 23 – *Property and infrastructure* of the EIS describe the impacts on the Casual Powerhouse Arts Centre and the Northern Powerhouse Land (land to the north of the Casula Arts Centre). In particular, minor amenity impacts are expected, including some potential disruption during construction activities; however, access to these facilities would be maintained at all times.

The northern and the central rail access options would have the greatest impact on the Northern Powerhouse Land, which is directly north of the Casula Powerhouse Arts Centre. Since exhibition of the EIS, MIC has selected the southern rail access option as its preferred option, so the impacts to the Northern Powerhouse Land will no longer occur.

6.15.2 Impacts on Georges River

Some submissions raise concerns in regards to the loss of recreational land. One submission argues that development on the Project site would be inconsistent with the Liverpool Council master plan for the Georges River.

Submission number(s)

8, 45, 92, 125, 134 and 216.

MIC response

The impacts on Georges River have been presented in section 6.15.1 which discusses potential impacts on recreational land. As noted in section 23.2.3 of Chapter 23 – *Property and infrastructure,* the Northern Powerhouse land, which is directly north of the Casula Powerhouse Arts Centre has been identified for potential future public parkland in the Georges River Casula Parklands Concept Master Plan (LCC 2013). However, since the southern rail access option has been selected as the preferred option, the impacts on the Northern Powerhouse Land will no longer occur.

Minor recreation impacts are expected, including some potential disruption during construction to activities by the NSW Barefoot Water Ski Club on the Georges River. During operation of the Project, impacts on the recreational use of the Georges River are unlikely. The normal water level at the proposed Georges River bridge location (the location of the northern rail access option bridge crossing to the SSFL) is RL 3.0 m, which is non-tidal due to the weir located downstream. This provides a vertical clearance of 8.3 m to the underside of the bridge deck (i.e. at RL 11.3 m).

6.15.3 Property values

Some submissions argue that development of an IMT close to existing residential areas will depreciate the value of the homes in the area.

Submission number(s)

9, form letter 1, 65, 93, 96, 99, 105, 142, 147, 155, 156, 161, 167, 189, 190, 191, 201, 210, 213 and 230.

MIC response

MIC acknowledges the concerns of the local community regarding depreciation to the value of homes. There are many factors that influence housing prices in an area. Given the complexity of these factors, it is not possible to predict whether the terminal would have any negative impacts, or positive impacts – for example, due to housing demand created by the additional employment generated by the terminal.

The EIS has also presented a number of management and mitigation measures to be implemented during construction and operation of the Project to mitigate any adverse impacts on property prices. These measures will be assessed further during the detailed design phase and during future Stage 2 SSD applications.

6.16 Social and economic impacts

Some submissions discussed issues relating to the social and economic impacts of the Project. These are outlined below:

6.16.1 Social impacts from increased travel times

Some submissions were concerned about the social impacts as a result of increased in travel times (i.e. increased travel time leading to reduced time for other things).

Submission number(s)

55, 100, 125 and 142.

MIC response

Social impacts from increased travel times are discussed in section 6.6.8; the project is expected to reduce the VKT on the Sydney road network which will benefit traffic flow on major Sydney arterials.

6.16.2 Impacts of children getting to school

One submission commented on the risks and delays to children travelling to school as a result of traffic impacts of the Project.

Submission number(s)

70.

MIC response

Refer to response in section 6.6.5 and section 6.6.8 which discuss the impacts on local roads travel delay times and traffic safety issues.

6.16.3 Impact on usability of residential open space

Three submissions argued that noise from the IMT would impact on the ability of residents to use their outdoor living spaces.

Submission number(s)

125, 142 and153.

MIC response

MIC acknowledges that a number of residents live close to the Project site and there are concerns regarding the exceedance of noise assessment criteria and the impacts this has on health and lifestyle. Noise from construction and operation would be regulated through the Project approvals (Stage 1 and Stage 2 SSD approvals) and in accordance to relevant acoustic legislation, policy and guidelines (including the NSW *Industrial Noise Policy*, the NSW *Road Noise Policy* and the *Interim Construction Noise Guideline*). The regulations have applied the more rigorous noise criteria at the property façade; typically if the façade regulations are achieved then the amenity regulations (for outdoor noise) are also achieved.

To minimise noise emissions and comply with the Project approval and regulations, the Project would be designed and constructed with reasonable and feasible noise mitigation measures to control noise emissions within the surrounding communities.

6.16.4 Impacts to the local community structure

One submission argues the community structure would be negatively impacted, now and into the future.

Submission number(s)

127.

MIC response

Section 24.3.2 of Chapter 24 – *Social and economic impacts* assesses community structure including the potential changes to demographics and population as a result of the Project. No considerable changes to Liverpool's population are expected during construction or operation of the Project. During construction the workers are expected to be sourced from within the Sydney metropolitan region, with some workers sourced from inside the Liverpool LGA. The operation of warehousing could see an additional 1,500 people being employed in the area; this would be equivalent to an increase of around 1% of the existing Liverpool LGA population (see Table 24.4 of Chapter 24 – *Social and economic impacts*).

As discussed in section 24.3.6 of Chapter 24 – *Social and economic impacts,* negligible impacts on existing housing and accommodation would be expected during all phases of the Project (construction and operation).

6.16.5 Impacts on quality of living

One submission was concerned that the Project would have adverse impacts on the quality of living.

Submission number(s)

130.

MIC response

MIC acknowledges the concerns of the local community regarding the impacts on the quality of living. There are many factors that influence the quality of living in an area. Given the complexity of these factors, it is not possible to predict whether the terminal would have any negative impacts, or positive impacts.

The EIS and Table 9.1 of this report have presented management and mitigation measures to be implemented during construction and operation of the Project which would avoid and minimise the impacts. These measures will be assessed in future detail during the detail design and during future Stage 2 SSD approval applications.

6.17 Human health risks and impacts

6.17.1 Health impacts on the community

The following general concerns were raised relating to human health:

- Concern about impacts on the health of the community (current and future) as a result of the construction and operation of the IMT. In particular, submission 142 states that according to the WHO, even relatively low noise levels are linked to higher rates of heart attack and increased cortisol levels, increased levels of hypertension, fatigue and psychological issues.
- Submissions argue that health impacts are not acceptable and will make people sick.
- Concerned with stress impacts on the community and the health implications.
- Submissions argued there are already significant health issues in the community, including respiratory problems and concerned that the Project would exacerbate these problems/issues.
- Submissions argued there are a high number of child care centres, pre-schools, kindergartens, primary schools, high schools, sporting grounds and aged care facilities located within the immediate area. Concerned with the impact on the population and users of these facilities.

Submission number(s)

4, 9, form letter 1, 16, 23, 34, 61, 62, 70, 79, 85, 87, 95, form letter 2, 142, 160, 166, 170, 185, 201, 210, 211, 228, 234 and 239.

MIC response

Chapter 25 – *Human health risks and impacts* of the EIS provides an overview of the findings of the assessments in relation to the potential health impacts associated with the Project. The health impacts are addressed in more detail in the HHRA of the EIS, and HIA of the EIS (in Volume 9). The methodology applied to the HIA was developed by HIA specialists Enrisks, with expert guidance provided by the Centre for Health Equity Training, Research and Evaluation (CHETRE) and a stakeholder working group (councils and state agencies). The HIA was technically peer reviewed by an independent expert who agreed with the approach, methodology and findings of the HIA. Letters from peer reviewers endorsing the technical papers are provided in Appendix G to the EIS (Volume 2).

In relation to determining whether health impacts in the community are acceptable, the HHRA and HIA have considered whether there are threshold values (below which there are no health impacts) that are protective of health and if the Project complies with these thresholds. In addition, where an annual or lifetime health risk is calculated, the HHRA provides a detailed discussion on the acceptability of health risks (presented in section 4.4 of the HHRA). All these aspects have been considered in the HHRA where the acceptability of health impacts is evaluated.

The HIA presented in Technical Paper 16 (EIS Volume 9) includes consideration of a range of impacts (related to many aspects of the Project) including stress levels on the community, low level noise impacts and impacts to infants, children and the elderly. These aspects are summarised in Table 6.1 in the HIA along with a summary of the measures proposed to minimise/mitigate these impacts.

The existing health of the local community is discussed in section 2.4 of the HHRA and section 3.5 of the HIA (EIS Volume 9). From this data the population in the Sydney south-west area has a higher rate of health indicators. The existing health of the population in this area (based on the existing health data available from NSW Health) is included in the calculations undertaken in the HHRA when evaluating the risk of health impacts from particulate exposures. The calculations presented in the HHRA do not indicate that the Project would result in any significant impact on the existing health of the population. While the calculated risks do not show any significant impact on community health, the HIA includes a list of recommendations and mitigation measures which will be considered further at detailed design to minimise community exposures. As discussed in section 5.11.7 of the HIA (EIS Volume 9), the implementation of best practice air quality management practices for the operation of the facility would also be investigated during Stage 2 SSD detailed design.

Impacts on health associated with noise are discussed in detail in section 5.3 of the HIA and summarised in section 25.5.2 of Chapter 25 – *Human health risks and impacts* of the EIS. The assessment of health impacts from noise relies on the noise guidelines established in NSW (NSW *Industrial Noise Policy*, the NSW *Road Noise Policy*, and the *Interim Construction Noise Guideline*). These noise guidelines are based on the protection of health from a range of different types of noises (from industry, roads, rail and construction) and these guidelines incorporate information/evidence of health effects in the community derived from the WHO (refer to section 5.3.3 of the HIA (EIS Volume 9) for further discussion).

The assessment of health impacts presented in the HHRA and the HIA have considered impacts at a range of representative sensitive receivers (refer to Figure 2.1 in the HHRA and Figure 3.1 in the HIA). These include the closest workplaces, residences, schools, childcare facilities and community facilities. The quantitative assessment of health risks presented in the HHRA has assumed that individuals are exposed to impacts from the Project at each of the sensitive receivers for a whole work day (for workplace locations) and for 24 hours a day, every day for all other sensitive receivers. This approach provides a conservative assessment for all users (i.e. school, day care, sporting grounds etc.) of these areas. Health impacts in areas located further from the site will be lower than assessed for the closest sensitive receivers.

6.17.2 Air quality impacts on human health

A number of submissions were concerned that air emissions during construction and operation of the IMT will have negative impacts on the health of the community. Some submissions were concerned that the Project would increase or exacerbate the occurrence of asthma.

Submission number(s)

9, 10, 48, 59, 81, form letter 2, 142, 178, 189, 190, 211, 217, 228 and 237.

MIC response

The air quality impacts on the health of the local community have been addressed in detail in the HHRA (Technical Paper 15 – *Human Impact Assessment,* in Volume 9 of the EIS) in accordance a number of national and international peer reviewed sources. In particular, the HHRA draws upon the following guidelines:

- Environmental Health Risk Assessment: Guidelines for Assessing Human Health Risks from Environmental Hazards: 2012 (enHealth 2012a); and
- Exposure Factors Guide (enHealth 2012b).

The HHRA has evaluated impacts during both construction and operational phases of the Project. As outlined in Chapter 25 – *Human health risks* and impacts and section 3 of the HHRA (EIS Volume 9), the HHRA has evaluated a range of emissions to air, including dust during construction and emissions from combustion sources including diesel trucks and equipment, locomotives and traffic associated with the IMT, warehousing and commercial operations.

A more detailed assessment of risk associated with particulate emissions (including dust during construction and finer particulates derived from combustion sources that include diesel trucks and locomotives) is presented in section 4 of the HHRA. The assessment has used the most current robust science to determine which health effects have been well linked to particulate emissions (including diesel particulates) and can be quantified in a population (as discussed in sections 4.1 and 4.2 of the HHRA). There are numerous studies available that consider various associations between particulate exposures (in populations or close to specific sources such as major roadways) and health effects. It's important to note that the studies considered in the HHRA are based on robust clear associations between exposure to particulates and a health effect. This has been considered in the assessment presented in section 4 of the HHRA (EIS Volume 9).

In response to community concerns regarding asthma, an assessment of the Project impacts on asthma is also presented in section 4.5.4 of the HHRA (EIS Volume 9). The HHRA concluded that the Project would not result in any significant impact on the existing health of the population. While the calculated risks do not show any significant impact on community health, the assessment recommended the application of best available technology and mitigation measures be implemented to minimise community exposures.

A paper has been referenced in several of the submissions: Matsuoko et al. 2011: *Freight Transport and Goods Movement – Impacts on Workers, Health, Community and the Environment*. A response to the issues raised in this paper is provided below:

- *Occupational health and safety issues for freight workers.* These aspects are addressed in detail in Chapter 11 – *Traffic, transport and access* and Chapter 14 – *Hazards and risks* of the EIS. The issues are also addressed in Technical Paper 11 – *Traffic Impact Assessment (*EIS Volume 3). The HHRA considered short-term/acute and long-term/chronic exposures and health risks to workers within the IMT. As concluded in section 5 of the HHRA, the risks are considered to be low which is consistent with established practice and regulation. In addition, Chapter 29 – *Environmental Risk* of the EIS, notes the key risks/hazards associated with the Project during construction and operation includes gas leaks, loss of containment of flammable/combustible liquids, vehicle accidents, flooding and inappropriate waste disposal. A number of design and management measures are proposed to minimise risk to levels consistent with established practice and regulation (refer to section 14.7 of Chapter 14 – *Hazards and risks*).

- *Exposure to air pollutants including fine particulates, ultrafine particulates and diesel particulates.* The health effects of exposure to air pollutants relevant to the Project is addressed in the HHRA where impacts of exposure to diesel particulate matter, fine particulates and other air pollutants has been addressed using Australian guidance, current robust science and the site-specific aspects, including all the emission sources related to the Project. Ultrafine particulate exposure was also raised in the paper. The relationships used in the HHRA (as outlined in section 4.2 of the HHRA) are based on studies of changes in exposure to fine particulates (that include ultrafine particulates) in urban air (where the pollution is dominated by combustion sources that include fine and ultrafine emissions) and health effects in the population. As such, the quantitative assessment presented in the HHRA addresses health effects associated with exposure to both fine and ultrafine emissions from combustion sources.

- *Exposure to noise.* The health effects outlined in the paper are noted and addressed within section 25.5 of Chapter 25 – *Human health risks and impacts* and section 5.3 of Technical Paper 16 – *Health Impact Assessment*. As noted in these sections, noise levels would need to be mitigated to ensure the Project complies with relevant guidelines and established practice.

- *Race and place issues.* Equity issues associated have been addressed in section 7 of the HIA (EIS Volume 9). The HIA notes that the evidence gathered for the assessment identified particular population sub-groups that are particularly vulnerable to health impacts resulting from the IMT (children and the elderly). Measures to address this include: providing advice to General Practitioners (GPs) regarding childhood asthma, targeted consultation and investigation of potential bus route options that target appropriate local facilities.

- *Incompatible land uses and potential health impacts of locating freight terminal in areas close to residential areas and schools*. The impact of the Project on the local community that includes residential areas, schools and aged care facilities has been assessed in detail, in accordance with Australian guidance, within the HHRA. Overall, on the basis the assessment, cumulative and incremental impacts from the construction and operation of the Project on the health of the community (including sensitive land uses) are generally considered to be low and impacts can be mitigated in accordance with established practice and regulation (refer to section 5 of the HHRA).

- *Neighbourhood impacts (lighting, traffic and congestion).* The light spill impacts of the Project have been addressed in Chapter 22 – *Visual and urban design* with further comments provided in section 6.14.1of this report. For some residential locations that overlook the Project site, there would be a noticeable change in the brightness of the area on clear nights and therefore a number of mitigation measures would be considered during the detailed design phase of the Project to mitigate the impacts. The traffic and congestion impacts are discussed in detail in Chapter 11 – *Traffic, transport and access* with further comment provided in section 6.6 of this report.

- *Climate change/global warming/natural resource impacts.* The GHG impacts of the Project are assessed in Chapter 19 – *Greenhouse gas assessment.* In summary, the annual GHG emissions would only represent a very small proportion of national (approximately 0.02%) and NSW (0.09%) emissions. In addition, the Project would result in reductions in freight transport emissions.

6.17.3 Learning difficulties for children

Two submissions were concerned that the noise impacts of the IMT would result in learning difficulties for children in nearby schools.

Submission number(s)

125 and142.

MIC response

Impacts on health associated with noise are discussed in detail in Chapter 25 – *Human health risks and impacts* and section 5.3 of Technical Paper 16 – HIA (EIS Volume 9). The assessment of health impacts from noise relies on the noise guidelines established in NSW (NSW *Industrial Noise Policy*, the NSW *Road Noise Policy*, and the *Interim Construction Noise Guideline)*. These noise guidelines are based on the protection of health from a range of different types of noises (from industry, roads, rail and construction) and these guidelines incorporate information/evidence of health effects in the community that include proximity to schools and learning difficulties for children. Compliance with the relevant NSW noise guidelines is protective of these health effects in the local community. A range of noise mitigation measures are identified in the EIS to ensure that the relevant noise guidelines are met in the community (refer to section 5 of the HIA and Chapter 12 – *Noise and vibration* of the EIS for further discussion).

6.17.4 Health impacts due to sleep disturbance

Some submissions were concerned that sleep disturbance could cause health impacts such as increased blood pressure and heart rate, increased pulse amplitude, vasoconstriction, changes in respiration and cardiac arrhythmias. These are all said to increase the likelihood of accidents and decrease concentration.

Submission number(s)

125, form letter 2, 142 and 228.

MIC response

MIC acknowledges that the community is concerned about the impacts of sleep disturbance and the potential health impacts this may cause. As discussed in section 12.5 of Chapter 12 – *Noise and vibration* of the EIS, operations on the main IMT site were predicted to comply with sleep disturbance objectives at the nearest receptors in Casula, Wattle Grove and Glenfield. Furthermore, IMEX and interstate train movements on the rail access connection to the SSFL are predicted to comply with sleep disturbance objectives for the southern rail access option.

The design and construction of the Project will include measures to reduce and control night-time noise levels and specifically control noise from short lived or high noise events which may otherwise have the potential to disturb sleep (refer to section 12.4 of Chapter 12 – *Noise and vibration)*.

6.17.5 Impacts on health systems

There was some concern there would be an increase in patient load on the health system as a result of the Project's impacts. Submissions reference a report commissioned by Queensland Health, where it was found that between 1996 and 2004 Gladstone has a chronic lymphocytic leukaemia rate twice that of the state average. Submissions note that Gladstone is a heavy industrial town.

Submission number(s)

147, 213, 228 and 234.

MIC response

The impacts on the health of the local community have been addressed in detail in Chapter 25 – *Human health risks and impacts* and Technical Paper 15 – HHRA and Technical Paper 16 – HIA (Volume 9 of the EIS). More specifically, the HHRA has undertaken a quantitative assessment of the impacts of the Project on the health of the community due to changes in air quality. The quantification of health impacts has included the calculation of the increase in the number of cases for the relevant health effects evaluated (refer to sections 4.4 and 4.5 of the HHRA). The change in the number of cases calculated was less than 0.2 per year which cannot be measured in any health data/statistics for the area. Therefore, it is not considered that the Project would have an increased patient load within the NSW health system.

A number of submissions have referenced a study undertaken by Queensland Health in relation to an increased incidence of Chronic Lymphoid Leukaemia in the Gladstone area between 1996 and 2004 ('*Investigation of Chronic Lymphoid Leukaemia, Gladstone – Calliope, 1996–2004, Full Technical Report, August 2007'* available from http://www.health.qld.gov.au/ph/documents/caphs/finalgladstone.pdf and summary at http://www.health.qld.gov.au/ph/documents/caphs/cll_summary_report.pdf). The submissions imply the Gladstone study found the increased incidence was due to industrial pollution exposures. Review of the Queensland Health report, however, does not support this implication. The Queensland Health report, which did evaluate the potential for a link between the increased incidence and industrial emissions, found 'no evidence in the scientific literature pointing to any environmental cause' (page 3 of the summary document as part of *Investigation of Chronic Lymphoid Leukaemia, Gladstone – Calliope, 1996-2004*). The report concludes the increased incidence may be related to a genetic risk or a result of random variation in time and place. On this basis, the study referenced in the submission does not support any conclusions of environmental exposures being linked to the increased incidence of Chronic Lymphoid Leukaemia in Gladstone. As such, the study does not provide any information that is relevant to the assessment of health impacts in Moorebank associated with the Project.

6.17.6 Adequacy of human health assessment

Two submissions were concerned that the HIA does not include all sensitive receptors and has not adequately assessed the impacts of the Project. Submissions argue that the health assessment should include consideration of costs (such as the cost of treating cancer patients).

Submission number(s)

185 and 211.

MIC response

The assessment of health impacts presented in Chapter 25 – *Human health risks and impacts*, Technical Paper 15 – HHRA and Technical Paper 16 – HIA (EIS Volume 9) have considered impacts at a range of representative sensitive receivers (refer to Figure 2.1 in the HHRA and Figure 3.1 in the HIA). These include the closest workplaces, residences, schools childcare facilities and community facilities. These are representative of the closest sensitive receivers in the surrounding community and are not intended to cover all the sensitive receivers in the suburbs surrounding the site. Impacts from the site decrease with increasing distance from the site, hence an assessment of community exposure all day every day at locations closest to the site provides a conservative assessment of impacts at locations further away. The HHRA considered health impacts to the community in all areas, assuming they are at home all day, every day, for a lifetime. For workplace areas close to the site, the HHRA considered exposures every work day for a working lifetime. In addition, the approach adopted for the assessment of health impacts in the HHRA addresses health effects for all members of the community including infants, pregnant women, the elderly and those with pre-existing health conditions. Such an approach addresses exposure to emissions from the Project for all members of the community regardless of whether they are at work, home, attending school, community facilities or recreational areas. The major community hospital, Liverpool Hospital is much further from the site than the sensitive receivers evaluated and is considered to be adequately covered by the assessment presented in the HHRA. This approach was also supported by and independent external technical peer reviewer CHETRE. Letters from peer reviewers endorsing the technical papers are provided in Appendix G to the EIS (Volume 2).

Submission 185 references a news article (http://www.healthnews.uc.edu/news/?/7358/) which notes that proximity to major roadways can leave school aged children more susceptible to respiratory disease later in life. These health effects are captured in the risk calculations presented in the HHRA (refer to sections 4.1 and 4.2 in the HHRA). The health impacts assessed include primary and secondary indicators related to shortened life expectancy from all causes (including respiratory disease) and specific respiratory and cardiovascular disease. The specific paper referenced does not provide robust relationships that can be used in the HHRA; however the effects and relationships adopted in the HHRA capture the health effects discussed in the paper.

The existing health of the local community is discussed in Chapter 25 – *Human health risks and impacts*, section 2.4 of the HHRA, and section 3.5 of the HIA (EIS Volume 9). This discussion includes health statistics published by NSW Health for the Sydney south-west area. These health statistics are based on data collected by NSW Health and reflect the population of the whole Sydney south-west area. No data is available for individual suburbs and there will be significant variations between individuals within the population (which is normal for any statistical data set). It is not appropriate to assume that the health statistics for a large population (such as the Sydney south-west area) apply to any specific individual.

The existing health of the population in the Project area (based on the existing health data available from NSW Health) has been included in the calculations undertaken in the HHRA when evaluating the risk of health impacts from particulate exposures. The calculations presented in the HHRA show that the Project would not result in any significant impact on the existing health of the population.

The health effects of exposure to air pollutants relevant to the Project are addressed in the HHRA where exposure to diesel particulate matter, fine particulates and other air pollutants has been assessed using current robust science and the site-specific aspects of the Project, including all the emission sources related to the Project (including diesel emissions). The relationships used in the HHRA (as outlined in section 4.2 of the HHRA) are based on studies of changes in exposure to fine particulates (that include ultrafine particulates) in urban air (where the pollution is dominated by combustion sources that include fine and ultrafine emissions) and health effects in the community. As such the quantitative assessment presented in the HHRA addresses health effects associated with exposure to both fine and ultrafine emissions from combustion sources.

Technical Paper 16 – HIA (EIS Volume 9) addresses health impacts associated with noise, light spill and traffic impacts raised in the submissions. In addition, the HIA (section 7 of the HIA) addresses equity aspects of the Project, relevant to the Project area.

The HHRA has undertaken a quantitative assessment of the impacts of the Project on the health of the community due to changes in air quality. The assessment of risk presented in the HHRA determined the health impacts were not significant in the local community. In addition the HHRA has included the calculation of the increase in the number of cases for the relevant health effects evaluated (refer to sections 4.4 and section 4.5 of the HHRA). The change in the number of cases calculated was less than 0.2 per year which cannot be measured in any health data/statistics for the area. Therefore, it is not possible to provide indicative health cost associated with such low levels of health impacts.

6.18 Environmental risks analysis

6.18.1 Appropriateness of risk assessment

Some submissions questioned the appropriateness of the risk analysis and the ratings identified in the EIS. In particular, five submissions (147, 189, 190, 192 and 213) suggested that air quality impacts should have been assessed with a probability of 'almost certain' and a consequence of 'severe' with a resultant risk of 'very high' given the release of particulate matter and polycyclic hydrocarbons into the atmosphere.

Submission number(s)

147, 189, 190 and 213.

MIC response

The Environmental Risk Analysis (ERA) provided in Chapter 29 – *Environmental risk analysis* of the EIS uses a risk analysis framework and matrix which was prepared in accordance with the principles of the Australian and New Zealand standard AS/NZS ISO 31000:2009 *Risk Management – Principles and Guidelines.*

In the case of the air quality impacts during construction and operation of the Project, a rating of 'Moderate' consequence, 'Likely' probability of impact, with a 'High' unmitigated risk significance was applied. However, the mitigation measures proposed as part of the Project reduced the residual risk to 'Low to Moderate'. The 'Moderate' consequence is appropriate given the impact is likely to be localised and the regional impact is low. This is consistent with the 'Moderate' rating defining in Table 29.2 of Chapter 29 – *Environmental risk analysis* of the EIS.

A 'Likely' probably rating was allocated based on the findings of the air quality assessments which determined there is overall a low likelihood of adverse local air quality impacts on the surrounding environment as result of construction and operation of the Project (refer to section 17.5 of Chapter 17 – *Local air quality*, EIS Volume 6). As such, the impact falls within the criteria 'Likely', as defined in Table 29.3 in Chapter 29 – *Environmental risk analysis*.

The operational air quality impacts of the Project were given the rating of 'High', despite the incremental (Project-only) air pollutant concentrations and dust deposition rates associated with all modelled scenarios being predicted to be within NSW EPA criteria and National Environment Protection Measures (NEPM) advisory reporting. This is due to the maximum cumulative 24 hour average PM_{10} and $PM_{2.5}$ concentrations exceeded the applicable NSW EPA criteria and NEPM advisory reporting goals (exceedance only at one receptor) when taking into account existing background levels. Importantly, the air quality assessment found that there would be no additional exceedance events as a result of the Project. On this basis, the Project was given a rating of 'High' as opposed to 'Major'. Taking into account the mitigation measures as outlined in section 17.4 of Chapter 17 – *Local air quality*, the impacts can be considered to be reduced to a low to moderate level, meaning the potential impact is understood and the effectiveness of the mitigation measures are considered to be high given that similar measures have been employed on a range of other projects.

The risk assessment process was supported by a robust Local Air Quality Assessment that was peer reviewed by an independent industry leading expert in air quality assessments.

6.19 Cumulative

6.19.1 Adequacy of cumulative assessment

A number of submissions noted there has been a lot of confusion around the two proposed IMTs within the Moorebank precinct (Moorebank and SIMTA). Some submissions argued the cumulative impacts of the SIMTA Project and the Moorebank IMT have not been adequately explained and considered as the projects have been assessed separately.

Submissions argued that the traffic modelling for the Moorebank IMT and the SIMTA project was different and this creates confusion.

Submission number(s)

Form letter 1, form letter 2, 142, 147, 210 and 213.

MIC response

MIC acknowledges the community concerns regarding the Moorebank IMT and SIMTA IMT proposals and recognises that some confusion may exist. As discussed in section 6.2.1, prior to the EIS exhibition, the MIC proposal was being developed as a stand-alone project and it was therefore necessary to assess the environmental impacts independently of the SIMTA project.

Chapter 27 – *Cumulative impacts* of the EIS assesses the cumulative impact of both the Moorebank IMT site in conjunction with the SIMTA IMT and other planned or proposed developments in the local area. In recognition of community and approval agencies concerns about the prospect of both projects being developed in some way; three scenarios (as detailed in section 27.1 of Chapter 27 – *Cumulative impacts*), were assessed in the EIS (assuming a combined IMT precinct across both sites). The cumulative scenarios assessed in the EIS were developed through discussions with NSW DP&E with consideration of the capacity of the SSFL and freight demands. Since the exhibition of the EIS an in–principle agreement has now been reached between MIC and SIMTA and the indicative site layout plan of the Moorebank IMT has changed to reflect the likely combination of the two sites. Chapter 7 of this report outlines proposed amendments to the development, which includes the details of the proposed change to the Project site concept layout and section 7.10 provides an assessment of cumulative impacts taking into account the developments in the IMT precinct planning that have occurred since exhibition of the EIS.

In terms of the comment regarding the discrepancies in the traffic modelling between the SIMTA Project and the Project site, as discussed in section 5.6.15, the SIMTA traffic analysis was undertaken by a different consultant, modelling a different operation and so discrepancies are to be expected. However, while the daily totals traffic generation are different, the AM and PM peak hour generation are similar.

As mentioned above, MIC acknowledges the traffic network implications of the Project and the concerns raised by Council. Additional traffic impact assessment is currently being undertaken to identify the measures required to mitigate the traffic impact of the Project on intersections in the surrounding area, the results of which are discussed in section 7.9.3 of this report. These investigations aim to ensure the intersections would operate no worse than they would without the Project.

6.20 General

In addition to the issues discussed in the sections above, a number of community submissions raised concerns about IMTs in general and/or the impacts of the Project. These are summarised and responded to in Table 6.2 below.

Table 6.2 Summary of general issues raised and MIC response

Issue	MIC response	Submission number(s)
General concern regarding pollution from the IMT.	Refer to MIC's response to contamination, air quality and noise impacts in section 6.9, section, 6.11 and section 6.7 of this report.	2, 11, 18, 52, 68, 74, 93, 102, 117, 170, 171, 174, 191, 206, 218 and 236
General concern raised on impacts of the Project.	The impacts of the Project have been considered and assessed in the EIS (Chapters 11–26 of the EIS).	50, 70, 118 and 226.
Concerned that the IMT would negatively impact on the quality of life for residents, including the ambiance.	MIC notes that the lifestyle of an area is comprised of a number of components including amenity aspects (visual, noise and air) as well as recreational opportunities and social interactions. The impact of the Project on these aspects has been discussed in detail throughout the EIS, with responses to particular community submissions provided in the sections above.	57, 65, 75 and 230
General concern regarding long term planning for Sydney basin	Chapter 2 – *Assessment of the issues raised by the NSW Planning Assessment Commission* of this report presents an analysis of the Moorebank precinct demand for both IMEX and Interstate intermodal capacity with a specific focus on the conclusions made by the PAC in their assessment report for the SIMTA concept approval. The analysis draws upon and expands on the demand assessment presented in Chapter 3 – *Strategic context and need for the project* in the EIS and aligns these with the NSW Government objectives to double the proportion of container freight moved by rail through NSW Ports by 2020. The Project is consistent with, and assists in meeting the key objectives of a number key policies including the National Land Freight Network Strategy, National Ports Strategy, National Infrastructure Priorities – Infrastructure for an economically, socially and	61

Issue	MIC response	Submission number(s)
	environmentally sustainable future, NSW 2021, State Infrastructure Strategy, NSW Long Term Transport Master Plan, Draft Sydney Metropolitan Strategy for Sydney to 2031, Railing Port Botany's Containers, South West Subregion: Draft Subregional Strategy and NSW Ports and Freight Strategy. Refer to section 3.6 of Chapter 3 – *Strategic context and need for the Project* of the EIS for a detailed discussion.	
Concerned with the crime issues associated with freight terminals.	MIC notes the issues raised by community members about crime issues. The design for the IMT would take into account measure to avoid and minimise crime including having the site fully fenced with security gates for vehicles and pedestrians entering the site. The design of the IMT would take into account the objectives for Crime Prevention Through Environmental Design (CPTED).	9, 125, 142 and 153
Concerned with the impacts of rail access options (as proposed in EIS). In particular: • The EIS creates confusion due to the three rail access options under consideration. It is difficult for community members to understand the impact of each rail access option. • Submission 188 argues the southern rail access option would better integrate into the existing rail network and provide for a precinct-wide approach for the development of the IMT. • Submission 237 questions why the southern rail access option would be preferred if only one IMT was developed on the SIMTA site and the Moorebank site. Suggests that either one of the rail access options would work.	The assessment of three rail access options in the EIS was intended to allow flexibility for future developers and operators of the Project, so that the most efficient and effective layout could be developed for the Project. However, since the exhibition of the EIS, MIC has selected the southern rail access option as its preferred option. The Project now only seeks approval for one rail access option, the southern rail access connection. This connection would provide access to both the SIMTA site and the Project site. It is important to note, that only one rail connection will be built to service both the Moorebank IMT project and the SIMTA IMT project.	Form letter 2, 188, 196 and 237
Concerned with litter impacts. In particular: • Argues that industrial areas are likely to generate a large amount of litter. • Argues that litter prevention measures are required to minimise and capture of litter to avoid downstream impacts on the Georges River. Suggests the use of a water wheel within the river.	Chapter 26 – *Waste and resource management* provides an assessment of the waste likely to be generated from the IMT during construction and operation of the Project. This assessment includes litter, paper and food waste generated from a range of sources. Section 26.3 outlines the mitigation measures and the key principles of waste management which includes reduction, re-use, recycling and recovery. Dedicated recycling storage areas and recycling bins would be located throughout the Project site, with clear signage and convenient access for waste recycling service providers. This would include bins for paper, plastics, glass, metals and compost. There are no plans to build a water wheel within Georges River, as this would generate additional impacts to the River itself.	194

Issue	MIC response	Submission number(s)
Argues that the business case has not been made public. Argues that this should be.	A business case was prepared for the Project in 2012 by KPMG and considered by the then Australian Government in its decision to proceed with the development of an intermodal at Moorebank. The full business case contains sensitive commercial information and as such is not available to the general public. A summary of the business case was released publicly in 2012, and is available on the MIC website, http://www.micl.com.au/. Relevant information from the full business case was incorporated into the EIS including a summary of the economic appraisal.	224
Concerns raised in relation to the accuracy and adequacy of identifying/ locating sensitive receptors. In particular: • St Francis X Primary, All Saints Primary, Al Amana College, Moorebank High School, St Christopher's Primary School, NewBridge Heights, Nuwarra Public School, St Josephs Moorebank, Hammondville Public School. • Places of workshop including: St Lukes Anglican Church, St Marys Anglican Church, St Christopher's Anglican Church, St Thomas Indian Orthodox Cathedral, Church of Jesus Christ of Latter Day Saints, St Agnes, St Thomas Anglican Church. • Other places including Liverpool Hospital and Liverpool Private and Liverpool Regional Museum. • Notes other residents in Lakewood Crescent which are said to be 22 m from the subject site. Other nearby houses which have not been included are in Wattle Grove (230 m), Casula (280 m), Liverpool Links (530 m), Glenfield (770 m), Moorebank Avenue 950 m).	The assessment of health impacts presented in Chapter 25 – *Human health risks and impacts*, Technical Paper 15 – HHRA and Technical Paper 16 – HA has considered impacts at a range of representative sensitive receivers (refer to Figure 2.1 in the HHRA and Figure 3.1 in the HIA). These include the closest workplaces, residences, schools childcare facilities and community facilities. These are representative of the closest sensitive receivers in the surrounding community and are not intended to cover all the sensitive receivers in the suburbs surrounding the site. Impacts from the site decrease with increasing distance from the site, hence an assessment of community exposure all day every day at locations closest to the site provides a conservative assessment of impacts at locations further away. This approach was also supported by and independent external technical peer reviewer and the CHETRE.	185

Chapter 7
Proposed amendments to the development

7. Proposed amendments to the development

This chapter documents and assesses proposed amendments to the development as a result of the recent agreement between the Moorebank Intermodal Company (MIC) and SIMTA to develop an integrated precinct, issues raised during the public exhibition of the EIS and outcomes of further technical investigations.

7.1 Introduction

Section 89F (4) of the *Environmental Planning and Assessment Act 1979* (EP&A Act) states that a development application for State Significant Development (SSD) may be amended, substituted, or withdrawn and later replaced before it has been determined by the Minister. Where this occurs, it may require further public consultation under the provisions of section 89F(1) of the Act where it is determined by the NSW Secretary of the Department of Planning and Environment (NSW DP&E)) to be substantially different from the original application and where the environmental impact of the development concerned has not been reduced by the changes proposed.

Since the EIS was exhibited between October and December 2014, a number of amendments are proposed, both to the layout of the Project and to its delivery staging. The NSW DP&E has advised that the proposed amendments to the development should be presented as part of the Response to Submissions report and placed on public exhibition for further consideration. This chapter of the document presents the proposed amendments.

7.2 Scope and approach

The purpose of this chapter is to:

- document the proposed amendments to the development as a comparison against what was presented in the EIS (section 7.4);
- assess the environmental impacts of the amendments with a focus on the change in impacts relative to the EIS predictions (section 7.8) and present updated mitigation measures; and
- provide an updated discussion and assessment of the cumulative impacts of the amendments in relation to the SIMTA IMT proposal section 7.10 provides a more detailed discussion of the relationship with SIMTA and the proposed intermodal precinct solution.

7.2.1 Terminology explained

There are a number of terms used throughout this chapter that are explained below:

Project phasing

Project *phasing* is the term used to describe the physical development of the Moorebank IMT over time. The Project will be developed progressively in line with demand, and for ease of reference the overall development of the Project has been divided into a series of phases. These are described further in section 7.5 below.

Project scenarios

Project *scenarios* are specific points in time throughout the development of the Moorebank IMT, on which impact assessments are based. They are a series of snapshots of the level of activity (and associated impacts) occurring at that time. Multiple scenarios have been considered to ensure the impacts are fully understood for the key project issues (traffic, local air quality, noise and human health) and a 'worst case' scenario can be captured. The application of scenarios is described further in section 7.8.2.

Project stages

Project *stages* refer to the development application process under the NSW EP&A Act. As indicated above the development is subject of a staged development application process. This sets out concepts for the development for which detailed proposals for separate stages will be the subject of subsequent development applications. The future *stages* (from an approvals perspective) may not necessarily be aligned with the Project phases as described herein.

7.3 Relationship with the SIMTA Project

Chapter 2 *Assessment of the issues raised by the NSW Planning Assessment Commission* of this report provides an outline of the relationship between this Project and the SIMTA project, in terms of explaining the potential for development of an overall Moorebank precinct across both sites. In addition, the chapter presents an outline of a number of potential cumulative scenarios that provide a basis for undertaking precinct-wide impact assessments. The cumulative scenarios are described and assessed in section 7.10.

7.3.1 SIMTA EIS for project approval

SIMTA has received approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) Act for the construction and operation of an intermodal terminal comprising a 1 million TEU IMEX facility and 300,000 sq. m of warehousing.

SIMTA has also received concept approval under Part 3A of the NSW EP&A Act from the Planning Assessment Commission (PAC) for the development of an intermodal terminal. In approving the development, the PAC granted concept approval only for a 250,000 TEU IMEX facility, until the local road infrastructure can be upgraded to support increased capacity. The PAC stipulated that subject to more detailed traffic assessment an ultimate 500,000 TEU capacity could be provided and that this should be adequate to 'meet the Government's objectives for rail freight from Port Botany well into the future'. This is less than the 1 million TEU that was sought by SIMTA (refer to section 2.3 of this report for a discussion on MIC response to the PAC capacity cap). The PAC approved the 300,000 sq. m of warehousing proposed.

SIMTA is now in the process of obtaining development consent to construct and operate Stage 1 of its development being:

- a 250,000 TEU IMEX facility; and
- a rail connection to the Southern Sydney Freight Line (SSFL) at the southern end of the Moorebank site.

SIMTA has submitted a Preliminary Environmental Assessment (PEA) in support of its SSD application under Part 4.1 of the EP&A Act. The 250,000 IMEX capacity proposed reflects the current cap placed on SIMTA's concept plan approval by the PAC.

The application was lodged in October 2014 and the NSW Secretary's Environmental Assessment Requirements (SEARs) were issued in December 2014 (Application Number SSD 14-6766).

The NSW SEARs require consideration of the following cumulative impacts by SIMTA:

- The development's relationship to and interaction with adjoining development, including the proposed intermodal on the School of Military Engineering (SME) site and consideration of cumulative impacts of the two intermodals; and
- Cumulative air impacts at a local and regional level (including from contemporaneous operations such as those of the proposed Australian Government MIT).

Moorebank EIS concept approval

The agreement between MIC and SIMTA is subject to certain contractual conditions between the two parties. These conditions include that:

- project approval be obtained by SIMTA for the IMEX terminal on the SIMTA site; and
- staged development consent be obtained for terminal development on the Moorebank site.

It is critical to MIC that the IMT development at Moorebank is for a total precinct capacity of 1.55million TEU to meet the Australian Government's objectives. MIC is therefore requesting staged development consent for a capacity of 1.55 million TEU, subject to the condition that only one IMEX terminal is built, on either the MIC site or the SIMTA site, but not on both.

MIC is also seeking consent for the southern rail connection as the only rail access point to the terminal. Once again, if SIMTA builds this connection (which it has concept approval for and is subject of a current development application), MIC will also use this connection to provide rail access to the Moorebank site and will not build a separate rail connection.

7.3.2 Future alignment of Moorebank Avenue

The full development of the Moorebank precinct may involve the Commonwealth-owned Moorebank Avenue being relocated, most likely to the northern and eastern boundary of the SIMTA site. This would create a fully integrated and contiguous intermodal precinct; however, any relocation of Moorebank Avenue is outside the scope of MIC and SIMTA's current plans and is therefore outside the scope of this development application. Any future decision to move Moorebank Avenue would be subject to a separate planning approvals process – yet to be determined. Public use of the realigned road would be maintained.

7.3.3 Future warehousing

The full development of the Moorebank precinct may also involve the development of additional warehousing on the Moorebank site to replace the area occupied by the IMEX terminal (if it is built on the SIMTA site). This area would yield an additional 200,000 to 250,000 sq. m of warehousing. Consideration of additional warehousing over and above the 300,000 sq. m is outside the scope of this EIS. Any future decision to include additional warehousing would be subject to demonstration of demand and a further environmental and planning approval.

7.3.4 Future planning pathway

The agreement between MIC and SIMTA considers the planning pathway if the conditions of the agreement are met. The planning pathway would incorporate the current approval that has already been obtained by SIMTA, and would include the following milestones:

- SIMTA obtains Stage 1 DA development consent for its site (current).
- MIC obtains staged development consent - including Stage 1 early works for its site (current).
- SIMTA obtains all subsequent development consents for each stage of the precinct development, including any modifications to the concept/stage development approvals referred to above.

7.4 Amendments to the IMT Terminal layout since the exhibition of the EIS

7.4.1 Elements of the Project layout and built form that have changed

Amendments to the Project layout and built form comprise:

- changes to the layout and operation of the IMT terminal, including the location of the warehousing, working tracks and storage tracks, IMT freight village precinct, IMEX and interstate equipment storage and repair area and detention ponds;
- confirmation that the southern rail access into the site will be required (the EIS sought flexibility to build either a southern, central or northern rail access into the site from the SSFL), a minor amendments to the alignment and a reduction in the southern rail access corridor;
- changes to the upgrade of Moorebank Avenue including changes in the extent and timing of the upgrade works;

- changes to access and circulation including heavy and light vehicle access to the facility via the Moorebank Avenue and Anzac Road intersection along a dedicated road at the north and along the western boundary of the Project site; and
- an increase in the size of the conservation area.

In terms of warehousing, the site built form controls associated with heights, setbacks and floor space ratio remain unchanged (refer section 7.7.2 of the EIS); however the setback control on Moorebank Avenue is no longer required as warehouses are no longer proposed on the eastern boundary of the site. To supplement the setback controls, asset protection zones will be established between the conservation area and the proposed warehouse buildings to safeguard against bushfire risk.

Figure 7.1 shows the comparison between the key components of the EIS and the proposed amendments to the development and how they have changed. Figure 7.2 shows the revised IMT layout.

KEY PROJECT COMPONENTS	EIS	REVISED PROJECT
IMEX FREIGHT TERMINAL	Designed to handle 1.05 million TEU per year of IMEX containerised freight. Located in the centre of the Project site.	Designed to handle 1.05 million TEU per year of IMEX containerised freight. Located in the southern section of the Project site, adjacent to Moorebank Avenue.
INTERSTATE TERMINAL	Designed to handle up to 500,000 TEU per year of interstate containerised freight. Located in the centre of the Project site.	Designed to handle up to 500,000 TEU per year of interstate containerised freight. Located along the eastern section of the Project site, adjacent to Moorebank Avenue.
WAREHOUSE FACILITIES	Capacity of up to 300,000 sq m. Located on the eastern boundary of the Project site, adjacent to Moorebank Avenue.	Capacity of up to 300,000 sq m. Located along the western boundary of the Project site, adjacent to a dedicated access road.
RAIL ACCESS AND LAYOUTS	Project connected to the Sydney Southern Freight Line (SSFL) via a new rail access. Three rail access options assessed in EIS (northern, central and southern rail access).	Project connected to the Sydney Southern Freight Line (SSFL) via a new southern access from the SSFL. Northern and central rail access options not considered further.
VEHICLE ACCESS	Vehicles to access the Project site from Moorebank Avenue via the M5 Motorway. Modification to the M5 Motorway intersection, widening and upgrade of Moorebank Avenue to East Hills Railway Line. Upgrade of Anzac Road and relocation and upgrade of Bapaume Road.	Vehicles to access the Project site from a new Moorebank Avenue/Anzac Road intersection via the M5 Motorway. Modification to the M5 Motorway intersection, widening and upgrade of Moorebank Avenue to the new intersection only.
INTERNAL ROAD LAYOUT	Vehicles to access IMEX, IMT terminals and warehouses via access points off the upgraded Moorebank Avenue.	Vehicles to access IMEX, IMT terminals and warehouses via a dedicated access road (open to the public), leading from the new Moorebank Avenue/Anzac Road intersection, located on the western boundary of the site adjacent to the conservation area.
CONSERVATION AREA	Located along Georges River on the western boundary of the Project site.	Located along Georges River on the western boundary of the Project site.
ON-SITE STORMWATER DETENTION BASIN	Multiple detention basins along western edge of development area. Detention basin locations differ for each rail access option.	Multiple detention basins along western edge of development area. Currently four detention basins proposed; two adjacent (western site) to dedicated access road, one in northern corner (adjacent to ABB land) and one in the southern end of the site. Final locations will be determined during detailed design.

Figure 7.1 Comparison of the key project components of the EIS and revised Project

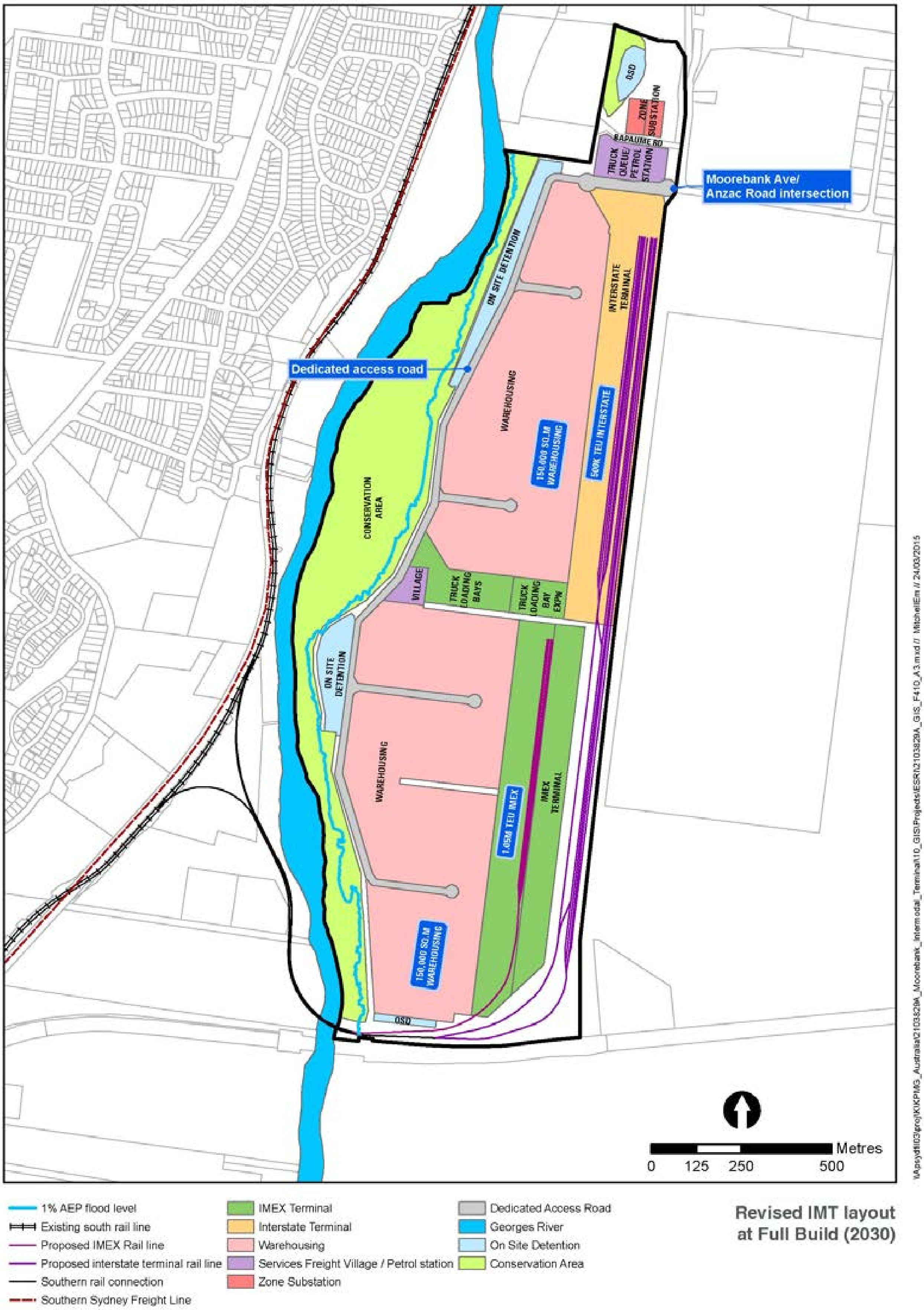


Figure 7.2 Revised Project layout at Full Build (2030)

7.4.2 Rail access

The Project is no longer seeking consent to construct a northern or central rail connection. Staged development consent is sought for a southern rail access only.

The southern rail access location and configuration has not changed since the EIS and remains as per the description presented in section 7.5.3 and Figure 7.6 in Chapter 7 – *Project built form and operations* of the EIS. However the construction staging has changed, with the entire rail connection (northbound and southbound rail spur) to be built during Phase A in 2016.

7.4.3 Internal rail layout

Description of the EIS design

The IMEX freight terminal tracks, as described in section 7.6.1 of the EIS included eight terminal tracks capable of accommodating 650 m trains and required the working tracks to be arranged parallel to each other in groups of four tracks with sufficient space in between to allow for the installation of rail mounted gantry (RMG) crane footings.

The interstate rail yard, as described in section 7.8.1 of the EIS comprises four interstate arrival and departure tracks designed to accommodate 1,800 m trains, four working tracks suitable for 900 m trains, a separate grouping of combined storage and classification tracks, and a rail configuration at either the northern or southern end of the interstate terminal working tracks, allowing for locomotives to be detached from one end of the train and re-positioned at the other end.

Description of the proposed change

The revised Project allows for four IMEX terminal tracks (three working tracks and locomotive release) which are arranged in parallel in one group along the eastern boundary of the Project site set back from Moorebank Avenue.

The interstate rail layout is also located on the eastern boundary to the north of the IMEX terminal tracks and still comprises two groupings of approximately four interstate arrival and departure tracks, one group for 1800 m trains and the other for 900 m long trains. The revised proposal, however, does not include a separate grouping of combined storage and classification tracks.

7.4.4 Road layout and access

Moorebank Avenue upgrade

Description of the EIS design

The upgrades to Moorebank Avenue, as described in section 7.9.2 of the EIS, included:

- modification of the M5 Motorway intersection to connect to the widened Moorebank Avenue;
- widening of Moorebank Avenue to a four-lane carriageway between the M5 Motorway and the East Hills Railway Line;

- an upgrade of the Anzac Road intersection;
- relocation of and upgrade of Bapaume Road and its intersection with Moorebank Avenue;
- installation of traffic control devices such as a median strip, traffic lights and additional road safety signage; and
- indicative vehicle entry/exit points into the Project site along Moorebank Avenue associated with the three rail access options (refer to Figure 7.7 to Figure 7.9 in Chapter 7 – *Project built form and operations* of the EIS).

Description of the proposed change

All traffic entering and exiting the Project site will utilise the Moorebank Avenue and Anzac Road intersection, with traffic restrictions in place to force all exiting traffic to turn left onto Moorebank Avenue. As such, upgrading of Moorebank Avenue between Anzac Road and the East Hills Railway line is no longer required:

- widening of Moorebank Avenue to a four-lane carriageway between the M5 Motorway and Anzac Road only;
- an upgrade of the Anzac Road intersection and relocation of and upgrade of Bapaume Road and its intersection with Moorebank Avenue (to be determined as part of the detailed design); and
- only one access point to the IMT Project site.

Design for these upgrades will be undertaken as part of the detailed design of the Project.

Internal road layout and access

Description of the EIS design

The indicative internal road layout and access, as described in section 7.6.1 and illustrated in Figure 7.4 to Figure 7.6 *in Chapter 7 – Project built form and operations* of the EIS included:

- a main entrance (main IMT entrance) for heavy vehicles associated with IMEX, interstate and warehouse traffic;
- a separate entrance for light vehicles (primarily administrative and maintenance staff vehicles) and for emergency vehicle access and movement of heavy vehicles as a secondary access;
- trouble parking – a truck parking and holding area;
- access and egress for emergency service vehicles; and
- warehouse access roads – an internal road system (layout dependent on rail option) adjacent to the warehouse precinct for heavy vehicles (separate from light vehicles) and in-terminal (ITVs). The internal road also provides additional layover areas for over the road (OTR) vehicles in addition to the trouble truck parking area.

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For the EIS heavy vehicle movements were segregated from light vehicles past the main entrance. The approach road to the main IMT access gate and movement through the terminal area also segregated OTR vehicles from IMT plant and equipment (as much as possible).

A grade separated crossing over the IMEX and interstate rail track was also proposed for the southern and central rail access option to allow access to the warehousing precinct in the south-west corner of the Project site.

Description of the proposed change

The internal road layout and access, as illustrated on Figure 7.3, will include:

- a vehicle entry point (for all vehicles) from Moorebank Avenue at a proposed new intersection at the junction of Moorebank Avenue and Anzac Road;
- a dedicated access road for heavy and light vehicles and emergency vehicles (constructed from the Moorebank Avenue and Anzac Road intersection);
- right-turn lanes at the Moorebank Avenue and Anzac Road intersection for safe entry for vehicles turning into the Project site and the dedicated access road. The dedicated access road will be a dead end road, also open to the public, located adjacent to the warehouse precinct on the western boundary of the Project site;
- when exiting the Project site from the dedicated access road, all heavy vehicles will turn left only at the Moorebank Avenue and Anzac Road intersection for travel towards the M5 Motorway. There will be no restrictions on light vehicle movements at this intersection;
- two IMT access gates, one for the interstate terminal and one for the IMEX terminal as follows:
  - the interstate IMT gate will provide access for heavy vehicles and will be located at the northern end of the interstate terminal with direct access from the dedicated access road. This gate will be located a sufficient distance from the access road to allow inbound trucks to queue within the IMT boundary without impeding the flow of traffic on the access road, Moorebank Avenue or the functioning of the intersection with Anzac Road or the M5 Motorway. Outbound traffic will still be able to queue within the IMT boundary along the approach to the interstate IMT gate; and
  - the IMEX gate will provide access for heavy vehicles to a dedicated IMEX truck loading area. This area processes the trucks which then park in a designated bay and wait for their container to be delivered by a straddle crane or transfer vehicle. The truck then secures the load and leaves the area via the exit gate.
- internal warehouse access roads that interface with the warehouse precinct, on the western side of the Project site, providing direct internal access for the ITVs to the warehouses from the IMEX and interstate terminal; and
- no grade separated crossing over the IMEX and interstate rail track is proposed in the south-west corner of the Project site for the southern rail access option.

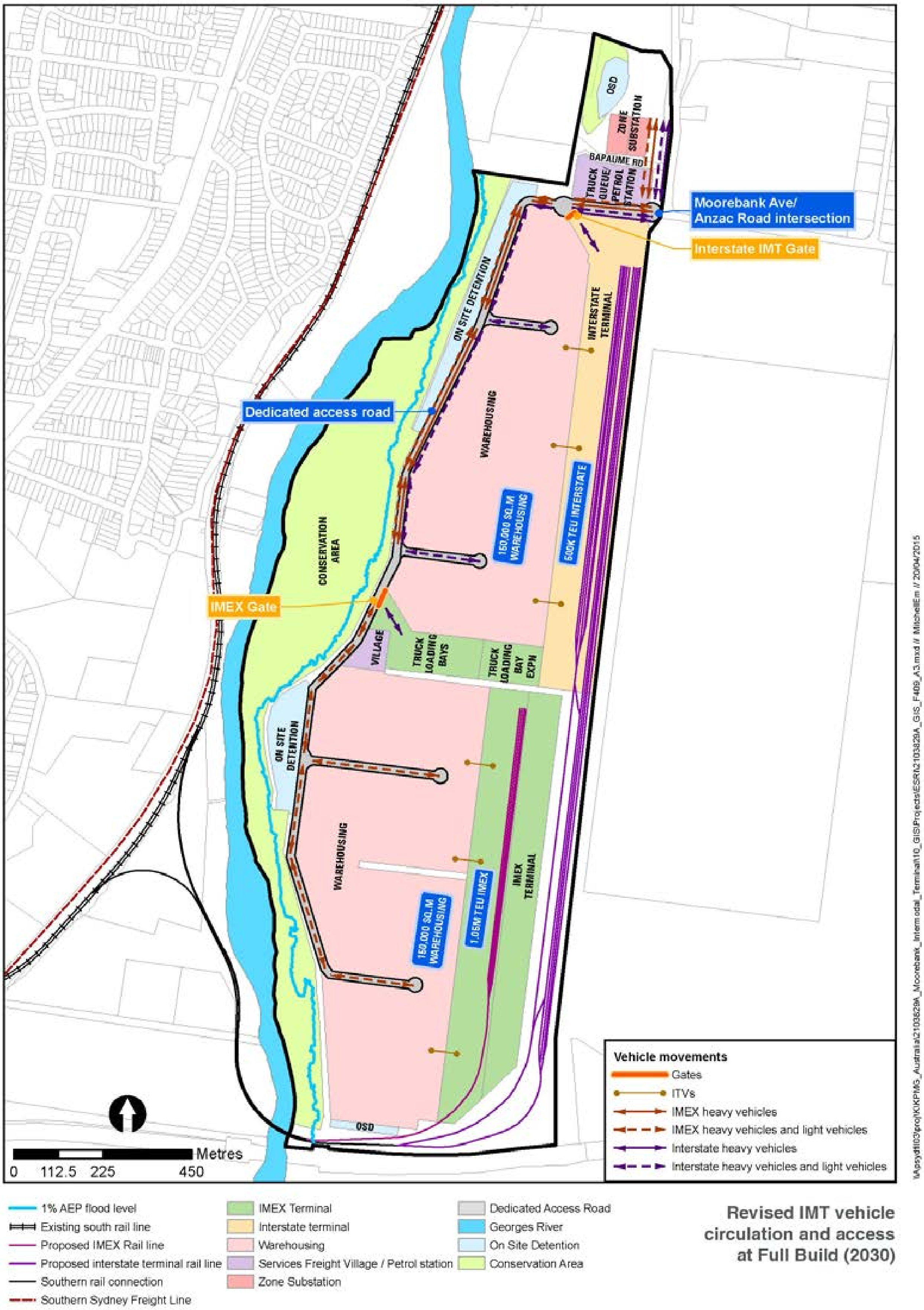

Figure 7.3 Revised IMT vehicle circulation and access at Full Build (2030)

Realignment of Powerhouse Road

Description of the EIS design

As described in section 7.9.3 of the EIS, the existing layout for the northern and central rail access options required realignment of the existing access road to the Casula Powerhouse Arts Centre on Liverpool City Council land to the west of the Georges River. The realignment was required to allow for construction and operation of the proposed rail access links to the SSFL, while also retaining access to the Arts Centre.

Description of the proposed change

Under the revised Project, the realignment of Powerhouse Road is not required as the southern rail access has been confirmed as the preferred option.

7.5 Amendment to the Early Works phase

Section 8.3 of Chapter 8 – *Project development phasing and construction* of the EIS describes the Early Works phase of the Project. These works excluded Rehabilitation Works which were described in Section 8.1.2 of the EIS, where it was stated that these works were outside the scope of the EIS but were subject to a separate Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) referral to the Department of Environment (DoE) (EPBC referral - EPBC 2014/152).

The works were subsequently determined by DoE not to be a Controlled Action under the EPBC Act, meaning that no further assessment or approval would be required from the Commonwealth. Additionally, as the works constituted an Action by the Commonwealth (MIC) entirely on Commonwealth land, it was further determined by MIC that approval under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) would also not be required.

The Early Works component of the Project, as described in the EIS will not change, and includes:

- establishment of construction facilities, which may include a construction laydown area, site offices, hygiene units, kitchen facilities and wheel wash;
- demolition of existing buildings, structures and contaminated buildings not being removed as part of the MUR Project or the site rehabilitation works;
- some contaminated land remediation including removal of unexploded ordnance (UXO) and explosive ordnance waste (EOW) if found, removal of asbestos contaminated buildings and remediation of an area known to contain asbestos;
- relocation of trees, including hollow bearing trees (i.e. those that provide ecologically important roosting habitats);
- service utility terminations and diversions;
- establishment of the conservation area within the plant and equipment operation training area (known as the 'dust bowl') including seed banking and planting; and
- heritage impact mitigation works including archaeological salvage of Aboriginal and European potential archaeological deposit (PAD) sites.

However, since the agreement has been made with SIMTA to build and operate the Moorebank IMT, SIMTA will now be responsible for delivering the Early Works phase of the project, which includes the Rehabilitation works. Therefore, MIC now seeks to include the previously excluded Rehabilitation Works into the Stage 1 SSD concept approval for the Project, in other words to subject the rehabilitation works to approval under the NSW EP&A Act, to remove any uncertainty over the fact that the works may be delivered by SIMTA (not a Commonwealth entity).

The areas of proposed Rehabilitation Works are presented in Figure 7.4 overleaf and include the following:

- decontamination and demolition of buildings identified with asbestos containing material (ACM) (B001, B032, B035, B039, B040, B041, B042, S128);
- remediation of contamination hotspots including underground storage tanks (USTs) as identified in the Remediation Action Plan presented in Appendix F of Technical Paper 5 – Environmental Site Assessment (Phase 2) of the EIS (EIS Volume 5);
- site stabilisation and establishment of the proposed conservation area on the site of the plant and equipment operator training area (known as the 'dust bowl') on the western side of the site;
- construction of secure perimeter fencing; and
- ancillary operations including establishment of construction facilities and amenities on existing areas of hardstand. This will include staff parking, site offices, hygiene units and kitchen facilities, plant laydown areas and wheel wash.

7.6 Changes to the Project development phasing and timing

This section provides a description of those aspects of the Project development phasing and timing which are likely to change as a result of the revised IMT layout. Figure 7.1 shows a comparison of the EIS and revised Project development phasing and timing.

Description of the EIS development phasing and timing

As discussed in Chapter 8 – *Project development phasing and construction* of the EIS, the construction and operation of the Project will be undertaken in a phased manner. The EIS used the following five development phases to describe the likely construction and operation activities as the Project develops:

1. Early Works (2015);
2. Phase A – construction of 500,000 TEU IMEX terminal and 100,000 sq. m warehousing (2015–2018);
3. Phase B – operation of 500,000 TEU IMEX terminal and 100,000 sq. m warehousing, construction of additional 550,000 million TEU and construction of additional 150,000 sq. m (2018–2025);
4. Phase C – operation of 1.05 million TEU IMEX terminal and 250,000 sq. m warehousing, construction of 500,000 million TEU interstate terminal and 50,000 sq. m warehousing (2025–2030) (Phase C); and

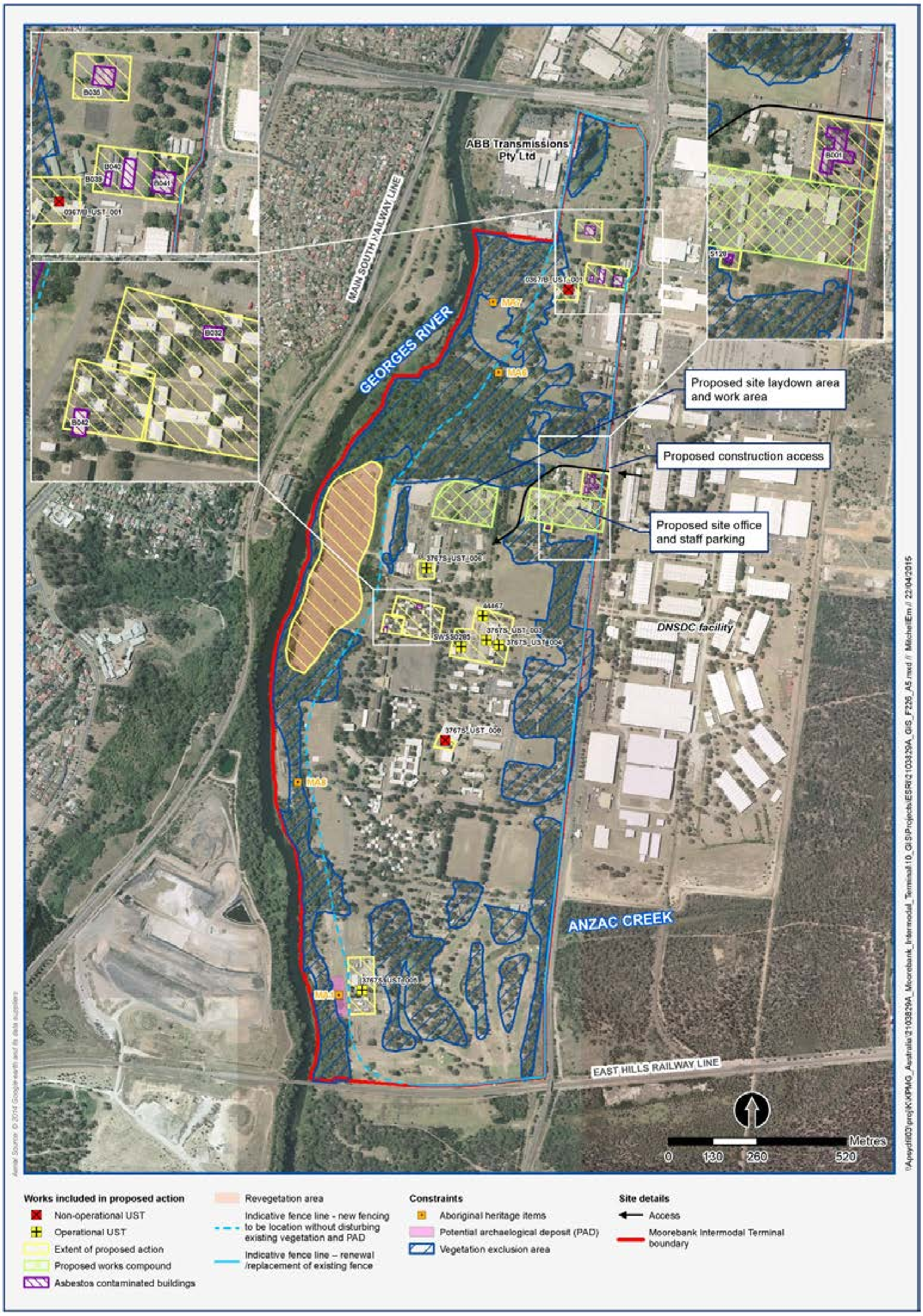

Figure 7.4 Layout of the proposed Rehabilitation Works

5. Full Build – operation of 1.05 million TEU IMEX terminal and 500,000 TEU interstate terminal, 300,000 sq. m of warehousing (2030).

Description of the revised development phasing and timing

The development phases anticipated for the revised Project have changed based on revised projections of the future demand, and may be subject to further change in light of changing economic conditions in future years. As such the phasing is a best estimate for the purposes of assessing environmental impacts at key stages of development. Each stage of development (with the exception of Early Works) will be subject to its own detailed EIS (Stage 2 SSD approval applications) which will provide an opportunity for the Project stages and timing to be determined in detail. A summary of the revised phasing comprises:

1. Early Works (2015), including Rehabilitation Works – subject to the current concept approval application.

2. Phase A – construction of 250,000 TEU IMEX terminal, 100,000 sq. m of warehousing and construction of the southern rail link (2015–2016)..

3. Phase B – the phase would commence with the operation of a 250,000 TEU IMEX terminal and 100,000 sq. m of warehousing, as well as the construction of a 250,000 TEU interstate rail terminal, which becomes operational in mid-2019. Construction of an additional 250,000 TEU IMEX terminal occurs in mid-late 2020.

4. Phase C – the phase would commence with operation of a 500,000 TEU IMEX terminal, 100,000 TEU warehousing and a 250,000 TEU interstate terminal. Additional construction activities during Phase C (which become operational once completed) comprise the construction of 150,000 sq. m warehousing and a 250,000 TEU IMEX (mid 2022 to end 2023 approx.); construction of an additional 255,000 TEU IMEX (2027); and construction of an additional 250,000 TEU interstate capacity and 50,000 sq. m warehousing (2029).

5. Full Build – operation of 1.05 million TEU IMEX terminal and a 500,000 TEU interstate terminal and, 300,000 sq. m of warehousing (2030).

Figure 7.5 below shows the comparison between the EIS and revised Project development phasing and timing.

Figure 7.6 to Figure 7.9 show the progressive development of the revised Project from 2016 to the Full Build at 2030.

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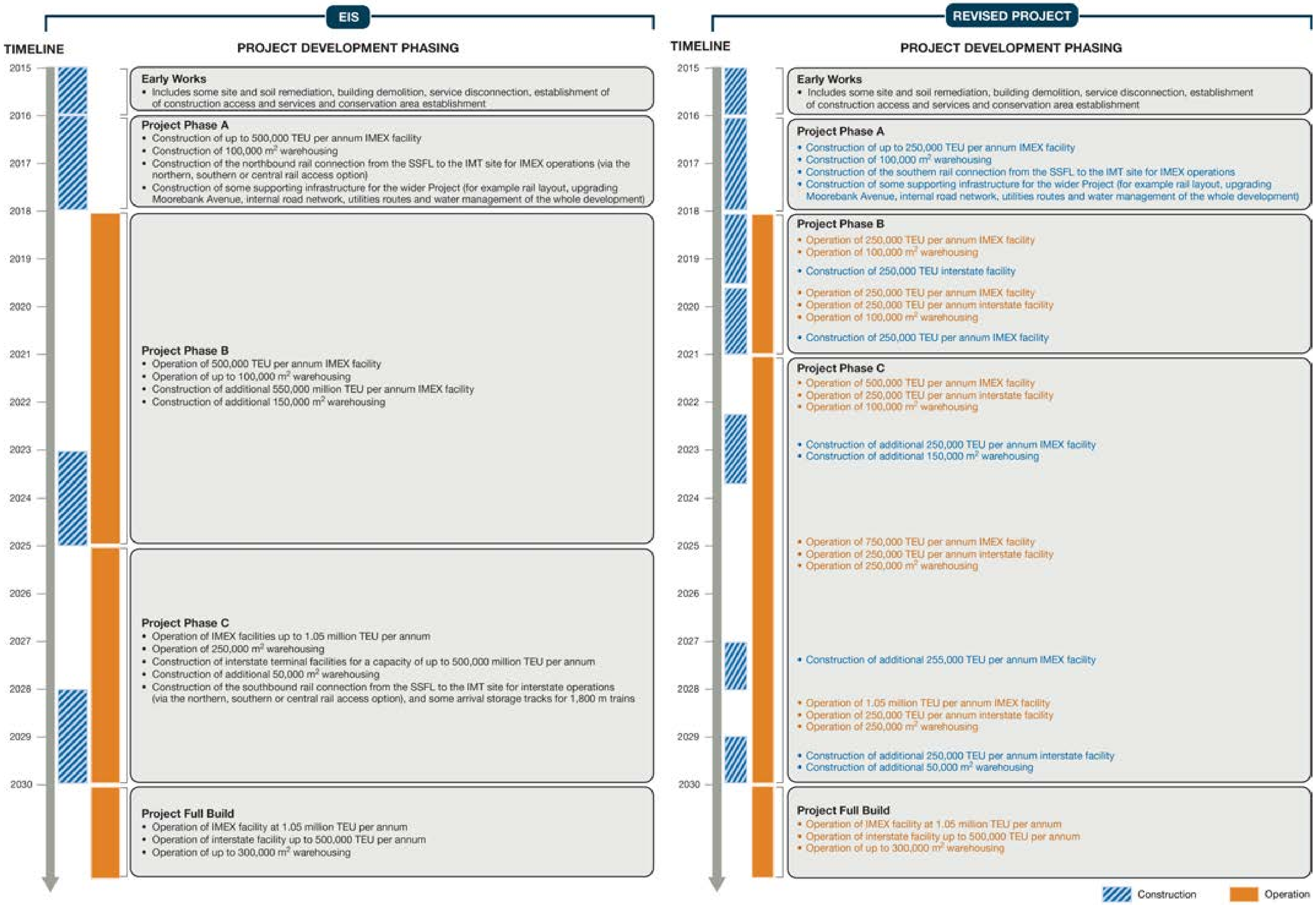

Figure 7.5 Comparison of EIS and revised Project development phasing

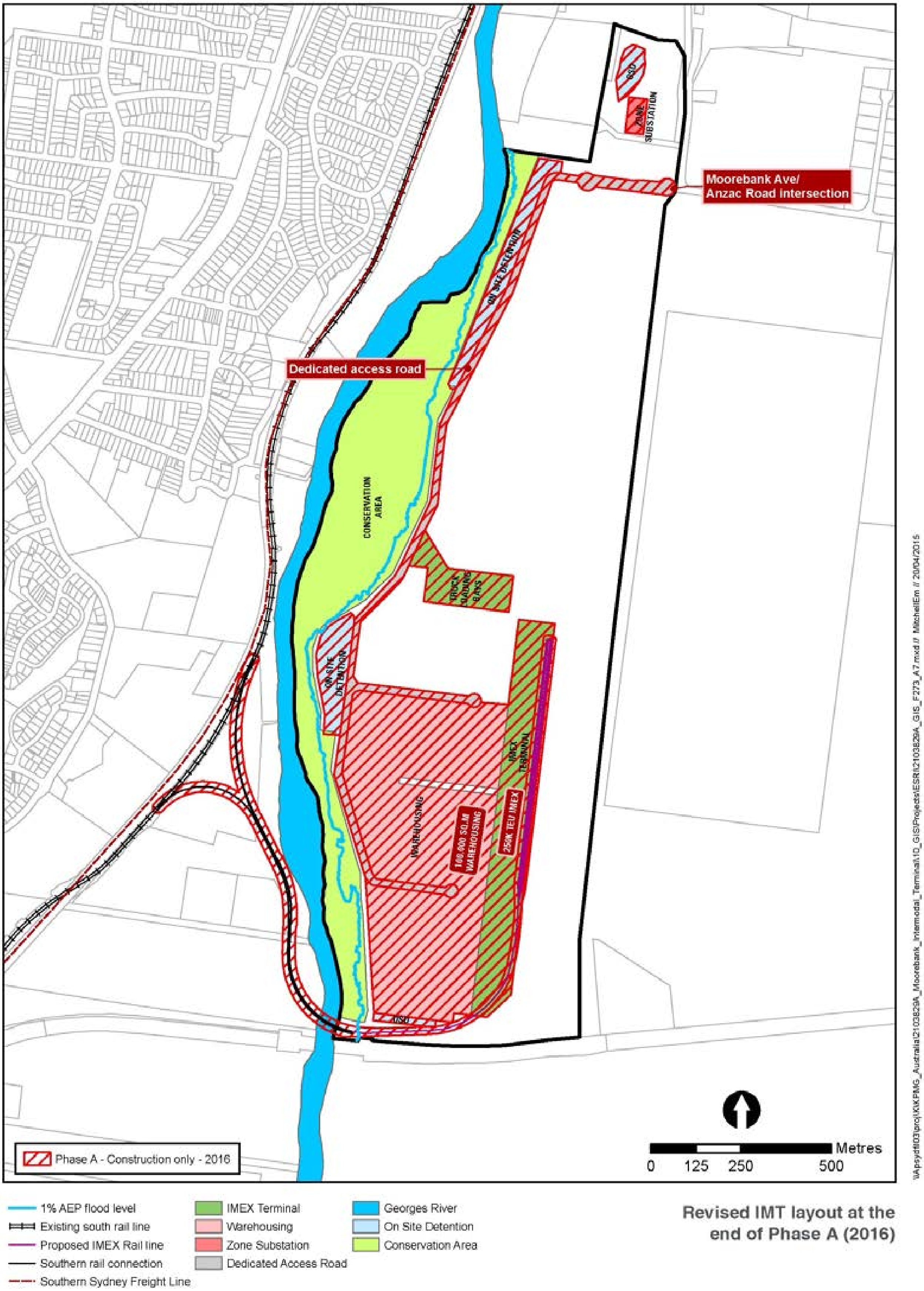

Figure 7.6 Revised IMT layout at the end of Phase A (2016)

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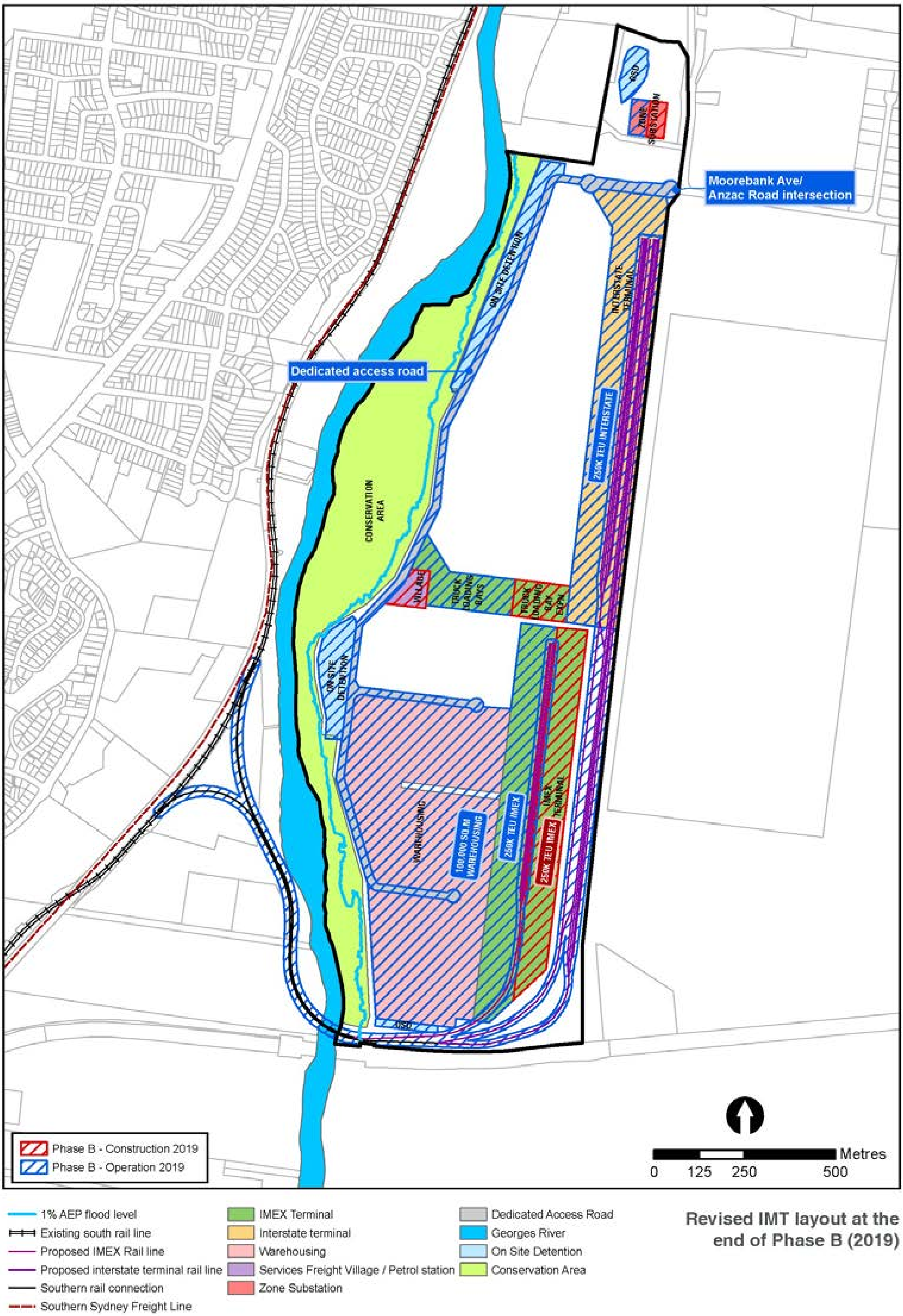

Figure 7.7 Revised IMT layout at the end of Phase B (2019)

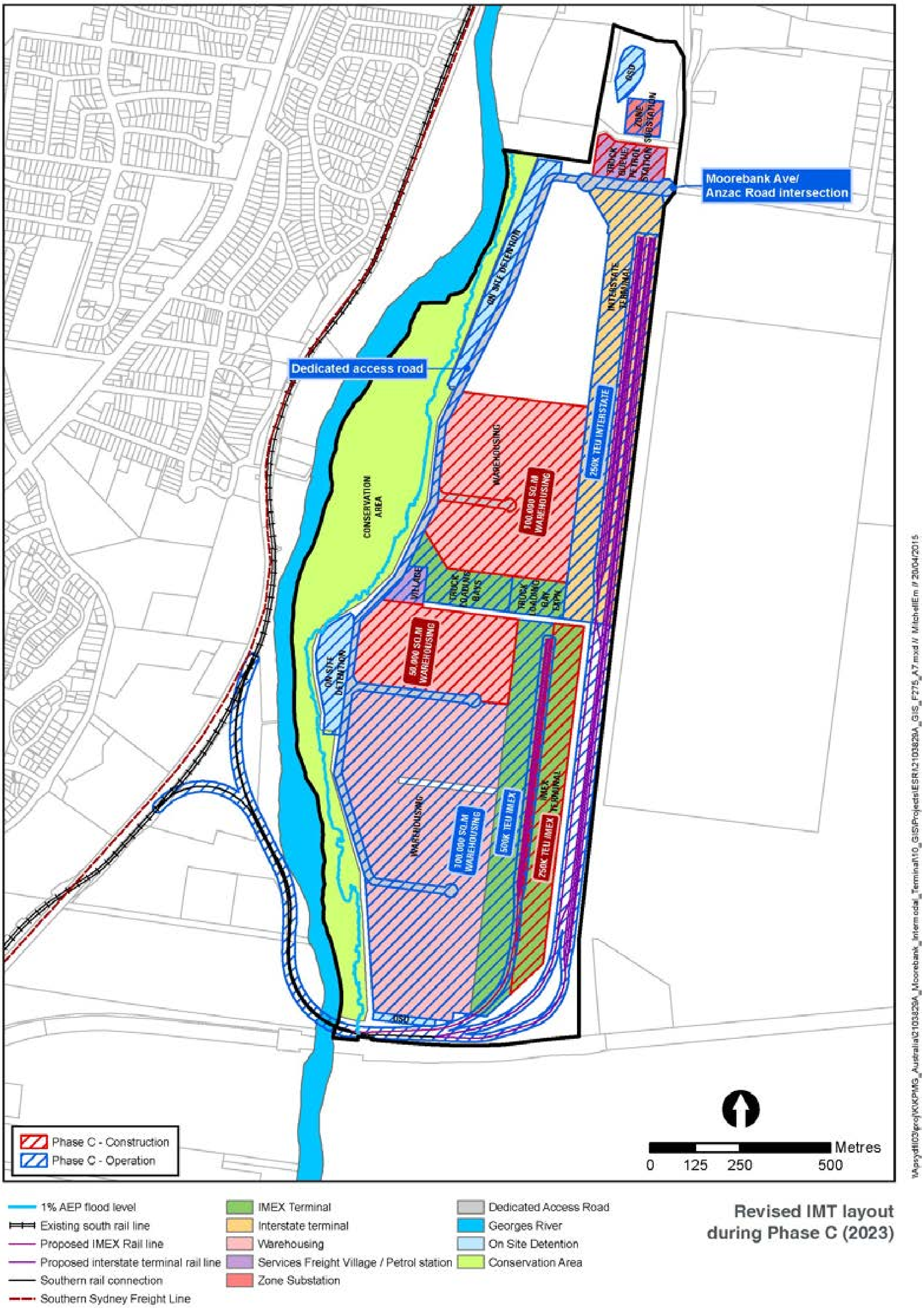

Figure 7.8 Revised IMT layout at the end if Phase C (2023)

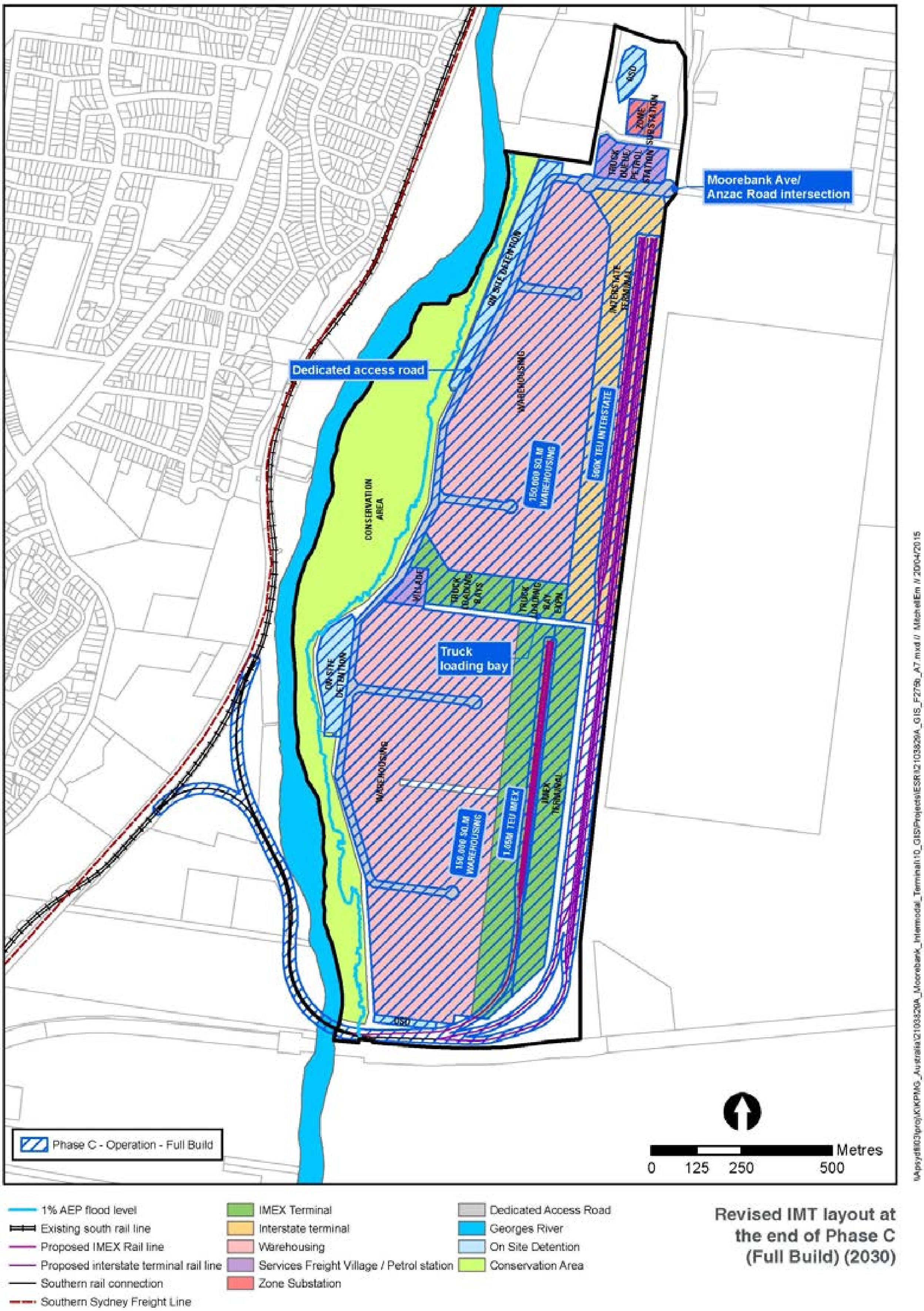

Figure 7.9 Revised Project at the end of Phase C (Full Build) (2030)

Chapter 7
Proposed amendments to the development

7.7 Changes to the operational activities and elements

Chapter 7 – *Project built form and operations* of the EIS provides a description of the proposal concept for the IMT Project including key elements of the built form and operations of the IMEX terminal, warehousing and interstate terminal. The chapter also provides detail of the functions and ultimate capacity of the proposed IMT at Full Build.

Table 7.1 provides a summary of the key operational changes associated with the revised Project by development phase including the forecast capacity of the IMEX and interstate terminals and the warehousing. The key operational changes associated with these revised estimates are associated with train movements, employment numbers and hours of operation.

Table 7.1 Indicative operational elements for the revised Project

Phase	Operational elements				
	Capacity	**Train numbers**	**Vehicle movements**	**Employment numbers (Full-time equivalent (FTE)**	**Hours of operation**
Phase B	250,000 TEU IMEX 250,000 TEU Interstate 100,000 sq. m of warehousing	<u>IMEX:</u> 68.2 train movements per week <u>Interstate:</u> 12 train movements per week	<u>IMEX:</u> 820 daily vehicle movements 58 peak vehicle movements <u>Interstate:</u> 972 daily vehicle movements 70 peak vehicle movements <u>Warehousing:</u> 2090 daily vehicle movements 54 peak vehicle movements	<u>IMEX:</u> *Administration:* 9 FTE *Operational:* 26 FTE (per shift with 3 shifts per day) *Maintenance:* 2.5 FTE (per shift with 3 shifts per day) 93.5 FTE operational staff on site each day <u>Interstate:</u> *Administration:* 17.5 FTE *Operational:* 39 FTE (per shift with 3 shifts per day) *Maintenance:* 3.5 FTE (per shift with 3 shifts per day) 145 FTE operational staff on site each day <u>Warehousing:</u> *Administration:* 7.5 FTE *Operational:* 82.5 FTE (per shift with 3 shifts per day)	24 hours a day, 7 days a week Heavy vehicles to access for 16 hours a day, 5.5 days a week.

Phase	Operational elements				
	Capacity	Train numbers	Vehicle movements	Employment numbers (Full-time equivalent (FTE)	Hours of operation
				Maintenance: 82.5 FTE (per shift with 3 shifts per day) 503 FTE operational staff on site each day	
Phase C	500,000 TEU IMEX 250,000 TEU Interstate 100,000 sq. m	IMEX: 137 train movements per week Interstate: 12 train movements per week	IMEX: 1639 daily vehicle movements 116 peak vehicle movements Interstate: 972 daily vehicle movements 70 peak vehicle movements Warehousing: 2362 daily vehicle movements 76 peak vehicle movements	IMEX: *Administration:* 17.5 FTE *Operational:* 52 FTE (per shift with 3 shifts per day) *Maintenance:* 4.5 FTE (per shift with 3 shifts per day) 187 FTE operational staff on site each day Interstate: *Administration:* 17.5 FTE *Operational:* 39 FTE (per shift with 3 shifts per day) *Maintenance:* 3.5 FTE (per shift with 3 shifts per day) 145 FTE operational staff on site each day Warehousing: *Administration:* 7.5 FTE *Operational:* 82.5 FTE (per shift with 3 shifts per day) *Maintenance:* 82.5 FTE (per shift with 3 shifts per day) 503 FTE operational staff on site each day	24 hours a day, 7 days a week Heavy vehicles to access for 24 hours a day, 7 days a week.

Phase	**Operational elements**				
	Capacity	**Train numbers**	**Vehicle movements**	**Employment numbers (Full-time equivalent (FTE)**	**Hours of operation**
Full Build	1.05 m TEU IMEX 500,000 TEU Interstate 300,000 m^2	<u>IMEX:</u> 137 trains (or 273 train movements) a week. Up to137 IMEX trains could be processed concurrently onsite. <u>Interstate:</u> 12 interstate trains (or 24 train movements) a week Up to four interstate trains could be processed concurrently on site.	<u>IMEX:</u> 3400 daily vehicle movements 245 peak vehicle movements <u>Interstate:</u> 2074 daily vehicle movements 120 peak vehicle movements <u>Warehousing:</u> 5380 daily vehicle movements 146 peak vehicle movements	<u>IMEX:</u> *Administration:* 35 FTE *Operational:* 1.4 FTE (per shift with 3 shifts per day) *Maintenance:* 9 FTE (per shift with 3 shifts per day) 374 FTE operational staff on site each day <u>Interstate:</u> *Administration:* 35 FTE *Operational:* 78 FTE (per shift with 3 shifts per day) *Maintenance:* 7 FTE (per shift with 3 shifts per day) 290 FTE operational staff on site each day <u>Warehousing:</u> *Administration:* 22 FTE *Operational:* 248 FTE (per shift with 3 shifts per day) *Maintenance:* 248 FTE (per shift with 3 shifts per day) 1,509 FTE operational staff on site each day.	24 hours a day, 7 days a week Heavy vehicles to access site for 24 hours a day, 7 days a week.

7.8 Changes to the construction activities and elements

Description of the EIS construction activities

Section 8.4 to section 8.7 in Chapter 8 – *Project development phasing and construction* of the EIS describes the key construction activities and operational elements for each development phase and include reference to the activities associated with the northern and central rail access options.

The existing construction footprint, access and haulage details are described in section 8.8 and illustrated in Figures 8.13 to 8.15 in Chapter 8 of the EIS.

Description of the revised construction activities

The key construction activities and operational elements of the revised Project are described below. Table 7.2 to Table 7.4 also describes the likely construction activities for each phase. These details are indicative only and will be subject to confirmation during the next stage of approval under the NSW EP&A Act (i.e. Stage 2 SSD applications).

The activities proposed in the Early Works phase, presented in section 8.3 in Chapter 8 of the EIS, will not change; however, as discussed in section 7.5 the Early Work phase will now include the site Rehabilitation Works, for the purpose of obtaining approval as part of the Stage 1 SSD approval. Activities associated with the northern and central rail access options have not been considered further.

Phase A:

A significant amount of construction activity would occur during Phase A of the Project.

Construction of the initial IMEX freight terminal facilities for a capacity of 250,000 TEU per annum and 100,000 sq. m of warehousing within the IMT site will commence in 2016. During this time, ancillary facilities including IMEX administration, the plant and equipment maintenance and repair building, and the main Moorebank IMT gate would also be constructed.

The Project involves the construction of a rail access from the SSFL to the IMT site. This access would be constructed across the southern end of the site as outlined in detail in section 7.5 of Chapter 7 - *Project built form and operations* of the EIS. The northbound and southbound rail connections to the SSFL would be constructed in Phase A and would facilitate train movements to and from Port Botany for the IMEX facility.

The southern rail access has only one bridge structure, which would allow for both IMEX and interstate train entry and exit to the SSFL. To avoid the need for bridge works in subsequent Project development phases, the bridge structure over the Georges River will accommodate both IMEX and interstate train entry and exit. Details of the construction footprint and proposed construction approach for southern rail access are provided in section 8.8, Chapter 8 – *Project development phasing and construction* of the EIS.

All utilities, including power, gas, water, sewer and stormwater trunks, would ideally be installed during Phase A. These utilities would be capable of supplying both the IMEX and the warehousing precinct at their full capacity; however, during Phase A, only connections to the IMEX and the initial warehousing (100,000 sq. m) would be made. Stub connections would be provided for future extensions to additional IMEX and warehousing and the interstate terminal. Internal roads would be developed as part of Phase A to serve initial IMEX and warehouse operations, while allowing for expansion in subsequent stages.

Table 7.2 identifies the key construction elements likely to occur during Phase A. These details are indicative only and would be subject to confirmation during the next stage of approval under the NSW EP&A Act (i.e. Stage 2 SSD applications).

Table 7.2 Key construction elements during Phase A

Project Stage	Key construction elements
Phase A	• Geotechnical works to determine the requirement for piles and other supporting structures for the Georges River bridge. • Vegetation clearing within the footprint of construction footprint of Phase A to enable construction works. • Upgrading of Moorebank Avenue and construction works to the new Moorebank Avenue and Anzac Road intersection (Moorebank Avenue would remain open during the construction and operation period). No upgrade of Moorebank Avenue to the south of the new Moorebank Avenue/Anzac Road intersection required. • Bulk earthworks for the construction footprint of Phase A (initial IMEX). • Construction of IMEX terminal buildings (for a capacity of 250,000 TEU a year) including separate rail maintenance facilities and a terminal operating plant and equipment facility. • Construction of IMEX rail infrastructure (including RMG lines). • Retaining wall construction (where required). • Construction of the southern rail access (both northbound and southbound rail spurs) and associated bridge structure over Georges River to service the IMEX facility. • Construction of the initial 100,000 sq. m of warehouse buildings, hardstand and car parking. • Installation and commissioning of a utilities duct (for water, gas, electricity and sewerage) and substation for IMEX terminal and initial warehousing precinct, with stub connections provided for future extensions. • Installation of major drainage infrastructure and lighting. • Construction of the dedicated access road. • Construction of hardstand pavements. • Installation of noise attenuation infrastructure (as required). • Construction of onsite detention ponds. • Landscaping. • Construction of ancillary services (such as the service centre and truck stop).

Phase B:

Phase B will commence in 2019 and include the construction of the interstate terminal (with a capacity of 250,000 TEU per year), and an additional IMEX terminal capacity by 250,000 TEU (to 500,000 TEU a year), constructed in 2020.

Table 7.3 identifies the likely construction elements during Project Phase B. These indicative elements will be confirmed during the Stage 2 SSD development approval process.

Table 7.3 Key construction elements during Phase B

Project Stage	Key construction elements
Phase B	• Vegetation removal, site preparation and bulk earthworks for footprint for Phase B. • Site preparation, including bulk earthworks and remediation of Phase B area. • Geotechnical works for the development of the interstate terminal area. • Construction of rail infrastructure for interstate terminal, including RMG lines. • Construction of interstate terminal buildings and associated facilities including maintenance facility, administration, car parking and fuel storage; for 250,000 TEU a year capacity. • Construction of interstate hardstand pavements. • Construction of retaining walls. • Installation of noise attenuation infrastructure (as required). • Construction of IMEX terminal buildings and facilities for an additional 250,000 TEU a year capacity (providing for a total capacity of 500,000 TEU a year). • Utility connections (to connect to major utilities installed during Phase A). • Lighting. • Landscaping.

Phase C:

Phase C construction activities include the provision of additional IMEX terminal capacity by 250,000 TEU, and additional warehousing capacity of 150,000 sq. m within the IMT site. These will be constructed between 2022 and 2023.

In 2027, an additional capacity of 255,000 TEU per annum will be constructed for the IMEX terminal.

Between 2029 and 2030, an additional capacity of 250,000 TEU per annum will be constructed for the interstate facility, together with a further 50,000 sq. m of warehousing.

Table 7.4 summarises the likely key construction elements during Phase C. These are indicative only and will be subject to the next stage of approval (i.e. Stage 2 SSD development approval).

Table 7.4 Key construction elements during Phase C

Project Stage	Key construction elements
Phase C (2023)	• Vegetation clearing within the construction footprint for Phase C. • Site preparation, including bulk earthworks and remediation of Phase C area. • Utility connections and additional minor drainage works for the connection to major utilities and drainage installed during Phase A and Phase B. • Construction of 150,000 sq. m of warehousing buildings, hardstand areas and car parking. • Construction of IMEX terminal buildings and facilities for an additional 250,000 TEU a year capacity (providing for a total capacity of 1.05 million TEU a year). • Landscaping. • Lighting.

Full Build (2030):

By 2030 the Moorebank IMT would reach capacity, and as such the Full Build scenario is intended to represent the developed terminal as it would operate on an ongoing basis. There would be no further construction activity on the Project site.

7.8.1 Bulk earthworks

Description of the EIS bulk earthwork volumes

As described in section 8.8.3 in Chapter 8 – *Project development phasing and construction* of the EIS, the Project site has a very flat gradient (0.1%) from north to south and is tiered from west to east between the main portion of the Project site and the area adjacent to the Georges River.

The EIS design sought to establish a level across the Project site and a minimal north–south gradient that is suitable for the efficient operation of rail infrastructure and RMGs, which have specific requirements related to changes in surface level.

The EIS design also focused on optimising a cut and fill balance across the IMT site to minimise the requirement for fill to be imported or excess spoil to be exported. The design also attempted to minimise elevation of the Project site from its current natural surface level as much as practicable, in order to minimise costs and visual impacts and also to avoiding flooding of surrounding areas. There would be no change to the levels or elevation of the proposed conservation area.

The indicative staging of the earthworks sought to progressively clear the Project site in line with the development phasing.

Table 8.6 in Chapter 8 – *Project development phasing and construction* of the EIS shows the indicative bulk earthworks estimates.

Description of the revised bulk earthworks volumes

The objectives for clearing and developing the Project site, as presented above and in section 8.8.3 in Chapter 8 – *Project development phasing and construction* of the EIS, are still relevant for the revised design, however, the bulk earthwork volumes have been revised to reflect the revised IMT layout, the change in Project development phasing and confirmation that the southern rail access option will be developed.

To generate the bulk earthwork volumes, the percentage of construction works for each development phase was calculated and resulted in:

- Phase A (2015–2016): 36%;
- Phase B (2016-2019): 35.3%;
- Phase C (2019-2030): 28.7%; and
- Full build (2030): 0%.

Table 7.5 below provides an estimate of the bulk earthwork estimates for the revised Project, including the development of the southern rail access, and development phasing. There will be no bulk works associated with the Full Build development phase as the Project site will be fully operational.

Table 7.5 Revised bulk earth works estimates

Item (at 30% bulking and settlement)	Revised layout cumulative		
	Phase A	Phase B	Phase C
Total excavated cut (m^3)	559,827	598,191	431,490
Acceptable reuse (m^3)	335,896	358,915	258,894
Total export (m^3)	427,129	468,499	320,914
Total pavement volume (m^3)	327,467	322,073	261,707
Total fill required (m^3) = (fill + soft spot container + rail earthworks)	312,468	405,456	197.000
Total cut reuse and spoil from previous stage	335,896	382,343	258,894
Import required (m^3) = (fill required – acceptable)	-23,429	23,113	-61,894
Spoil	23,429	0	61,894
	Total Import m^3		23,113
	Total Spoil Remaining m^3		61,894

7.8.2 Construction workforce numbers

Description of the EIS construction workforce numbers

Table 8.8 in section 8.8.6 in Chapter 8 – *Project development phasing and construction* of the EIS provides an estimate of construction workforce numbers associated with construction activities for each development phase.

The EIS assumed that construction workers and staff would peak at an estimated 1,236 during Phase B, as presented in Table 7.6 below.

Table 7.6 Indicative daily construction workforce presented in the EIS

Project Stage	Typical daily workforce (FTE)	Peak daily workforce (FTE)
Early Works	150	300
Phase A	662	1,146
Phase B	435	1,236
Phase C	275	474

Description of the revised construction workforce numbers

Table 7.7 below shows the indicative daily construction workforce which has been updated for the revised Project. This shows the construction workforce and staff would peak at an estimated 850 during Phase A.

Table 7.7 Indicative daily construction workforce for the revised Project

Project Stage	Typical daily workforce (FTE)	Peak daily workforce (FTE)
Early Works	150	300
Phase A (2016)	490	850
Phase B (2019)	200	550
Phase C1 (2023)	190	770
Phase C2 (2028)	200	780

7.8.3 Construction traffic and access

Description of the EIS construction traffic and access

Construction traffic volumes entering and exiting the Project site would vary over the duration of the Project construction. Indicative volumes, as presented in section 8.8.8 in Chapter 8 – *Project development phasing and construction* of the EIS, and in Table 7.8 below, are based on the bulk earthworks and materials estimates.

For the EIS design, construction vehicle traffic was expected to be greatest during the main earthworks and civil construction in Phase A, with traffic comprising vehicles transporting equipment, materials and spoil, and construction workers accessing the work site.

Table 7.8 Indicative construction traffic volumes presented in the EIS

Project Phase	Daily one way movements		Peak hourly two way movements	
	Cars	HV	Cars	HV
Early Works	405	32	54	10
Phase A	1453	965	194	210
Phase B	1669	972	222	212
Phase C	640	197	85	42

The EIS design assumed that access to the Project site would predominantly be via the M5 Motorway and Moorebank Avenue. For the construction of the southern rail access option, the haulage route was assumed to be from Cambridge Avenue via Moorebank Avenue or Glenfield Road.

It was also assumed that all required car parking would be provided on site and that access to the neighbouring ABB site would be maintained throughout the Project construction.

Impacts on traffic and access, including proposed works on Moorebank Avenue were described in Chapter 11 – *Traffic, transport and access* of the EIS. This identified that some partial and full road closures were required during construction and that the existing site access points would be used before the upgrade of Moorebank Avenue and during the Early Works development phase and part of Phase A.

Description of the revised construction traffic and access

Table 7.9 below provides the construction traffic volumes for the revised Project. These volumes are based on the revised bulk earthwork volumes presented in Table 7.5 of this chapter.

Table 7.9 Indicative construction traffic volumes for the revised Project

Stage	Daily vehicle movements		Peak hourly vehicle movements	
	Cars	HV	Cars	HV
Early Works (2015)	810	64	54	10
Scenario 1 (2016)	2295	1390	153	152
Scenario 2a (2019)	1485	260	99	28
Scenario 2b (2023)	2080	360	139	40

The changed site access (i.e. access from Moorebank Avenue and Anzac Road intersection) means there will be no road closures south of this intersection. Construction access to the main site will be via the Moorebank Avenue/Anzac Road intersection. For construction of the southern rail access, access requirements are unchanged to that presented in the EIS.

7.8.4 Construction plant and equipment

Description of the EIS construction plant and equipment

Table 8.10, section 8.8.9 in Chapter 8 – *Project development phasing and construction* of the EIS provides an indicative list of the major equipment to be used during the three construction phases. The main types of construction machinery used during the construction phasing, and presented in the EIS includes:

- piling plant - piling rigs, sheet piling and grout pump;
- excavation plant – backhoe, grader, 7–30 t excavator, bobcat, D6 dozer and D8 dozer;
- compaction plant – compactor, 13 t roller, 14,000 L water truck, multi wheel roller, padfoot roller, smooth drum roller, loader (950), 28 m^3 scraper, 9–13 m^3 self-elevating scraper, 300–450 mm trencher asphalt spreaders;
- plant (other) – street sweeper, 30 m boom concrete pump, dewatering equipment, manitou, disc harrow tractor;
- trucks – tipper, 20 m^3 truck and trailer, crane truck (semi), 17.7 m^3 dump truck, semitrailer, concrete truck, rock saws and truck-mounted drills;
- lifting plant – scissor lift, 10 m boom lift, 10 t franna crane, and 80 t crane;
- miscellaneous – kerb machine, drifters, air compressors, shotcrete guns, post tensioning equipment, and scaffolding;
- asphaltic plant – spreader, bitumen rucks and multi drum roller;
- rail plant – hi-rail dumper, hi-rail crane, rail tampers, ballast regulator, rail grinder, roller, skid steer crane, rail saw, thermit welding equipment, rail threader and ballast box; and

- barges – on Georges River (one for services and one for construction).

Description of the revised construction plant and equipment

Table 7.10 below provides an updated equipment list for the revised Project according to the development phase. The quantity and types of equipment have not significantly changed from those outlined in the EIS. The actual quantity and types would depend on availability and the Project contractor's preferred working method. There will be no construction activity associated with the Full Build development phase as the Project site will be fully operational.

Table 7.10 Indicative construction equipment list for the revised Project

Early Works	Phase A	Phase B	Phase C
	Piling plant *Including piling rigs, sheet piling and grout pump*	Piling plant *Including piling rigs, sheet piling and grout pump*	Piling plant *Including piling rigs, sheet piling and grout pump*
Plant – excavation *Including backhoe, grader, 7–30 t excavator, bobcat, D6 and D8 dozer, fuel truck, service truck and 2 water carts*	Plant – excavation *Including backhoe, grader, 7–30 t excavator, bobcat, D6 dozer and D8 dozer*	Plant – excavation *Including backhoe, grader, 7–30 t excavator, bobcat, D6 and D8 dozer*	Plant – excavation *Including backhoe, grader, 7–30 t excavator, bobcat, D6 and D8 dozer*
Plant – compaction *Including compactor and 2 front end loaders*	Plant – compaction *Including compactor, 13 t roller, 14,000 L water truck, multi wheel roller, padfoot roller, smooth drum roller, loader (950), 28 m^3 scraper, 9–13 m^3 self-elevating scraper, 300–450 mm trencher asphalt spreaders*	Plant – compaction *Including compactor, 13 t roller, 14,000 L water truck, multi wheel roller, padfoot roller, smooth drum roller, loader (950), 28 m^3 scraper, 9–13 m^3 self-elevating scraper, 300–450 mm trencher*	Plant – compaction *Including compactor, 13 t roller, 14,000 L water truck, multi wheel roller, padfoot roller, smooth drum roller, loader (950), 28 m^3 scraper, 9–13 m^3 self-elevating scraper, 300–400 mm trencher*
Plant – other *Street sweeper, post hole borer, one tracker*	Plant – other *Including street sweeper, 30 m boom concrete pump, dewatering equipment, manitou, disc harrow tractor*	Plant – other *Including street sweeper, 30 m boom concrete pump, dewatering equipment, manitou, disc harrow tractor*	Plant – other Including street sweeper, 30 m boom concrete pump, dewatering equipment, manitou, disc harrow tractor
Trucks *Including 20 m^3 truck and trailers, site vehicles for personnel and plant material transport*	Trucks *Including tipper, 20 m^3 truck and trailer, crane truck (semi), 17.7 m^3 dump truck, semitrailer, concrete truck, rock saws and truck-mounted drills*	Trucks *Including tipper, 20 m^3 truck and trailer, crane truck (semi), 17.7 m^3 dump truck, semitrailer, concrete truck,. rock saws and truck-mounted drills*	Trucks *Including tipper, 20 m^3 truck and trailer, crane truck (semi), 17.7 m^3 dump truck, semitrailer, concrete truck, rock saws and truck-mounted drills*
Plant – lifting *Including scissor lift, 10 m boom lift, 10 t franna crane, and 30 t crane*	Plant – lifting *Including scissor lift, 10 m boom lift, 10 t franna crane, and 80 t crane*	Plant – lifting *Including scissor lift, 10 m boom lift, 10 t franna crane, and 80 t crane*	Plant – lifting *Including scissor lift, 10 m boom lift, 25 t franna crane, and 80 t crane*

Early Works	Phase A	Phase B	Phase C
	Miscellaneous *Including kerb machine, drifters, air compressors, shotcrete guns, post tensioning equipment, and scaffolding*	Miscellaneous *Including kerb machine, drifters, air compressors, shotcrete guns, post tensioning equipment, and scaffolding*	Miscellaneous *Including kerb machine, drifters, air compressors, shotcrete guns, post tensioning equipment, and scaffolding*
	Asphaltic plant *Including spreader, bitumen rucks and multi drum roller*	Asphaltic plant *Including spreader, bitumen rucks and multi drum roller*	Asphaltic plant *Including spreader, bitumen rucks and multi drum roller*
	Rail plant *Including hi-rail dumper, hi-rail crane, rail tampers, ballast regulator, rail grinder, roller, skid steer crane, rail saw, thermit welding equipment, rail threader and ballast box*	Rail plant *Including hi-rail dumper, hi-rail crane, rail tampers, ballast regulator, rail grinder, roller, skid steer crane, rail saw, thermit welding equipment, rail threader and ballast box*	
	Barges *Barges on Georges River (one for services and one for construction)*	Barges *Barges on Georges River (one for services and one for construction) (for the central rail access option)*	

Notes: t = tonne, mm = millimetre

Source: Based on information in the Noise and Vibration Assessment (Volume 3)

7.8.5 Early Works incorporating Rehabilitation Works

The remedial and rehabilitation work to be included in the Early Works phase of the project includes:

Decontamination and demolition of asbestos-contaminated buildings

Eight buildings on the site are currently contaminated with asbestos and will be dismantled or demolished and removed. These building are identified on Figure 7.4 as buildings; B001, B032, B035, B039, B040, B041, B042, S128. Clean and contaminated material will be kept separate throughout the process to allow the clean material to be stockpiled for future use.

Asbestos removal would be undertaken by a licensed asbestos removal contractor. Dependent on the state of the asbestos, a friable or bonded asbestos removal license will be obtained prior to commencement of works. All asbestos removal would be carried out in accordance with the Code of Practice for the Safe Removal of Asbestos [NOHSC: 2002 (2005)] and the NSW OHS Regulation 2001 made under NSW OHS Act 2000 (or relevant national regulations). Handling and disposal of asbestos waste material would be carried out in accordance with NSW DECCW Waste Classification Guidelines: Classifying Waste (April 2008).

Remediation of contamination hotspots associated with underground hydrocarbon storage tanks

Localised contamination management is proposed through the removal of underground hydrocarbon storage tanks and localised ground remediation as identified in the Remediation Action Plan presented in Volume 5 of the EIS (as Appendix F to the Environmental Site Assessment (Phase 2)). The works would be undertaken in accordance with the *Australian Standard (AS4976) Removal and disposal of underground petroleum storage tanks.* The locations of the USTs for removal are shown on Figure 7.4.

The estimated excavation footprint associated with each tank is presented in Table 7.11.

Table 7.11 Estimated excavation footprint for USTs

Tank ID	Estimated excavation footprint m^2	Contents
0367/B_UST_001	18	Unknown
3767S_UST_006	77	Unknown
44467	173	Diesel
3767S_UST_003	79	Waste oil
3767S_UST_004	25	Waste oil
SWSS0285	30	Waste oil
3767S_UST_005	70	Waste oil
367S_UST_008	45	Unknown

Waste material will be tested and characterised on site before being transported by licensed carriers and disposed to facilities licensed to receive contaminated waste.

Approximately 1135 m^3 of contaminated waste material (soil and concrete) could be excavated during the work. This would equate to some 45 truckloads of material, resulting in 90 vehicle movements to and from the site. Table 7.12 below presents a summary of the estimated quantity of clean fill material required allowing for settlement. Approximately 1414 m^3 would be required, equating to 114 vehicle movements.

Site stabilisation and establishment of the proposed conservation area on the site of the plant and equipment operator training area

An area of approximately 7.2 ha used for plant and equipment operator training (in the area known as ‘the dust bowl’) will be stabilised and established for the conservation zone. The work includes the demolition of a viewing grandstand and works to stabilise and rehabilitate (landscape) this area for future planting. This would include use of a geotextile membrane, import of clean topsoil, and landscaping earthworks to re-establish suitable vegetation in this area.

Table 7.12 presents an estimate of the quantities of clean material to be imported to the site. Based on the need for 500 mm of topsoil material, approximately 44,720 m^3 would be required, equating to 3578 vehicle movements associated with these works. A maximum of 40 truck movements a day would be generated over a four-month period.

Table 7.12: Estimates of quantities of clean fill to be imported for the proposed action

Element of proposed action	Estimated quantity of fill required (m^3)	Approximate number of truck deliveries to the site[1]
Backfill of UST voids	1414	57
Import of suitable planting fill for driver training arena	44720	1789

Notes: [1] based on 30 tonne truck and dog carrying 20–25m^3 of soil and sand and 40m^3 mulch (lighter fill) (http://www.amazonsoils.com.au/company/amazon_booklet.pdf)

Construction of secure perimeter fencing

The existing site perimeter fencing would be inspected and replaced or reinforced to ensure site security following the vacation of the site by Defence. Secure temporary site fencing will also be erected within the site along the eastern boundary. The fence alignment would be determined on site to ensure that no vegetation or areas containing heritage values are disturbed.

Fencing works will involve the construction of a shallow trench (up to 500 mm deep), installation of fence straining posts and stringing of an appropriate gauge chain mesh and straining wires. Once the fence mesh has been hung to the required tension, the trench would be backfilled with the original excavated material.

Establishment of site facilities

The site would be accessed via a single access point from Moorebank Avenue. Areas of existing hardstand near this access point would be adapted for use during the works. This would include site offices, hygiene facilities (including units for decontamination and routine use), kitchen and rest facilities and construction plant storage.

Where appropriate existing buildings on the site would be considered for reuse (for example, as offices and rest facilities). It would also be necessary for purpose-specific demountable units to be used for decontamination of personnel working on the site.

A designated 'clean' area would be identified for staff parking. A wheel wash would be located on the exit route from the site. All site vehicles would be required to use this prior to leaving the site.

7.9 Impact assessment of the revised Project

7.9.1 Approach to the impact assessment in the EIS summary

The EIS included comprehensive and detailed assessment of the full range of impacts associated with the construction and operation of the Project, in accordance with the NSW SEARs and the Commonwealth EIS guidelines. This included assessment of several scenarios at key points in the Project's development (from Early Works through to operation of the 'Full Build' terminal), assessment of three alternate rail alignments and cumulative impact assessment of the development of both the Moorebank and SIMTA IMT sites. Chapter 10 – *Impact Assessment Approach* of the EIS provides detailed information on the assessment approach undertaken.

In the EIS, the traffic and transport, noise and vibration, local air quality and human health impacts were identified as the most significant for the Project, and heavily influenced by Project phasing. It was therefore considered appropriate to assess the environmental impacts during the successive Project development phases, including points in time where concurrent construction and operational activities were planned.

The Full Build terminal was assessed to demonstrate the worst case scenario for the other environmental issues presented in the EIS summary.

7.9.2 Approach to the impact assessment of the revised Project

For the revised Project, the focus of the assessments is on the *changes to the impact* relative to that predicted in the EIS. Adopting this approach it was identified that a number of impacts remain largely unchanged relative to the EIS assessments and that any minor changes of impact could be addressed during the subsequent stages of the SSD process.

The project Full Build footprint (i.e. the extent of physical development) remains largely unchanged relative to the EIS (see Figure 7.2). As such, impacts such as heritage, contaminated land, greenhouse gas, property and infrastructure, waste management and hydrology are largely unchanged as a result of the revised Project.

The other key difference is that the revised Project seeks approval for a southern rail alignment only, so impacts, associated with the northern and central rail alignments are excluded from this report. In terms of comparison between the impacts predicted in the EIS and the impacts presented for the revised Project, comparisons are made for the southern rail option only.

The assessment of the revised Project and development phasing, where remodelling has been undertaken (noise and vibration, transport and access, local air quality and human health), follows the same approach as the EIS, with an assessment of the southern rail access only. This approach allows for assessment of potential worst case impacts, by considering the cumulative impacts of simultaneous construction and operational activities.

Where remodelling has been conducted, the assessment considered four scenarios. These scenarios have been selected to represent the worst case at a given point in time throughout the progressive development of the Project to give visibility of the likely impacts:

- Scenario 1 – (Phase A) 2016 (construction only);
- Scenario 2a – (Phase B) 2019 (construction and operation);
- Scenario 2b – (Phase C) 2023 (construction and operation); and
- Scenario 3 – (Full Build) 2030 (operation only).

Figure 7.10 shows the relationship between the Project development phases and the scenarios.

The impact assessment approach also considers the inclusion of the Rehabilitation Works into the Early Works phase of the Project.

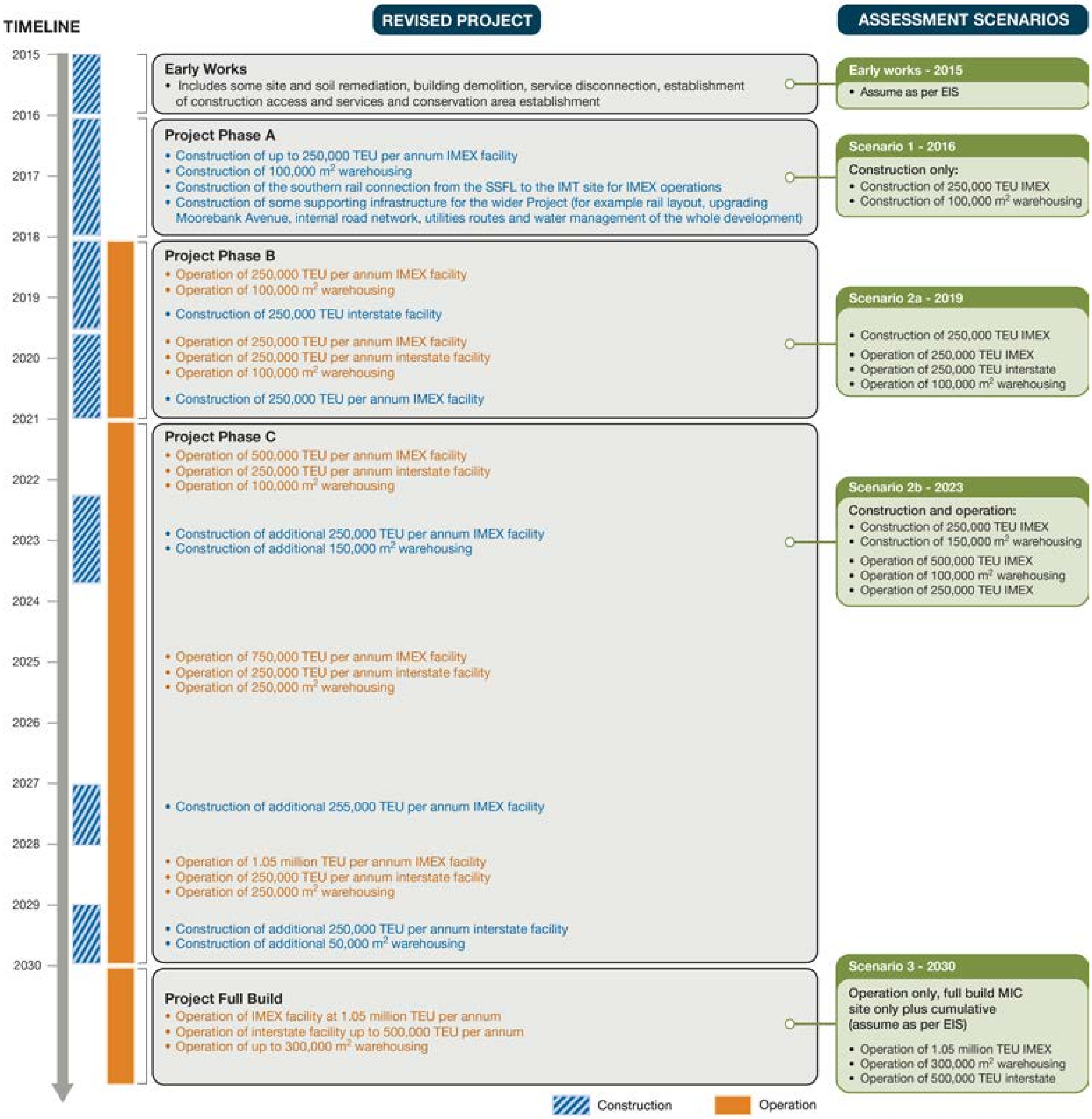

Figure 7.10 Relationship between the Project development phasing and assessment scenarios

7.9.3 Scoping of impact assessments

To determine the potential changes to the impacts assessments for all impacts assessed in the EIS, a scoping exercise was undertaken to review the key changes of the revised Project (presented in Table 7.11) against the findings and conclusions of the impact assessment presented in the EIS. This qualitative exercise has determined the relative level of change in impacts and associated requirements for re-assessment or re-modelling.

Table 7.11 Scoping impact assessment

EIS studies	Assessment approach and summary of key findings of the EIS impact assessment	Implications of the revised Project on the impact assessment	Assessment approach
Traffic, transport and access (Chapter 11 and Technical Paper 1 – *Traffic, Transport and Accessibility Impact Assessment* in the EIS)	Assessment approach • Assessment comprised two main components: > Development of strategic transport model to assess impacts of articulated truck movements on the Sydney greater metropolitan area (GMA) network. Forecasts for 2031. > Intersection performance modelling to assess performance of intersections in the local and wider road network in 2030 (without and with the Project). Key findings • Construction impacts: > Traffic expected to be greatest during the main earthworks and civil construction in Phase A (2016). > Temporary increase in congestion at existing intersections along Moorebank Avenue. Once Moorebank Avenue is upgraded in Phase A, the upgraded intersections would operate better than the existing road network. > Some partial and full road closures may be required during construction (most likely at night). > Impact of construction traffic on the operation of the M5 Motorway is expected to be negligible. > Existing accesses, public transport and pedestrian facilities would be retained. > Construction traffic (around 25 heavy vehicles a day) would need to access the northern and central rail access bridge construction area through Casula on the western bank of the Georges River. For the southern rail access option, haulage routes would be via Moorebank Avenue or Glenfield Road. • Construction of the rail access connection to the operating SSFL would cause some temporary disruption to the operation of this freight corridor during rail closedown (possession) periods. • Operational impacts: > 2030 AM peak hour – approximately 84 cars and 169 trucks would travel into the IMT and 169 trucks would travel from the IMT. > Truck movements from the IMEX and interstate operations are not new trips. These movements would already be on the highway network - to and from Port Botany. > Project would save on road-based freight trips by transferring freight movements	The revised Project will not result in a change in impact to the road network at Full Build (from 2030) as the land uses of the developed Project remain largely unchanged. However additional analysis undertaken since EIS exhibition has demonstrated that the traffic generation rates associated with the proposed on site activities have changed. These revised assumptions have been taken into consideration in this assessment. Remodelling and reassessment of traffic impacts is required associated with the: • changes to the construction of the first phase, resulting in modified construction traffic generation rates; • changes to the phasing of development, resulting in modified 'ramp up' of traffic generation; • changes to the proposed upgrading of Moorebank Avenue (including modified entry and exit points), resulting in changes to traffic impacts on Moorebank Avenue; and • changes to the warehouse traffic generation. For the Rehabilitation Works the main access to the site will be via a single access point from Moorebank Avenue. The works will generate 4500 heavy vehicle movements to and from the site,	The revised Project will result in changes to the impact on traffic and transport and therefore re-modelling and re-assessment has been undertaken. Refer to section 7.9.3 in this Report for a summary of the detailed impact assessment. Refer to Appendix E of this Report for the detailed Traffic and Transport Assessment.

EIS studies	Assessment approach and summary of key findings of the EIS impact assessment	Implications of the revised Project on the impact assessment	Assessment approach
	to the Project site by rail. Regional network would experience reductions of approximately 56,125 truck vehicle kilometres travelled (VKT) a day and 1265 truck vehicle hours travelled a day. This is also expected to contribute to reducing heavy vehicle-related crashes. > Additional heavy and light vehicle trips generated primarily along Moorebank Avenue, the M5 Motorway and local road intersections, slightly intensifying existing congestion along the M5 during peak hours. Impact negligible as contribution less than 3% of the total M5 Motorway traffic volume during the 2030 AM and PM peak hours. > Upgrade of Moorebank Avenue between the M5 Motorway and the southernmost IMT access would significantly improve intersection performance on this road section improving congestion when compared with the no upgrade. > Operational traffic in 2030 not predicted to have a significant impact on most of the intersections in the vicinity of Moorebank. Any congestion increase offset by the significant wider network benefits from the diversion of container traffic from the roads in this area. > For the EIS summary layout configuration, the SSFL has capacity constraints that may impact on the Projected train movements. Further analysis to be undertaken as part of the Stage 2 SSD approval process, to determine likely demand distribution and capacity across the rail freight network.	which is equivalent to 60 heavy vehicle movements per day during the peak of the works (over a two month period). This traffic would travel to and from the site via the M5 Motorway and would not utilise the local road network. The majority of the movements would be outside the morning and afternoon peak. Given the low numbers of vehicle movements associated with the works, there is unlikely to be any significant impact to the road network or intersection performance. The addition of 60 vehicle movements per day will increase traffic flows by less than 0.5%.	
Noise and Vibration (Chapter 12 and Technical Paper 2 – *Noise and Vibration Impact Assessment* in Volume 3 in the EIS)	Assessment approach • Assessment of a number of scenarios including Early Works (2015), Phase A (2018), Phase B (2025), Phase C (2030) and Full Build (2030). Key findings • Construction: > Noise levels for the majority of daytime construction works (including all daytime Early Works) are predicted to comply with the noise management (NML)s at all receptors and would be expected to be undertaken without the requirement for noise mitigation. > At Casula, Wattle Grove and Glenfield temporary exceedance of NMLs during piling and rail access connection works at certain times and under worst case conditions and would trigger the need for reasonable/feasible noise mitigation measures. Noise levels would be sufficiently controlled if all proposed mitigation was implemented. > Potential ground vibration levels should be within the human comfort criteria and nearby buildings are unlikely to suffer cosmetic damage as equipment is expected to be operated within the recommended safe working distances for construction ground vibration.	The revised Project will result in the relocation of noise sources within the IMT site boundary, with the most significant change for noise emission sources being: • the IMEX and Interstate working tracks and terminal facilities located along the eastern boundary of the Project Site in proximity to Moorebank Avenue; and • the warehouse precincts being moved to the western boundary of the Project site in closer proximity to Casula. In addition, revised Project will result in changes to the noise sources over the progressive development of the Project and operational elements of equipment	The revised Project will result in changes to the impact assessment and therefore re-modelling and re-assessment has been undertaken. Refer to section 7.9.4 for a summary of the detailed noise and vibration assessment and Appendix F for the detailed noise and vibration assessment. A supplementary Noise and Vibration Impact Assessment is provided in Appendix F.

EIS studies	Assessment approach and summary of key findings of the EIS impact assessment	Implications of the revised Project on the impact assessment	Assessment approach
	• Operation (without mitigation): > Full Build (2030), unmitigated operations under neutral metrological conditions for all three layouts predicted to occasionally exceed assessment criteria at receivers in Casula and Wattle Grove. Operations under neutral metrological conditions predicted to comply with the assessment criteria for receivers in Glenfield. Early morning and night-time in winter months, potential adverse meteorological conditions may occasionally enhance the propagation of noise by 1 to 3 dB(A) above the levels predicted for neutral meteorological conditions. > Full Build (2030) – unmitigated rail operations on the northern rail access connection exceed amenity noise criteria by up to 17 dB(A) (daytime, evening and night-time) at nearest receivers in Casula. No noise level exceedances predicted for rail noise on the central and southern rail access connections. > Sleep disturbance – operations predicted to comply with objectives at the nearest receptors in Casula, Wattle Grove and Glenfield. Train movements on the central and southern rail access predicted to comply with objectives. Unmitigated noise levels on the northern rail access predicted to exceed objectives in some locations in Casula. > Noise levels at all non-residential receptors were predicted to comply with the amenity noise criteria for all layout and rail access connection options. > Potential ground vibration predicted to comply with the relevant vibration criteria for human comfort and cosmetic structural damage.	(e.g. automation of ITVs for IMEX terminal. These key changes has resulted in a requirement for a detailed re-assessment and modelling to determine noise impacts. Noise impacts of Rehabilitation Works are likely to be associated with vehicle movement to and from the site and construction vehicle movement within the site. Given the low numbers of vehicle movements associated with the works, there is unlikely to be any significant noise or vibration impacts associated with the works. The works would be undertaken within standard construction periods. Current noise monitoring would be maintained during the Rehabilitation Works to monitor noise impacts.	
Ecological impact assessment (Chapter 13 and Technical Paper 3 – *Ecological Impact Assessment* in Volume 4 of the EIS)	<u>Assessment approach</u> • Assessment considered the Full Build at 2030 (worst case). <u>Key findings</u> • Loss or disturbance of vegetation including threatened flora and fauna species. • Loss or disturbance of EPBC listed flora species. • Impacts to threatened fauna species included noise and light disturbance, and potential for direct mortality. • Impact to EPBC listed fauna species included potential loss of habitat and breeding resources, noise and light disturbance, and potential for direct mortality. • Removal of hollow-bearing trees.	The revised Project and reconfiguration of the IMT layout has resulted in slight decrease in the overall extent of the clearing of the operational area of the Project site and an increase in the footprint of the Conservation Area to the west of the dedicated access road. These changes have resulted in a change in the requirement for vegetation clearance along the riparian corridor of Georges River, and a need to review and re-calculate the offsets requirements and overall impact assessment presented in the Offsets Strategy of the EIS. No vegetation clearance will take place during the Rehabilitation	Refer to section.7.9.1 of this Report for a summary of the re-assessment of biodiversity impacts as a result of the revised Project. Refer to section 8.1 for a summary of the results of the re-calculation of the biodiversity offset requirements associated with the revised Project. Refer to Appendix C for the revised Biodiversity Offset Strategy.

EIS studies	Assessment approach and summary of key findings of the EIS impact assessment	Implications of the revised Project on the impact assessment	Assessment approach
		Works.	
Hazard and risks (Chapter 14 of the EIS)	<u>Assessment approach</u> • Assessment included a risk assessment process to identify the possible hazardous incidents arising from the sources of risks relevant to the Project for all development phases. <u>Key findings</u> The following risks were identified for the Project: • Potential bushfire risks exacerbated by the Project (e.g. flammable substances such as fuels). • Potential hazards arising from loss of containment of flammable/combustible or corrosive liquids. • Vehicle accident during the transport of a potentially hazardous materials to the Project site. • Flooding as a result of extreme weather. • Inappropriate waste disposal. • Bushfire threat to the Project. • Potentials hazards arising from gas leaks (natural gas, liquefied natural gas (LNG), liquefied petroleum gas (LPG). • Overall, the Preliminary Risk Assessment (PRA) concluded that there would be no significant increase in risk to the public and a result of the Project and, with the mitigation measures described above, the residual hazards and risks of the Project would be managed to an acceptable level.	The revised Project will not result in a change associated with the hazards and risks identified in the EIS as the key project components and land-use remain largely unchanged.	No further assessment proposed.
Contamination and soils (Chapter 15 and Technical Paper 5 – *Environmental Site Assessment (Phase 2)* in Volumes 5A and 5B of the EIS)	<u>Assessment approach</u> • Assessment considered the Early Works and Full Build at 2030 (worst case). • Assessment undertaken for this Project focused only on the contamination issues that would exist following completion of the site rehabilitation works. <u>Key findings</u> • Early Works and construction activities have the potential to release existing sources of contamination into the surrounding environment. • Construction activities, including earthworks, vegetation clearing, ground penetration and storage and usage of fuels, have the potential to result in liberation of existing sources of contamination, or generation of new contamination. • Limited potential for contamination within the northern and the central rail access	The revised Project will not result in any changes to the findings of the contamination and soils assessment presented in the EIS as the key project components and land-uses remain largely unchanged. The Rehabilitation Works will involve the remediation of contaminated soils and hence will improve the contamination status on the site.	No further assessment proposed.

EIS studies	Assessment approach and summary of key findings of the EIS impact assessment	Implications of the revised Project on the impact assessment	Assessment approach
	connection alignments. • High potential for contamination to exist in the southern rail access connection option alignment, including contaminated fill, soils, groundwater, leachate and generation of landfill gases from Glenfield Landfill. • Potential activities that may give rise to contamination or opportunities for contamination during operation include minor earthworks, storage and use of fuels, and maintenance of underground utilities.		
Hydrology, groundwater and water quality (Chapter 16 and Technical Paper 6 – *Surface Water Assessment* in Volume 6 of the EIS)	<u>Assessment approach</u> • Assessment considered Early Works and Full Build at 2030 (worst case). • Assessed potential changes in hydrologic regime (flooding or stormwater runoff quantity) and potential impacts on surface water quality (sedimentation and erosion, stormwater quality and stormwater pollution (including accidental spills). • Desktop assessment of existing groundwater environment undertaken for the surrounding area. <u>Key findings</u> • Significant increase in impervious surfaces, with subsequent risks for hydrology (flooding) and water quality. • None of the three bridge options would increase the flood risk to upstream properties during a 1% Annual exceedance probability (AEP) event and no significant increase in flood extent predicted. Changes in flow velocities in the Georges River unlikely. • Climate change is an additional consideration that may exacerbate flooding risks. • Construction activities have the potential to affect stormwater quality and downstream waterbodies including the potential mobilisation and erosion of soils due to land disturbance. • Piling activities in the Georges River for the construction of the rail access bridges have the potential to mobilise sediment on the river bed and expose potential acid sulphate soils. • Accidental spills of chemicals and other hazardous construction materials, and uncontrolled discharge have the potential to adversely impact on water quality. • Overall water quality benefits for the Georges River through treatment of stormwater prior to discharge - in line with the objectives of the Australian and New Zealand Environmental Conservation Council (ANZECC) environmental values. • Potential groundwater impacts resulting in lowering of the water table and contamination of groundwater.	The hydrology, groundwater and water quality assessment presented in the EIS assessed the Early Works and Full Build (worst case) development phases. The revised Project will not change the findings of the hydrology, groundwater and water quality impacts as the key components and land-uses associated with the Early Works and Full Build development phases remain largely unchanged. The Rehabilitation Works will avoid construction within the flood prone land (1 in 20 year flood zone of Georges River). The works associated with the rehabilitation of the 'dust bowl' have the potential to impact on water quality in the Georges River through the release of contamination and sedimentation. However this impact would be managed through good construction environmental practice to ensure the appropriate management of site operations and run off to avoid adverse impacts on water quality. To ensure against any deterioration of water quality, existing water quality monitoring upstream and downstream within the Georges River would be continued during the Rehabilitation Works.	No further assessment proposed.

EIS studies	Assessment approach and summary of key findings of the EIS impact assessment	Implications of the revised Project on the impact assessment	Assessment approach
	• Drainage strategy was been developed to manage issues.		
Local air quality (Chapter 17 and Technical Paper 7 – *Local air quality impact assessment* in Volume 6 of the EIS)	<u>Assessment approach</u> • Assessment of a number of scenarios including Early Works (2015), Phase A (2018), Phase B (2025), Phase C (2030) and Full Build (2030). <u>Key findings</u> • Early Works – local air quality impacts predicted to be negligible, given the expected low magnitude of the earthworks and the short-term nature of construction activities. • Phases A, B and C – potential air quality impacts would be localised and would occur over defined periods between 2015 and 2030. Emissions of particulate matter (PM_{10}, $PM_{2.5}$, TSP and deposited dust) and pollutants associated with combustion engines and plant machinery represent greatest potential for air quality impacts. • During operation of the Project, combustion engine emissions (i.e. NOx, CO, SO2, $PM_{2.5}$, PM_{10}, volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs)) from locomotives, mobile LNG equipment and heavy vehicles represent greatest potential for air quality impacts. • Incremental (Project-only) air pollutant concentrations and dust deposition rates associated with all modelled scenarios were predicted to be within NSW EPA criteria and National Environment Protection Measure (NEPM) advisory reporting goals. • When existing elevated background airborne PM concentrations were considered (including extensive bushfire activity in late 2013), the maximum cumulative 24-hour average PM_{10} and $PM_{2.5}$ concentrations exceed the applicable NSW EPA criteria and NEPM advisory reporting goals at one receptor (R33), located adjacent to the Project site on Moorebank Avenue. However, the peak ambient concentrations were already above the goals due to the influence of this bushfire activity. Importantly, the assessment predicted that no additional exceedance events would occur as a result of construction or operational emissions at the Project site. • Overall, low likelihood of adverse local air quality impacts in the surrounding environment arising from the construction and operation of the Project.	The revised Project will result in the relocation of terminal infrastructure within the IMT site boundary and the associated changes in traffic generation, with the most significant change for air quality emission sources being: • changes to the phasing of project development and associated changes to traffic generation assumptions; and • changes to the impact on local receptors due to modification to the layout of onsite activities. Air quality impacts during Rehabilitation Works would be associated with vehicle movement to and from the site and construction vehicle movement within the site. Where possible all vehicles would utilise sealed roads. Dust generation associated with the stabilisation and landscaping works in the 'dust bowl' would be minimised by implementing a dust management plan which would detail dust control measures in line with good environmental practice. Air quality monitoring would continue during the Rehabilitation Works to ensure the effective implementation of the management and mitigation measures. Asbestos fibre air monitoring would be undertaken during asbestos removal works by a competent person specialised in asbestos management in accordance with National Occupational Health and	Refer to section 7.9.5 of this Report for a summary of the detailed assessment of the likely changes associated with local air quality impacts. Refer to Appendix H for the detailed local air quality impact assessment.

EIS studies	Assessment approach and summary of key findings of the EIS impact assessment	Implications of the revised Project on the impact assessment	Assessment approach
		Safety Commission (NOHSC) (2005), Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC:3003(2005)], NOHSC, Canberra, Australia.	
Regional air impact quality (Chapter 18 and Technical Paper 8 – *Regional Air Quality Assessment* in Volume 6 of this EIS)	Assessment approach • Assessment included complex regional-scale dispersion modelling for the Full Build in 2030 with and without the Project to identify any changes in regional air quality in the Sydney metropolitan region. Key findings • Assessment concluded that the impacts of the Project on regional air quality in the Sydney basin would be insignificant. • All predictions were well within the applicable air quality criteria for the modelled pollutants. • Project is predicted to slightly increase some concentrations of air pollutants along roads near Moorebank and the western part of the rail corridor from Port Botany to Moorebank. • Changes in emissions on a regional level were predicted to be small, and unlikely to be discernible relative to pollutant levels that would occur with or without the Project.	The regional air quality assessment presented in the EIS assessed impacts associated with the Full Build development scenario. As the key project components and land-uses associated with the Project at Full Build will remain largely unchanged and the EIS concluded that the regional air quality impacts will be insignificant, the revised Project is unlikely to result in any change to the findings of the impact assessment.	No further assessment proposed.
Greenhouse gas assessment (Chapter 19 and Technical Paper 9 – *Greenhouse Gas Assessment* in Volume 6 of the EIS)	Assessment approach • Assessment considered the impacts of each of the EIS Project construction phases (Phases A, B and C) separately and the operational impacts of the EIS Project during Phases B, C and Full Build (worse case). Key findings • Main emission sources during the construction phase - stationary energy (fuel use for equipment fleet and diesel power generation) and transport (light and heavy vehicles). • Main emissions sources during the operational phases - stationary energy (purchased electricity use) as well as stationary energy (fuel use for equipment fleet). • Development phase of the Project is likely to have negligible impacts in terms of greenhouse (GHG) emissions. • When fully operational in 2030, the annual GHG emissions would represent only a very small proportion of national (approximately 0.02%) and NSW (approximately 0.09%) emissions.	The main emission sources associated with the revised Project will not change as the key components and land-uses of the Project remain largely unchanged. The impact assessment presented in the EIS also concluded negligible impacts in terms of GHG emissions.	No further assessment proposed.

EIS studies	Assessment approach and summary of key findings of the EIS impact assessment	Implications of the revised Project on the impact assessment	Assessment approach
	• Project as a whole would result in reductions in freight transport emissions, as a result of the mode shift from trucks to trains for IMEX freight travelling between Port Botany and the Project site.		
Aboriginal heritage (Chapter 20 and Technical Paper 10 – *Aboriginal Heritage Impact Assessment* in Volume 7 of the EIS).	<u>Assessment approach</u> • Assessment considered the Full Build at 2030 (worst case). <u>Key findings</u> • Moderate to high Aboriginal heritage significance (local and regional level) along the riparian corridor along the Georges River. However, the Project's main construction footprint is outside the boundary of this corridor. • Project's main construction footprint (including for Early Works) initially considered to be of low Aboriginal archaeological potential, and subsequently assessed to be of no Aboriginal heritage significance. • Aboriginal recordings of highest sensitivity in the Project footprint largely conserved. • Less than a quarter of the Tertiary terraces identified as archaeologically sensitive affected. • Project would directly affect between six and ten Aboriginal sites dependant on rail access option. All three options would also directly affect parts of the Georges River corridor west bank due to work for the proposed rail access connection to the SSFL. • Impacts to Aboriginal sites would occur from direct ground disturbance, indirect ground disturbance (e.g. vehicle movements) and removal of trees – and would mainly occur during Project Phase B and the Early Works.	The Aboriginal heritage assessment presented in the EIS assessed the Project at Full Build (worse case). As the land-uses and development footprint associated with the revised Project at Full Build remain largely unchanged. The removal of the northern and central rail access options has reduced the potential impact the Project may have on these locations. The Aboriginal impacts of the Project will remain the same (albeit slightly improved with the selection of the southern rail access option through the disturbed lands on the Glenfield waste site). While there is a minor reduction in impacted area on the western boundary of the development footprint (which could lead to a slight improvement in aboriginal heritage impacts) this is not considered to be significant, and will be investigated further as part of the Stage 2 SSD. There are no heritage impacts associated with the Rehabilitation Works.	No future assessment proposed. Refer to Chapter 8 – *Additional technical assessments since EIS*, section 8.2 of this Report for a summary of the additional information and assessment associated with sub-surface testing of site MA14 and two scarred trees (MA6 and MA7) since the EIS were prepared. These additional assessments have not resulted in a change to the overall conclusions of the Aboriginal impact assessment. Refer to Appendix I for the detailed Aboriginal impact assessment and Appendix J for the Cultural Heritage Report.
European heritage (Chapter 21 of the EIS and Technical Assessment X)	<u>Assessment approach</u> • Assessment considered the Full Build at 2030 (worst case). <u>Key findings</u> • Majority of existing heritage items would be relocated from the current SME site prior to construction of the Project as part of the Moorebank Unit Relocation (MUR) Project. • Anticipated impacts within the residual landscape and its elements would include	The European heritage assessment presented in the EIS assessed the Project at Full Build (worst case). As the land-uses and development Project footprint associated with the revised Project at Full Build/worst case remain largely unchanged the European heritage	No future assessment proposed. Refer to Chapter 8 – *Additional technical assessments since EIS*, section 8.2 of this Report for a summary of the information associated with archival recording of existing land-uses within the current SME site.

EIS studies	Assessment approach and summary of key findings of the EIS impact assessment	Implications of the revised Project on the impact assessment	Assessment approach
	building, garden and memorial demolition, disturbance of archaeological deposits, destruction of the landscape setting and vistas, loss of and/or reduced historical associations, loss of existing internal street layouts and associated names, and loss of access to these items. • All remaining heritage items would be directly impacted by the Project, along with all remaining intangible heritage values. • Any indirect impacts of the Project on adjacent European heritage items (i.e. impacts on the visual context and landscape setting) are considered to be negligible.	impacts of the Project will remain the same. There are no heritage impacts associated with the Rehabilitation Works (no buildings with heritage value would be demolished as part of the Rehabilitation Works).	Refer to Appendix K for the detailed Cultural Heritage Archival Recordings report. The additional information does not result in a change to the conclusions of the European heritage assessment.
Visual and urban design (Chapter 22 and Technical Paper 12 – Visual Impact Assessment in Volume 8, Technical Paper 13 – Light Spill Assessment in Volume 9 of the EIS)	<u>Assessment approach</u> • Assessment considered Early works (2015), Phase A (2018), Phase B (2025), Phase C (2030) and Full Build (2030). • For Phases A to C, impacts were examined in relation to parts of the Project that would already be operational at the conclusion of each phase. The Full Build scenario represents the long-term visual impact of the Project and is essentially the 'worst case' scenario in terms of operational impacts. <u>Key findings</u> • Early Works: > Impacts considered to be moderate/low, with one negligible rating. > Retained conservation area and existing riparian vegetation would screen a substantial amount of activities for viewpoints to the west of the Georges River. > Where works are required outside of standard construction hours, potentially affected residents and relevant authorities would be notified in advance. • Construction: > Impacts predicated to range from negligible to moderate/high for different receptors. > Moderate/high impacts due to the impact of tall construction equipment visible above tree-line, earthworks, clearing and vegetation removal and construction of the warehousing. Localised visual impacts along Moorebank Avenue from construction fencing and the warehousing development area would be highly visible. > Impacts similar for the three rail access options, with the exception of receptors within the Georges River Casula Parklands, St Andrews Park and the residential properties surrounding St Andrews Park. These receptors would experience greater visual impact associated with the northern rail access connection, relative to the central and southern rail access options, as these receptors would	The visual and urban design assessment presented in the EIS assessed the Project at each of the development phases. There are a number of changes associated with visual and urban design assessment as a result of the revised Project layout and reconfiguration of key Project components. These changes will impact on the views into the Project and include: • views from Casula will be onto the warehousing precinct (where previously the intermodal infrastructure was the most prominent aspect of the development) • views along Moorebank Avenue will be of the IMEX and interstate terminals (where the visual impact assessment was of warehousing along Moorebank Avenue) • views south of Bapaume Road, impacts associated with the upgrade of Moorebank Avenue (as anticipated by the EIS) would not occur.	The revised Project will result in minor changes to the visual impact assessment associated with the reconfiguration of the IMT layout. Refer to section 7.9.2 of this report for a summary of the assessment of the visual and urban design impacts associated with the revised Project. Refer to Appendix D for the detailed Visual and Urban Design Assessment which includes photomontages of the revised design.

EIS studies	Assessment approach and summary of key findings of the EIS impact assessment	Implications of the revised Project on the impact assessment	Assessment approach
	have a clear view of the northern rail access. > The majority of activities would occur during standard daytime construction hours and would not require lighting; however, some out of hours construction work may be required. Lighting would be contained and positioned to avoid light spill to surrounding areas. • During operation: > Impacts predicted to range from negligible to moderate/high for different receptors. > The greatest visual impact of the Full Build development would be on public park and residential receptors on the elevated areas to the west of the Georges River and residential properties backing onto the SSFL. > For some residential locations that overlook the Project site, these receptors would also experience a noticeable change in the brightness of the area on clear nights. > The warehousing development would front Moorebank Avenue and would dominate views towards the Project site from the east. The visual impacts would reduce as landscaping is established. > Trains leaving the Project site via the northern and the central rail access options would directly face some residents in Casula, and the use of headlights could affect local residents. Impacts could be mitigated by avoiding the use of high beams lights on trains until they are running on the SSFL.	Due to the changes in the site layout and reconfiguration of key Project components it is also anticipated there will be changes in the impacts associated with light spill. There are minimal visual impacts associated with the Rehabilitation Works.	

EIS studies	Assessment approach and summary of key findings of the EIS impact assessment	Implications of the revised Project on the impact assessment	Assessment approach
Property and infrastructure (Chapter 23	Assessment approach • Assessment of impacts on affected properties and land uses, including impacts related to land use, future development potential, and property acquisition. Key findings • Change of land use from the current Defence facility to an IMT. • Construction of the Project would permanently affect some small areas of Liverpool City Council (LCC) land. In addition, depending on the rail access option selected, some LCC-owned, Sydney Trains-owned, NSW Roads and Maritime Services (RMS), and privately owned land (Glenfield Landfill site) would be temporarily and permanently impacted. • Visitors to the Casula Powerhouse Arts Centre may experience some amenity impacts during construction of the northern or the central rail access options. In addition, the northern and central rail access options would necessitate the realignment of Powerhouse Road, which provides access to the Casula Powerhouse Arts Centre. However, it is not likely that an extended closure of Powerhouse Road would be required, and access to the Casula Powerhouse Arts Centre would therefore be maintained. • Potential for temporary recreational and amenity impacts associated with the construction of the rail access bridge across Georges River. • The Project would result in the need for upgrades to or augmentation of some infrastructure and services (including energy, water, wastewater, stormwater). • During construction, some utilities assets may be affected; however impacts would be reduced by confirming their location during detailed design and avoid conflicts where possible. • The Project would potentially have temporary impacts on the SSFL while the rail turnout connection is made to the SSFL. • No major infrastructure or utility impacts are predicted, other than disruptions to local roads such as Moorebank Avenue, which would be upgraded, and Bapaume Road, which would be reconfigured.	The revised Project will not result in any change to the impacts on land use, future development potential, or property acquisition as the footprint and key project components remain largely unchanged. The impacts associated with the northern and central rail access options presented in the EIS will not occur as the southern rail access has been identified as the preferred option.	No further assessment proposed.
Waste and resource management (Chapter 26 of the EIS)	Assessment approach • Assessment focused on typical waste streams generated during construction and operation and provided a broad overview of resource requirements including energy, materials and water resources. Key findings • Waste generated throughout all phase of the Project and would be similar for the northern, central and southern rail access options and associated IMT site layouts.	The typical waste streams generated will not change as a result of the revised Project as the key components and land-uses remain largely unchanged.	No further assessment proposed.

EIS studies	Assessment approach and summary of key findings of the EIS impact assessment	Implications of the revised Project on the impact assessment	Assessment approach
	• Waste generated can be broken down into two main streams: > Solid waste (i.e. demolition waste, green waste, hazardous waste and sewage, litter, paper and genera recyclable waste); and > Effluent, sewage, wastewater and trade waste.		
Social and economic impact assessment (Chapter 24 and Technical Paper 14 – Social Impact Assessment in Volume 9 of the EIS)	<u>Assessment approach</u> • Social impact assessment and economic impact assessment assessed potential impacts on the social and cultural environment during construction and operation. <u>Key findings</u> • Socio-economic impacts associated with the Early Works anticipated to be relatively minor and would include minor adverse impacts related to traffic and amenity values, and positive impacts on job generation. • Project anticipated to generate employment opportunities during construction and operation – many of which would suit the local skills base. Employment opportunities would be associated with wider socio-economic benefits, including financial security, and improvements in health and wellbeing. • No substantial shift expected in the local demographics or population during construction or operation. Potential increase in the demand for rental properties and social infrastructure/services in the Liverpool LGA during peak periods of construction; however no substantial impact on social and community infrastructure is expected. • Minor recreation impacts are expected, including closure of the RAE Golf Club and potential disruption during construction to activities by the NSW Barefoot Water Ski Club on the Georges River (northern rail access option only). Potential for the northern rail access connection to increase the visual severance between the Casula Powerhouse Arts Centre and the surrounding environment. • No direct impacts on local businesses are predicted. Some in the area may experience temporary disruptions from vehicle access to the Project and other amenity impacts. On the whole, businesses are likely to benefit from construction demand and the influx of workers to the area.	The social and economic impacts of the Project will not change as the capacity, key components and land-uses of the revised Project remain largely unchanged. Although the development phasing has changed, the overall timing of the Project remains the same.	No further assessment proposed.
Human health risks and impacts (Chapter 25 and Technical Paper 16 – *Health Impact Assessment* in Volume 9 of the EIS	<u>Assessment approach</u> • Assessment of one 'typical' construction scenario and the Project at Full Build 2030 (worse-case). <u>Key findings</u> • The Health impact assessment (HIA) screening assessment determined that three of the potential aspects relating to health issues and opportunities required a detailed HIA: traffic, transport and access; noise; and air quality.	The revised Project has resulted in changes to the Project layout and development phasing and timing of the Project with associated changes to the traffic generation, noise impacts and local air quality impacts.	The revised Project will result in changes the assessment of human health risks and impacts. See section 7.9.6 of this Response to Submissions Report for a summary of the detailed assessment of the human health risks and impacts.

EIS studies	Assessment approach and summary of key findings of the EIS impact assessment	Implications of the revised Project on the impact assessment	Assessment approach
	• Traffic congestion has the potential to contribute to health impacts such as stress and anxiety affecting users of Moorebank Avenue during construction; however, once proposed mitigation measures are implemented, the Project is anticipated to have net positive health outcomes in relation to traffic congestion. • The upgrade of Moorebank Avenue and a reduction in heavy vehicle traffic on roads within the wider network are anticipated to improve road safety. • Noise can have a range of health impacts such as sleep disturbance and cardiovascular health problems. Without mitigation, construction and operation of the Project would potentially lead to health concerns; however, provided that the proposed mitigation measures are implemented, then the noise levels should remain within the acceptable levels, with the likelihood of any health impact being negligible. • During both construction and operation, levels of oxides of nitrogen, sulphur dioxide, carbon monoxide, VOCs and PAHs were all estimated to be low and acceptable. • Larger particulates (PM_{10}) are anticipated to dominate PM emissions during early construction (e.g. earthworks), while smaller particles (PM2.5) would increase as the use of diesel combustion sources increases over the Project's life. Exposure to PM is linked to various health impacts, such as respiratory illnesses and changes in cardiovascular risk factors. However, the HIA found that the Project's potential health risks or impacts are low. • Impacts on human health during Early Works would be negligible.	As a result, a re-assessment is required of the human health risk and impacts associated with the revised Project. There are no negative human health impacts associated with the Rehabilitation Works. The removal of USTs and other contamination will provide an overall benefit to human health.	Refer to Appendix H for the detailed Human Health Impact Assessment.

7.9.4 Scoping assessment for Early Works

Based on the assessment of impacts presented in Table 7.11 above, no additional technical work was considered necessary for assessing the impacts associated with the Rehabilitation Works. The assessment of impacts associated with Early Works conducted for the EIS (and presented in Chapters 11 to 27 of the EIS) is appropriate for the Rehabilitation Works.

7.10 Assessment of project amendments

7.10.1 Biodiversity

Introduction

Chapter 13 – *Biodiversity* of the EIS and Technical Paper 3 – *Ecological Impact Assessment* in Volume 4 of the EIS provided an assessment of the impacts of the Project. A detailed Ecological Impact Assessment was prepared by Parsons Brinckerhoff (2014) and is included in Technical Paper 3 – *Ecological Impact Assessment* in Volume 4 of the EIS. The assessment addressed the relevant Commonwealth Department of the Environment (DoE)'s EIS Guidelines and the NSW SEARs.

Table 7.11 in section 7.8.3 of this Report summarises the assessment approach and key finding of the EIS biodiversity impact assessment. In summary, the assessment identified that the Project and each of the three Full build options would have residual impacts on biodiversity and as such would require the development of a Biodiversity Offset strategy (BOS) developed in accordance with the NSW Framework Biodiversity Assessment (FBA).

Implications of the revised Project on the impact assessment

Due to the following minor Project changes the biodiversity assessment has been revised:

- a narrowing of the proposed southern access rail corridor in the vicinity of the Georges river from 60 m to 30 m;
- a modified rail alignment utilising more of the existing disturbed lands associated with cleared lands, existing rails corridor and waste facility;
- a reduction in the impact to the Riparian and Alluvial vegetation presented in the EIS southern access option by approximately 4 ha; and
- the revised site layout has increased the width of the onsite Moorebank conservation area, extending east of the 1% flood line and therefore increasing the future Conservation and riparian corridor.

In addition, the revised biodiversity assessment has taken account of changes to the biodiversity offset requirements, under the FBA, and issues raised by the NSW Office of Environment and Heritage (OEH) during exhibition of the EIS.

A summary of the revised assessment addressing these changes is provided below with further detail on the BOS provided in Chapter 8 - *Additional technical assessments since EIS* and the BOS (refer to Appendix C).

Biodiversity assessment

Minor Changes to Project footprint

When compared to the EIS, the development of the revised southern rail access corridor reduces the Projects impacts on biodiversity slightly by utilising more of the existing disturbed rail corridor associated with the East Hills Railway Line and Tarakan Road crossing of the Georges River.

Table 7.12 provides a summary of the changes in residual impacts on vegetation and habitat between the Full Build (2030) southern rail access development scenario presented in the EIS and the Full Build (2030) development scenario assessed for the revised Project.

Table 7.12 Comparison of the residual impacts on vegetation and habitat between the EIS and revised Project at Full Build (2030)

Vegetation community/habitat/ threatened species	Approx. extent (ha) within Project site	Full Build (2030) clearing (ha) EIS (southern rail access option)	Full Build (2030) clearing (ha) Revised Project
	Vegetation		
Castlereagh Swamp Woodland1	0.9	0.9	0.9
Castlereagh Scribbly Gum Woodland2	16.1	16.1	16.1
Riparian Forest (River-Flat Eucalypt Forest)1	16.2	5.3	3.6
Alluvial Woodland (River-Flat Eucalypt Forest)1	35.6	30.4	28.1
Total River-Flat Eucalypt Forest3	51.8	35.7	31.7
Total vegetation	**68.8**	**52.7**	**48.7**

Changes to the offset requirements under the FBA

The proposed changes associated with the revised Project footprint, specifically the alignment and width of the southern rail access corridor, required a revised assessment of the Projects residual impacts on biodiversity and BOS prepared in accordance with the FBA.

The revised assessment also includes some minor changes in the quantification of credits generated from the credit calculator, as a result of changes to the credit calculator relative to that used in the Technical Paper 3 – *Ecological Impact Assessment* in Volume 4 of the EIS. This is a result of discussions with OEH regarding how to apply the calculator in accordance with the *NSW biodiversity Offset Policy for Major Projects 2014* (Offset Policy 2014).

The FBA requires Projects to quantify the residual impacts on biodiversity using the FBA Credit Calculator Version 4.0 (Office of Environment and Heritage 2014a). This assessment tool converts the residual impact areas identified in Table 7.12 into a calculation of the number and class of biodiversity credits required to offset and to ensure maintenance or improvement in biodiversity (refer to Appendix A of the BOS in Appendix C of this Response to Submissions Report).

The maximum offset requirements of the Project under the Offset Policy 2014 has been quantified using FBA calculator as up to **1,409** ecosystem credits or approximately 140 ha and **1,004** species credits.

Additional assessment issues raised by OEH

The revised assessment and BOS have also incorporated changes in the application of the FBA assessment methodology to further consider submissions from OEH. In particular, the revised BOS has incorporated:

- further assessment of the measures are taken to avoid and minimise the direct and indirect impacts of a development proposal on biodiversity values as required by section 8 of the Framework for Biodiversity Assessment (FBA) and NSW Offset Policy 2014; and
- assessment of matter requiring further consideration under the FBA.

A detailed assessment of the measures taken to avoid and minimise the direct and indirect impacts of a development in accordance with the FBA is provided in section 2 of the revised BOS.

Summary

The current concept design for the full build will clear approximately 48.7 ha of vegetation, including Endangered Ecological Communities, plant community types (PCTs) that contain threatened species and habitats and riparian areas.

The revised Project has demonstrated further avoidance in the development of the revised southern rail access utilising more of the existing disturbed rail corridor crossing of the Georges River and minimising impacts on the corridor in general.

The revised BOS also outlines appropriate mitigation and management measures identified for the revised Projects direct and indirect impacts in accordance with section 8.3.1.3 of the FBA. These mitigation and management measures incorporate Industry best practices and standards and are presented in section 6 of the Ecological Assessment and Table 9.1 of this report.

7.10.2 Visual impact assessment

Introduction

Chapter 22 – *Visual and urban design* of the EIS describes the potential visual impacts of the Project, including light spill, and the urban design principles underpinning the Project. A detailed visual impact assessment was prepared by Cloustons Associates (Technical Paper 12 – *Visual Impact Assessment* in Volume 8 of the EIS), and a detailed light spill assessment was prepared by AECOM (Technical Paper 13 – *Light Spill Assessment* in Volume 9 of the EIS). These documents address the relevant Commonwealth Department of the Environment (DoE)'s EIS Guidelines and the NSW SEARS.

Table 7.11 in section 7.8.3 of this Response to Submissions report summarises the assessment approach and key findings of the EIS impact assessment.

Cloustons Associates prepared an updated *Visual and Urban Design Assessment* (refer to Appendix D) which considers the changes to the landscape and visual impacts associated with the Project. The assessment considered all five proposed development stages and uses the same impact assessment approach and methodology documented in section 22.1.1 of Chapter 22 – *Visual and urban design* of the EIS.

Implications of the revised Project on the impact assessment

The changes associated with the revised Project, including the IMT layout and the reconfiguration of key components, a revised visual and urban design impact assessment was undertaken to assess impacts on the landscape character and visual amenity of the surrounding area. In particular the following changes were considered:

- views from Casula will now be onto the warehousing precinct (where previously the intermodal infrastructure was the most prominent aspect of the development);
- views along Moorebank Avenue will now be of the IMEX and interstate terminals (where the visual impact assessment was of warehousing along Moorebank Avenue); and
- views south of Bapaume Road, impacts associated with the upgrade of Moorebank Avenue (as anticipated by the EIS) would not occur.

Landscape character assessment

As shown in Table 7.13, which provides a summary of the landscape character impacts and compares the findings of the EIS against the revised Project, there will be no changes to the key findings presented in the EIS.

Table 7.13 Comparison of the EIS and revised Project landscape character impacts

	Zone 1 - Fragmented vegetation		Zone 2 - Riparian Corridor		Zone 3 - Residential development		Zone 4 - Commercial/ light industrial	
	EIS	**Revised Project**	**EIS**	**Revised Project**	**EIS**	**Revised Project**	**EIS**	**Revised Project**
Sensitivity	Moderate/ High	Moderate/ High	Moderate/ Low	Moderate/ Low	Moderate	Moderate	Low	Low
Magnitude	High	High	Moderate/ Low	Moderate/ Low	Moderate	Moderate	Moderate/ Low	Moderate/ Low
Overall Rating	High	High	Moderate/ Low	Moderate/ Low	Moderate	Moderate	Moderate/ Low	Moderate/ Low

The revised Project is shown to have the greatest impact on fragmented vegetation due to expected requirements for removal, with a lesser impact on the surrounding residential areas due to the presence of screening vegetation and topography. A moderate/low impact rating is recorded on the riparian corridor along the Georges River and surrounding industrial/commercial zones due to the limited magnitude of the changes within these areas. The revised Project fits within a wider context of commercial and industrial built form present within the locality.

The southern rail alignment crosses the Glenfield landfill site. This area is zoned as Public Recreation within the Liverpool LEP 2008. Currently the site has a low sensitivity to change due to its degraded landscape character, although overtime it is likely to be re-vegetated and may become an area of public open space with high amenity value. The presence of existing rail infrastructure to the east and south of the landfill site will assist in reducing the magnitude of any landscape character impacts associated with the new southern access rail spur in the future.

Visual Impact Assessment

As described in section 22.2.2 in Chapter 22 – *Visual and urban design* of the EIS, the visual assessment considered eight key viewpoints which were representative of visual receptors surrounding the Project site. The viewpoints and locations for the assessment of the revised Project remain unchanged.

Table 7.14 provides a summary of the combined visual impact assessment ratings for each viewpoint and compares the findings with the EIS.

Table 7.14 Comparison of the EIS and the revised Project combined visual impact assessment ratings

Viewpoint/ receptor type	Early Works		Development phases (A, B, C)		Full Build	
	EIS	Revised Project	EIS (southern rail access option)	Revised Project	EIS (southern rail access option)	Revised Project
1	Moderate/ Low	Moderate/ Low	Moderate	Moderate	Moderate	Moderate
2	Moderate/ Low	Moderate/ Low	Moderate/High	Moderate/ High	Moderate/High	Moderate/ High
3	Moderate/ Low	Moderate/ Low	Moderate/High	Moderate/ High	Moderate/High	Moderate/ High
4	Moderate/ Low	Moderate/ Low	Moderate/ Low	Moderate/ Low	Moderate/Low	Moderate/ Low
5	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
6	Moderate/ Low	Moderate/ Low	Moderate/ Low	Moderate/ Low	Moderate/Low	Moderate/ Low
7	Moderate/ Low	Moderate/Low	Moderate/High	Moderate/High	Moderate	Moderate
8	Moderate/ Low	Moderate/ Low	Moderate/High	Moderate/ High	Moderate	Moderate

When compared to the EIS, the combined impact rating for the visual impact assessment at each of the viewpoints remains unchanged for the revised Project.

The visual assessment of the revised Project suggests there will be moderate to high potential impact to a limited number of residential properties based in Casula who overlook the site. The greatest visual impact will be on the public parks and associated residential properties that are situated on the elevated land west of Georges River. Direct views of the development will be possible from properties directly adjacent to Leacock Park and Carroll Park. The most prominent views of the revised Project will be at localised boundaries and public parks overlooking the site.

In order to show representative views of the revised Project from key viewpoints, photomontages have been prepared from viewpoints 1, (see Photomontage 1), viewpoint 3 (see photomontage 2), viewpoint 7 see photomontage 5), viewpoint 8 (photomontage 6). These photomontages are shown in the V*isual and Urban Design Assessment* (Clouston Associates, 2015) in Appendix D.

Table 7.15 summarises the suggested mitigation measures documented in the EIS and additional measures associated the revised Project.

Table 7.15 Visual and urban design mitigation measures for the Project

Mitigation measures	
Avoidance	The proposed terminal is of state and national importance and its location is central to its functionality, so avoidance measures have not been considered appropriate
Reduction	Align and locate car parks to minimise visual impacts from the public domain or residents. Building and car park siting to permit and equate tree planting, especially along road fronts. Refinements to building siting and alignment of infrastructure locations to assist in retaining significant existing vegetation such as individual tree specimens or groups of trees. Maximising the integration of terminal facilities and warehousing precincts by providing screening, breakout space for public and staff, and visual relief, as well as aiding way-finding throughout the site. Where possible retain existing native trees along Moorebank Avenue to mitigate visual impact as well as providing additional native trees to the carpark areas to maximise the opportunity for shade and to provide a landscape frontage that is scaled to complement the new development. Landscaping along Moorebank Avenue is of particular importance and must provide visual relief from the industrial appearance of the rail infrastructure. The detailed landscape strategy should provide a layered approach along the streetscape. Consider the use of lower, more frequent light poles where possible to mitigate light spill effects and ambient light impacts. Integration of car parking, planting and signage to present as one cohesive address. Consider localised earth mounding and provide native canopy trees to internal landscape areas on the western side of the new buildings to mitigate visual impacts from the residential area.
Alleviation	Choice of finishes and materials based on limiting the amount of contrast with the surrounding landscape with the preferred use of muted colours. On site planting of suitable vegetation species at a range of heights. Utilise opportunities to commence early rehabilitation and supplementary planting of endemic species to the conservation zone on the western boundary and to commence early screen planting at the junction of Moorebank Avenue and M5 Motorway to mitigate visual impact.
Lighting	Placement of lighting columns and the specification of suitable lighting levels that would ensure minimal light spillage to surrounding residential areas. An assessment should be made (potentially in consultation with affected residents at a stage when detailed impact assessment has been completed) to establish whether selected street trees could assist in mitigating the impacts of floodlighting from the site

Summary

The major landscape character impacts of the revised Project will comprise scale, height and bulk of the proposed buildings, especially light towers and an increase in the scale of Moorebank Avenue to a four lane road.

The greatest visual impact of the revised Project will be on the public parks and associated residential properties that are situated on the elevated topography sloping west from the Georges River. These will have clear views over the site and the taller project elements such as lighting towers and gantries.

Although the combined impact ratings for the visual impact assessments have not changed since the EIS, it is acknowledged that the views into the site will change in relation to the re-configuration of the Project layout and components. Mitigation measures to manage the changes in these views should be considered during the detailed design.

7.10.3 Traffic and transport

Introduction

Chapter 11 – Traffic and Transport of the EIS provides an assessment of the traffic generation as a result of the construction and operation of the Project and presents the impact of the Project on the road network. Detailed analysis was presented in Technical Paper 1 – *Traffic, Transport and Accessibility Impact,* which was included in Volume 3 of the EIS.

Chapter 11 *Traffic and Transport* and its supporting technical paper established the current road network conditions (at 2014) and predicted conditions at future years to 2030 (the Project in its fully developed state), taking into account published background traffic growth rates, to show the functioning of the Project in future years 'without project'.

The report also described the traffic generation associated with the Project at each stage (associated with construction traffic, IMEX, interstate and warehousing) and, based on demand analysis undertaken by Deloitte, provided information on the distribution of generated traffic to the road network. An assessment of impacts was then undertaken including impacts on Moorebank Avenue (including an assessment of the effectiveness of the upgrades proposed for Moorebank Avenue), impacts on the M5 Motorway and impacts on the functioning of a number of intersections in the immediate vicinity and the wider road network.

As a separate exercise, a cumulative impact assessment was undertaken based on two assumed development scenarios for SIMTA (presented in Chapter 27 – *Cumulative impacts* of the EIS) that identified the impact on the road network due to development of the Moorebank IMT and SIMTA IMT sites (i.e. the Moorebank precinct).

Since the exhibition of the EIS, a number of project amendments have occurred as described in section 7.4 to 7.6 of this report, a number of these amendments will have an impact on the predicted traffic impacts associated with the Project. In summary these changes are:

- Amended site layouts resulting in a change to the vehicle entry points from Moorebank Avenue removing the multiple entry points assessed in the EIS and replaced with a single vehicular access location at the intersection of Moorebank Avenue and Anzac Road.
- the upgrade of Moorebank Avenue north of Anzac Road to the M5 Motorway and the associated upgrading of the Moorebank Avenue and Anzac Road intersection.
- This assessment assumes that no truck traffic generated by the Moorebank IMT will use Moorebank Avenue south of this intersection.
- The revised project phasing will influence the level of traffic generated over time leading to the full-build development at 2030.
- Changes to the constructability planning (largely associated with changes to project phasing) have resulted in changes to the Project earthworks and associated construction traffic volumes.
- Changes to the assumptions about development on the SIMTA site have resulted in changes to the cumulative impact assessment results (discussed in section 7.10.2).

Further research into intermodal operations has resulted in modifications to some of the underlying assumptions about the rates of traffic generation. As a result, although the components of the development at 2030 are consistent with those in the EIS, the level of traffic generation has changed, for example the peak generation has increased slightly, but overall daily traffic generation has reduced. These modifications to assumptions are discussed further below.

The EIS presented impacts of the Project at all phases of development (Early Works through to full build) for all proposed intersections on Moorebank Avenue between the East Hills railway line and the M5 Motorway. However, for the wider road network the assessment presented results for 2030 (full build) only. The assessment did not prescribe solutions for those intersections on the network that were operating below and acceptable level of service (LoS) in future (either with or without the Project). The assessment of the modified project takes a different approach whereby it:

- Presents results of SIDRA analysis for the entire affected road network – a total of 16 intersections including the modified Moorebank Avenue/Anzac Road intersection for all assessment scenarios to 2030. While this section of the report provides information for the 2030 (full build) year only, the assessment results for all scenarios are presented in Chapter 9 of the revised traffic impact assessment presented in Appendix E. The analysis of interim years was considered critical to understanding the timing of required road network upgrades.

- Prescribes intersection treatments to achieve an acceptable LoS for those intersections that are identified as underperforming, including the timing of when these upgrades would be required. These are reported in chapter 9 of the revised traffic report in Appendix E.

- Assesses the impact of traffic on the M5 Motorway including the impact of the Project on the 'weave' between Moorebank Avenue and the Hume Highway.

- Undertakes a mid-block analysis (the effectiveness of traffic flow on a stretch of road between intersections) at a number of key locations.

The SIDRA analysis used the SIDRA 6 program, which was considered to provide an appropriate level of assessment for the project given it is at a concept approval stage. More detailed intersection analysis is possible using mesoscopic modelling, and it is proposed that AISUM mesoscopic modelling software is used at the next stage of the development application process when more detailed information about future intersection design is known.

The intersections assessed for this project comprise:

- I-01 – Hume Highway/Orange Grove Road
- I-02 – Hume Highway/Elizabeth Drive
- I-03 – Hume Highway/Memorial Avenue
- I-04 – Hume Highway/Hoxton Park Road/Macquarie Street
- I-05 – Hume Highway/Reilly Street
- I-06 – Newbridge Road/Moorebank Avenue
- I-07 – Heathcote Road/Moorebank Avenue
- I-08 – Moorebank Avenue/Industrial Park Access
- I-09 – Moorebank Avenue/Church Road

- I-10 – Heathcote Road/Nuwarra Road
- I-11 – Newbridge Road/Nuwarra Road
- I-12 – Newbridge Road/Brickmans Drive/Governor Macquarie Drive
- I-13 – Moorebank Avenue/M5 Motorway
- I-14 – Hume Highway/M5 Motorway
- I-15 – Cambridge Avenue/Canterbury Road
- I-0A – Moorebank Avenue/Anzac Road
- I-0B – Moorebank Avenue/New DNSDC Access/SIMTA Northern Access
- I-0C – Moorebank Avenue/SIMTA Central Access.

The analysis contained in this document presents a summary of information contained in the *Moorebank Intermodal Terminal – Traffic and Transport Impact Assessment* (February 2015), attached as Appendix E and hereafter referred to as the 'revised TIA'.

Moorebank Avenue upgrade

As described in section 7.4.4, the proposed upgrade of Moorebank Avenue has changed significantly since EIS exhibition.

Where the EIS design proposed an upgrade for Moorebank Avenue (including duelling and signalisation) between the M5 Motorway and East Hills rail line, as well as numerous entry and egress points from the Project site onto Moorebank Avenue, the modified project consists of a single entry point only – at the intersection of Moorebank Avenue and Anzac Road (refer Figure 7.11). The modified design provides for the upgrading of Moorebank Avenue to a four-lane carriageway from the M5 Motorway to that entry point, with no further upgrade to the south, on the basis that no truck traffic generated by the Project will travel to and from the south of Anzac Road along Moorebank Avenue.

In addition to the upgrade of the Anzac Road intersection, relocation and upgrade of Bapaume Road and its intersection with Moorebank Avenue will be undertaken (to be determined as part of the detailed design).

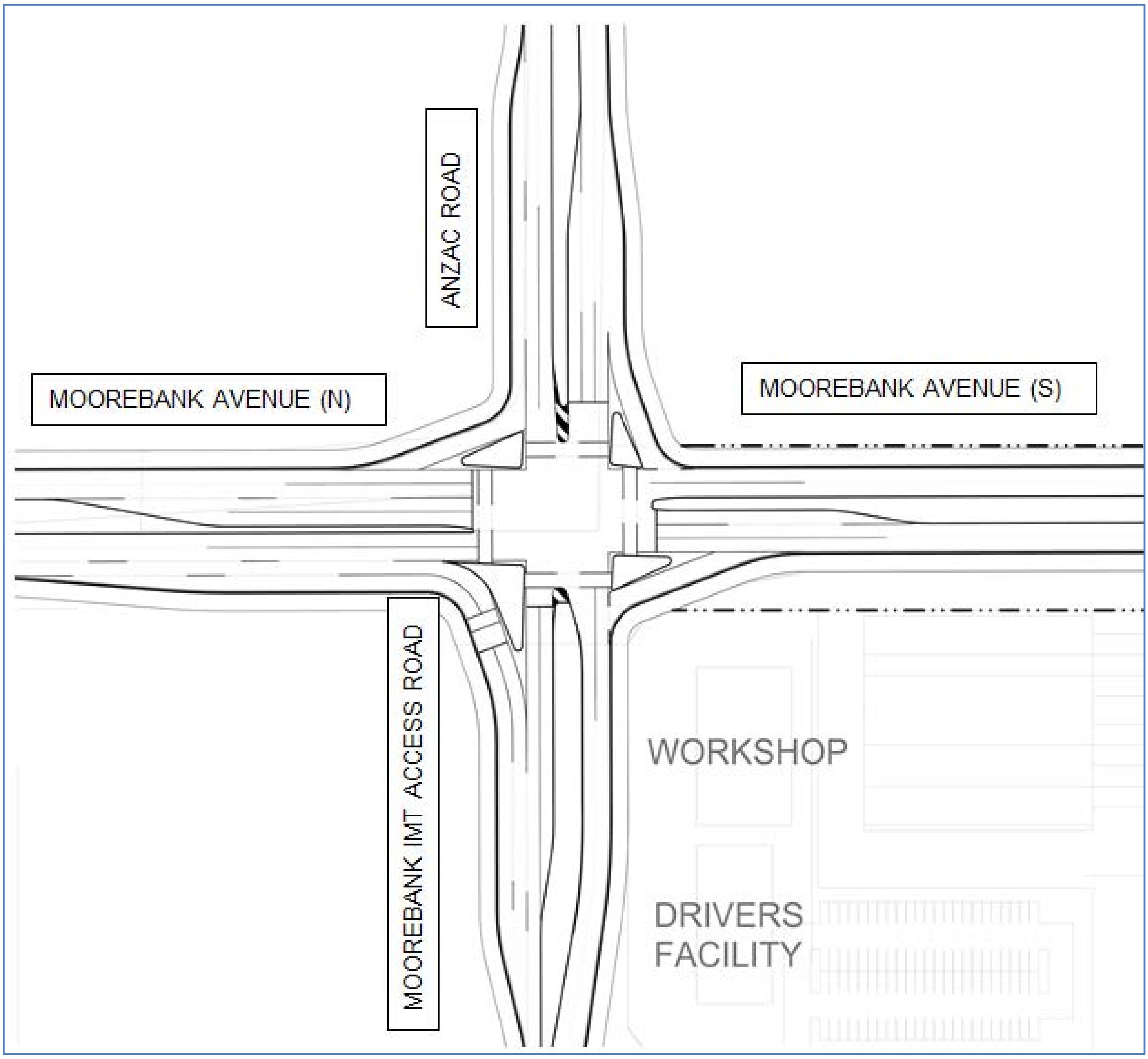

Figure 7.11 Proposed Moorebank Avenue, Anzac Road and Moorebank IMT Access intersection

Design for these upgrades will be undertaken as part of the detailed design phase of the Project.

Traffic generation

Construction traffic

While the underlying assumptions about traffic generation during construction remain unchanged and are presented in Chapter 11 – *Traffic, transport and access,* section 11.4.1 of the EIS, construction traffic generation has changed overall as a result of modifications to earthworks volumes and phasing plans associated with construction. The construction traffic volumes associated with the modified Project are detailed in Tables 7.16 to 7.18 below for all scenarios where construction is occurring.

Operation

While the Project at full build consists of the same elements as that presented in the EIS, some of the underlying assumptions – in particular the conversion factors between site activity/land uses and traffic generation have changed as a result of further analysis of IMT generation rates.

Summary of traffic generation rates

A summary of the total traffic generated by the Project development during the construction and operation phase is shown in Table 7.16 for the different years of analysis. Table 7.17 and Table 7.18 show the weekday AM peak and PM peak volumes for these phases for the different years. Detailed information on traffic generation is contained in Chapter 6 of the revised TIA, contained in Appendix E.

Table 7.16 shows one-way weekday trips. For example 50 trips would involve 25 trips in and 25 trips out.

Table 7.16 Summary of total daily weekday trips generated by Moorebank IMT

	Early Works 2015		Scenario 1 2016		Scenario 2a 2019		Scenario 2b 2023		Scenario 3 2030	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Construction	810	64	2,295	1,390	1,485	260	2,080	360	0	0
IMEX	0	0	0	0	168	652	337	1,302	674	2,726
Interstate	0	0	0	0	262	710	262	710	522	1,152
Warehouse	0	0	0	0	1,510	580	1,510	852	4,528	1,644
Total trips	810	64	2,295	1,390	3,425	2,202	4,189	3,224	5,724	5,522

Table 7.17 summary of total weekday AM peak hour traffic movements

		Early Works 2015		Scenario 1 2016		Scenario 2a 2019		Scenario 2b 2023		Scenario 3 2030	
		LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Construction	Inbound	54	5	153	76	99	14	139	20	0	0
	Outbound	0	5	0	76	0	14	0	20	0	0
IMEX	Inbound	0	0	0	0	8	25	16	50	32	105
	Outbound	0	0	0	0	0	25	0	50	0	105
Interstate	Inbound	0	0	0	0	16	27	16	27	32	44
	Outbound	0	0	0	0	0	27	0	27	0	44
Warehouse	Inbound	0	0	0	0	10	22	10	33	20	63
	Outbound	0	0	0	0	0	22	0	33	0	63
Total trips	**Inbound**	**54**	**5**	**153**	**76**	**133**	**88**	**181**	**130**	**84**	**212**
	Outbound	0	5	0	76	0	88	0	130	0	212

Table 7.18 Summary of total weekday PM peak hour traffic movements

		Early Works 2015		Scenario 1 2016		Scenario 2a 2019		Scenario 2b 2023		Scenario 3 2030	
		LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Construction	Inbound	0	5	0	76	0	14	0	20	0	0
	Outbound	54	5	153	76	99	14	139	20	0	0
IMEX	Inbound	0	0	0	0	0	30	0	61	0	127
	Outbound	0	0	0	0	8	30	16	61	32	127
Interstate	Inbound	0	0	0	0	0	33	0	33	0	54
	Outbound	0	0	0	0	16	33	16	33	32	54
Warehouse	Inbound	0	0	0	0	0	27	0	40	0	76
	Outbound	0	0	0	0	10	27	10	40	20	76
Total trips	**Inbound**	**0**	**5**	**0**	**76**	**0**	**104**	**0**	**154**	**0**	**257**
	Outbound	54	5	153	76	133	104	181	154	84	257

Traffic distribution

Operational traffic distribution (in terms of the proportionate split across the road network in the vicinity of the site) is unchanged since the EIS, and is described in Chapter 11 – *Traffic, transport and access* in section 11.4.2. For the purposes of the assessment, construction traffic was assumed to be apportioned to the road network in the same manner as the operational traffic. Further assessment of construction traffic distribution will be required as part of the Stage 2 development application process, once details such as construction spoil disposal and worksite locations are known.

Traffic impact assessment

Intersection analysis

The impacts of the Project on the key intersections are outlined below. The tables show, for each intersection:

- The performance of the intersection during the AM and PM peak.
- The performance now (assumed 2015 base) without project and at 2030 with and without the Project.

A more detailed analysis, including presentation of the results for all scenarios (2016, 2019 and 2023) is contained in section 9.1 of the revised TIA in Appendix E of this report.

Critical to the assessment of the future performance of the intersections is the establishment of background traffic growth rates as they apply to intersections affected by the Project. Assumptions regarding background traffic growth are unchanged since the EIS exhibition, and are detailed in Chapter 7 of the revised TIA in Appendix E of this report.

The results in Table 7.19 below demonstrate there are a number of intersections that deteriorate below an acceptable level of service by 2030. Detailed analysis in section 7.3 of the revised TIA was undertaken for all scenarios and identifies the point in time that specific mitigation works are required.

Table 7.20 below provides a detailed outline of the intersection treatments required for those intersections that will deteriorate to a LoS of E or below without mitigation, in order to maintain the intersection at an acceptable LoS for the long term development of the Project. Approval and funding of those works is subject to ongoing discussions between MIC (on behalf of the Commonwealth) and NSW Government.

Table 7.19 indicates the resulting LoS that will be achieved if these works are implemented.

Table 7.19 Intersection performance results at 2030

Intersection	Scenario	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
I01 Hume Highway/Orange Grove Road	2015 Base	0.88	31	C	224	0.96	45	D	271
	2030 Base	0.94	35	C	288	1.04	63	E	372
	2030 with Project	1.07	44	D	375	1.11	76	F	488
	2030 with upgrade[1]	1.07	44	D	378	1.00	62	E	448
I02 – Hume Highway/Elizabeth Drive	2015 Base	1.11	59	E	318	0.99	47	D	239
	2030 Base	1.27	100	F	515	1.16	59	E	286
	2030 with Project	1.17	98	F	555	1.07	62	E	356
	2030 with upgrade[1]	1.13	98	F	555	0.98	59	E	356
I03 – Hume Highway/Memorial Avenue	2015 Base	1.01	52	D	319	1.19	45	D	266
	2030 Base	1.18	92	F	504	1.24	57	E	422
	2030 with Project	1.26	102	F	583	1.23	60	E	523
	2030 with upgrade[1]	1.26	86	F	457	1.06	44	D	288
I04 – Hume Highway/Hoxton Park Road/ Macquarie Street	2015 Base	0.95	49	D	272	1.19	47	D	300
	2030 Base	1.27	110	F	485	1.41	81	F	507
	2030 with Project	1.26	117	F	503	1.41	87	F	629
	2030 with upgrade1	1.13	115	F	503	1.41	84	F	761
05 – Hume Highway/Reilly Street	2015 Base	0.90	17	B	274	0.94	16	B	296
	2030 Base	1.06	27	B	462	1.06	42	C	941
	2030 with Project	1.03	31	C	572	1.12	43	D	974
	2030 with upgrade[1]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
I06 – Newbridge Road/Moorebank Avenue	2015 Base	0.93	28	B	200	0.92	32	C	200
	2030 Base	1.58	134	F	650	1.19	99	F	520
	2030 with Project	1.70	151	F	759	1.21	127	F	688
	2030 with upgrade[1]	1.60	139	F	706	1.29	123	F	643

Intersection	Scenario	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
I07 – Heathcote Road/Moorebank Avenue	2015 Base	1.00	36	C	311	0.91	16	B	189
	2030 Base	1.39	207	F	706	1.42	107	F	690
	2030 with Project	1.45	205	F	785	1.42	115	F	692
	2030 with upgrade[1]	1.30	206	F	473	1.28	85	F	364
I-08 – Moorebank Avenue/Industrial Park Access	2015 Base	0.49	4	A	95	0.43	8	A	84
	2030 Base	1.22	187	F	1144	0.52	7	A	75
	2030 with Project	1.28	226	F	1335	0.52	7	A	77
	2030 with Project with upgrade1	1.22	189	F	1241	0.52	7	A	78
I-09 – Moorebank Avenue/Church Road	2015 Base	0.71	78	F	60	0.93	98	F	192
	2030 Base	0.95	845	F	83	1.29	374	F	567
	2030 with Project	1.00	768	F	97	1.45	736	F	729
	2030 with Project with upgrade1	1.00	32	C	13	1.45	457	F	728
I-10 – Heathcote Road/Nuwarra Road	2015 Base	1.05	51	D	270	0.99	56	D	343
	2030 Base	1.44	178	F	1182	1.32	144	F	854
	2030 with Project	1.44	178	F	1183	1.34	146	F	855
	2030 with Project with upgrade1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
I-11 – Newbridge Road/Nuwarra Road	2015 Base	1.02	53	D	352	0.97	27	B	182
	2030 Base	1.25	168	F	1038	1.08	38	C	298
	2030 with Project	1.25	178	F	1143	1.1	39	C	315
	2030 with Project with upgrade1	1.28	172	F	1079	N/A	N/A	N/A	N/A
I-12 – Newbridge Road/Brickmans Drive/ Governor Macquarie Drive	2015 Base	1.00	52	D	440	1.04	41	C	270
	2030 Base	1.24	161	F	1180	1.15	62	E	389
	2030 with Project	1.24	170	F	1278	1.62	81	F	660
	2030 with Project with upgrade1	1.24	159	F	1278	1.09	69	E	548

Intersection	Scenario	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
I-13 – Moorebank Avenue/M5 Motorway	2015 Base	0.85	19	B	74	0.89	29	C	218
	2030 Base	0.99	21	B	90	0.93	32	C	264
	2030 with Project	0.98	24	B	142	1.09	56	D	342
	2030 with Project with upgrade1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
I-14 – Hume Highway/M5 Motorway	2015 Base	1.03	30	C	279	0.90	30	C	297
	2030 Base	1.21	81	F	1101	1.15	79	F	641
	2030 with Project	1.32	95	F	1109	1.29	95	F	646
	2030 with Project with upgrade1	1.32	92	F	1109	1.23	88	F	646
I-15 – Cambridge Avenue/Canterbury Road	2015 Base	0.63	18	B	35	0.48	12	A	15
	2030 Base	1.14	114	F*	287	0.59	14	A	28
	2030 with Project	1.19	135	F*	336	0.60	14	A	28
	2030 with Project with upgrades	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
I-0A – Moorebank Avenue/Anzac Road	2015 Base#	0.73	19	B	188	0.85	28	B	296
	2030 Base#	1.04	56	D	752	1.21	59	E	577
	2030 with Project	0.88	39	C	198	1.00	48	D	385
	2030 with Project with intersection upgrades / modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

1 – upgrades to achieve this level of service are outlined in section 7.1.6 below

- this is based on the existing signalised T junction layout

Intersection upgrades required to maintain adequate level of service

Table 7.19 identifies that by 2030 numerous intersections will be operating at a reduced LoS when compared to the existing (2015 base) conditions. The deterioration of intersections is generally a result of both background traffic growth and the Project. According to RMS guidelines, intersections operating at LoS D or above are considered to be acceptable, while E or below are below an acceptable standard.

Assessment was undertaken to determine intersection functioning at a number of points in time leading to full development to determine the required timing of infrastructure upgrades. Additional analysis was undertaken at 2025 and 2028, to provide a comprehensive understanding of the point of failure of key intersections.

Table 7.20 below identifies the treatments that would be required, and by what date, for affected intersections. Mitigation treatments would only be applied if an intersection is operating at level of Service (LoS) E or worse as a result of the Project traffic above the background growth and cumulative impacts by others. Treatments would not be recommended where the resulting LoS of D or above is achieved, even where performance has deteriorated as a result of the Project.

Indicative timing of these upgrades is provided in Table 7.20, based on current projections for background traffic growth and anticipated increases in container throughput (or ‘ramp up’) over time for the IMT. However, in recognition of the uncertainties over actual throughput increases (due to factors such as future economic growth rates), any funding contribution of the IMT towards these upgrades would be based on the following circumstances:

- That certain throughput levels at the terminal had been achieved. These throughputs are outlined in column 1 of Table 7.20.
- That it can be further demonstrated (as part of any subsequent planning approval stage) that the intersection performance would have deteriorated to a level of service E or worse (where previously operating at a LoS D or above) were it not for the implementation of the upgrades outlined in Table 7.20.

Concept layouts of the proposed intersections are shown in section 7.1 of the revised TIA (Appendix E). The upgrades are required as a result of a combination of background traffic growth and traffic generated by the Project. They are presented as potential road network solutions but are not nominated for delivery by this project.

Table 7.20 Intersection upgrade and timing requirements

Throughputs triggering IMT contributions to upgrades	Upgrade description	Intersections	Indicative upgrade year
Construction of Phase A (no operational throughput)	Signal timing changes, change bus lane on Heathcote Road to general traffic lane (combined left and right turn lane) and second lane to right turn lane.	I-07 – Heathcote Road/ Moorebank Avenue	2016
	Ban right turn on Church Road	I-09 – Moorebank Avenue/ Church Road	
	Signal timing changes	I-12 – Newbridge Road/ Governor Macquarie Drive	

Throughputs triggering IMT contributions to upgrades	Upgrade description	Intersections	Indicative upgrade year
Operation of 250,000 TEU	Signal timing changes	I-08 – Moorebank Avenue/ Industrial Access	2019
Operation of 750,000 TEU	Signal timing changes	I-01 – Hume Highway/ Orange Grove Road I-06 – Newbridge Road/ Moorebank Avenue I-11 – Newbridge Road/Nuwarra Road	2023
	Signal timing changes, extend short right turn lane on M5 East to 230 m in length.	I-14 – Hume Highway/M5 Motorway	
Operation of 1 million TEU	Signal timing changes, changed layout on Governor Macquarie Drive to include a combined through and right turn lane, and dedicated right turn lane of 200 m lengths.	I-12 – Newbridge Road/ Governor Macquarie Drive	2025
	Provide a left, through and right lane and dedicated right turn lane on Canterbury Road.	I-15 – Cambridge Avenue/ Canterbury Road	
Operation of 1.3 million TEU	Signal timing changes.	I-13 – Moorebank Avenue/M5 Motorway	2028
Operation of 1.55 million TEU	Signal timing changes, 60 m approach and 60 m departure lanes on Hume Highway in the northbound direction.	I-01 – Hume Highway/Orange Grove Road	2030
	Signal timing changes, additional 60 m right turn lane on the Hume Highway in the northbound direction.	I-03 – Hume Highway/Memorial Avenue	
	Signal timing changes.	I-04 – Hume Highway/Hoxton Park Road	

Mid-block capacity analysis

Mid-block capacity assessment has been determined to analyse the link capacity on wider road network based on Austroads *Guide to Traffic Management part 3: Traffic Studies and Analysis, Table 5.1*. The typical mid-block capacities for various types of urban road with interrupted flow, with unflared major intersections and with interruptions form cross and turning traffic at minor intersections are shown in Table 7.21.

Table 7.21 Typical mid-block capacities for urban roads with interrupted flow

Type of lane	One-way mid-block capacity (pc/hr)
Median or inner lane	
Divided road	1,000
Undivided road	900
Middle lane (of a three lane carriageway)	
Divided road	900
Undivided road	1,000

Type of lane	One-way mid-block capacity (pc/hr)
Kerb lane	
Adjacent to parking lane	900
Occasional parked vehicle	600
Clearway conditions	900

Source: Austroads Guide to Traffic Management Part 3: Traffic Studies and Analysis, section 5.2.1, Table 5.1

The modelled traffic volumes were compared with the following nominal lane capacity of the subject road:

- divided three lane road (e.g. Hume Highway and Newbridge Road): 2,800 vehicles/three lanes/hr;
- divided two lane road (e.g. Heathcote Road, south of Nuwarra Road): 1,900 vehicles/two lanes/hr;
- undivided two lane road (e.g. Moorebank Avenue): 1,800 vehicles/two lanes/hr;
- divided one lane road (e.g. Nuwarra Road): 1,000 vehicles/lane/hr; and
- undivided one lane road (e.g. Cambridge Road): 900 vehicles/lane/hr.

The peak hour directional traffic flows for the key mid-block sections on the wider road network and the results of volume-to-capacity (V/C) ratios assessments are presented in Table 7.22. A V/C ratio greater than 1.00 indicates the section of roadway is over capacity and will not operate efficiently.

Table 7.22 shows there are several mid-block road sections that are currently performing near capacity (V/C between 0.90 and 1.00) or over capacity (V/C greater than 1.00). Much of the road network is or will be experiencing congestion without the Project and the addition of Project traffic would have a small (less than 6%) contribution to that congestion.

Table 7.22 Mid-block capacity analysis on the wider road network

Road section	Peak hour	Available capacity (veh/hr)	2014 Existing				2030 Background				2030 with Moorebank IMT				(%) Difference with Moorebank IMT	
			Peak hour traffic volume (veh/hr)		V/C		Peak hour traffic volume (veh/hr)		V/C		Peak hour traffic volume (veh/hr)		V/C			
			NB or EB	SB or WB	NB or EB	SB or WB	NB or EB	SB or WB	NB or EB	SB or WB	NB or EB	SB or WB	NB or EB	SB or WB	NB or EB	SB or WB
Hume Highway, east of Orange Grove Road	AM	2800	2338	1169	0.84	0.42	2651	1275	0.95	0.46	2649	1278	0.95	0.46	-0.08%	0.27%
	PM	2800	1325	2241	0.47	0.80	1402	2449	0.50	0.87	1409	2454	0.50	0.88	0.47%	0.20%
Hume Highway, south of Orange Grove Road	AM	2800	2902	1938	1.04	0.69	3267	2151	1.17	0.77	3300	2191	1.18	0.78	1.01%	1.85%
	PM	2800	2126	2714	0.76	0.97	2245	2964	0.80	1.06	2293	3010	0.82	1.08	2.15%	1.56%
Hume Highway, north of Elizabeth Drive	AM	2800	2606	1861	0.93	0.66	2979	2042	1.06	0.73	3016	2082	1.08	0.74	1.24%	1.95%
	PM	2800	1779	3007	0.64	1.07	1895	3298	0.68	1.18	1942	3344	0.69	1.19	2.50%	1.40%
Hume Highway, south of Elizabeth Drive	AM	2800	2073	1945	0.74	0.69	2364	2152	0.84	0.77	2402	2196	0.86	0.78	1.60%	2.03%
	PM	2800	1620	2512	0.58	0.90	1721	2739	0.61	0.98	1776	2784	0.63	0.99	3.21%	1.65%
Hume Highway, north of Memorial Avenue	AM	2800	1962	1647	0.70	0.59	2240	1840	0.80	0.66	2278	1887	0.81	0.67	1.69%	2.54%
	PM	2800	1684	2881	0.60	1.03	1803	3133	0.64	1.12	1851	3172	0.66	1.13	2.67%	1.25%
Hume Highway, north of Hoxton Park Road	AM	2800	2075	1603	0.74	0.57	2341	1816	0.84	0.65	2380	1860	0.85	0.66	1.66%	2.43%
	PM	2800	1644	2753	0.59	0.98	1710	3038	0.61	1.09	1768	3079	0.63	1.10	3.37%	1.36%
Hume Highway, south of Hoxton Park Road	AM	2800	2887	1840	1.03	0.66	3269	2065	1.17	0.74	3309	2116	1.18	0.76	1.21%	2.49%
	PM	2800	1967	3432	0.70	1.23	2084	3779	0.74	1.35	2145	3832	0.77	1.37	2.94%	1.40%
Hume Highway, south of Reilly Street	AM	2800	2772	1805	0.99	0.64	3077	1989	1.10	0.71	3113	2041	1.11	0.73	1.16%	2.62%
	PM	2800	2085	3453	0.74	1.23	2139	3771	0.76	1.35	2201	3821	0.79	1.36	2.89%	1.32%
Newbridge Road, west of Moorebank Avenue	AM	1800	1608	1798	0.89	1.00	2324	2376	1.29	1.32	2332	2375	1.30	1.32	0.36%	-0.05%
	PM	1800	1772	1740	0.98	0.97	2133	2253	1.19	1.25	2137	2255	1.19	1.25	0.19%	0.11%
Newbridge Road, east of Moorebank Avenue	AM	2800	2072	1086	0.74	0.39	2797	1571	1.00	0.56	2843	1594	1.02	0.57	1.65%	1.45%
	PM	2800	1534	2071	0.55	0.74	1976	2483	0.71	0.89	1999	2528	0.71	0.90	1.16%	1.83%
Moorebank Avenue, south of Newbridge Road	AM	3800	2149	973	0.57	0.35	2755	1477	0.73	0.53	2799	1507	0.74	0.54	1.59%	2.03%
	PM	2800	1327	1896	0.35	0.68	1856	2243	0.49	0.80	1877	2288	0.49	0.82	1.15%	2.02%
Moorebank Avenue, south of Heathcote Road	AM	1800	1467	534	0.82	0.30	1847	772	1.03	0.43	1884	806	1.05	0.45	2.00%	4.38%
	PM	1800	851	1234	0.47	0.69	1151	1453	0.64	0.81	1180	1496	0.66	0.83	2.55%	2.99%
Moorebank Avenue, north of Church Road	AM	1800	1625	537	0.90	0.30	2003	716	1.11	0.40	2043	757	1.14	0.42	2.00%	5.75%
	PM	1800	873	1355	0.49	0.75	1119	1616	0.62	0.90	1142	1663	0.63	0.92	2.05%	2.92%
Moorebank Avenue, south of Church Road	AM	1800	1836	673	1.02	0.37	2264	871	1.26	0.48	2307	917	1.28	0.51	1.91%	5.24%
	PM	1800	952	1687	0.53	0.94	1221	2006	0.68	1.11	1248	2058	0.69	1.14	2.22%	2.57%
Heathcote Road, north of Nuwarra Road	AM	1900	1182	2149	0.62	1.13	1461	3060	0.77	1.61	1456	3059	0.77	1.61	-0.37%	-0.02%
	PM	1900	1810	1726	0.95	0.91	2305	2078	1.21	1.09	2306	2083	1.21	1.10	0.02%	0.23%
Heathcote Road, south of Nuwarra Road	AM	1900	1316	1990	0.69	1.05	1640	2822	0.86	1.49	1637	2825	0.86	1.49	-0.21%	0.11%
	PM	1900	1986	1687	1.05	0.89	2567	2031	1.35	1.07	2573	2031	1.35	1.07	0.24%	-0.01%
Nuwarra Road, north of Heathcote Road	AM	1000	1095	868	1.10	0.87	1373	1112	1.37	1.11	1372	1117	1.37	1.12	-0.07%	0.45%
	PM	1000	838	1445	0.84	1.45	1000	1724	1.00	1.72	1005	1732	1.00	1.73	0.50%	0.46%
Newbridge Road, west of Nuwarra Road	AM	2800	1807	954	0.65	0.34	2461	1386	0.88	0.50	2491	1401	0.89	0.50	1.21%	1.05%
	PM	2800	1285	1961	0.46	0.70	1687	2369	0.60	0.85	1709	2393	0.61	0.85	1.28%	1.00%
Newbridge Road, west of Governor Macquarie Drive	AM	2800	2240	1094	0.80	0.39	2971	1576	1.06	0.56	2999	1585	1.07	0.57	0.93%	0.56%
	PM	2800	1646	2360	0.59	0.84	2133	2853	0.76	1.02	2138	2942	0.76	1.05	0.22%	3.11%

Road section	Peak hour	Available capacity (veh/hr)	2014 Existing				2030 Background				2030 with Moorebank IMT				(%) Difference with Moorebank IMT	
			Peak hour traffic volume (veh/hr)		V/C		Peak hour traffic volume (veh/hr)		V/C		Peak hour traffic volume (veh/hr)		V/C			
			NB or EB	SB or WB	NB or EB	SB or WB	NB or EB	SB or WB	NB or EB	SB or WB	NB or EB	SB or WB	NB or EB	SB or WB	NB or EB	SB or WB
Newbridge Road, east of Governor Macquarie Drive	AM	2800	3252	1681	1.16	0.60	4258	2268	1.52	0.81	4279	2282	1.53	0.81	0.49%	0.60%
	PM	2800	2157	3317	0.77	1.18	2775	3982	0.99	1.42	2807	4001	1.00	1.43	1.16%	0.48%
Cambridge Avenue, west of Moorebank Avenue	AM	900	1110	323	1.23	0.36	1442	420	1.60	0.47	1463	420	1.63	0.47	1.45%	0.00%
	PM	900	340	1293	0.38	1.44	487	1638	0.54	1.82	487	1663	0.54	1.85	0.00%	1.52%
Orange Grove Road, north of Hume Highway	AM	1900	1399	1604	0.74	0.57	1559	1819	0.82	0.65	1593	1854	0.84	0.66	2.18%	1.94%
	PM	2800	1864	1536	0.98	0.55	1989	1661	1.05	0.59	2031	1702	1.07	0.61	2.10%	2.49%
Elizabeth Drive, west of Hume Highway	AM	2800	1814	791	0.65	0.28	2119	943	0.76	0.34	2121	942	0.76	0.34	0.09%	-0.11%
	PM	2800	1033	1977	0.37	0.71	1111	2242	0.40	0.80	1106	2247	0.40	0.80	-0.45%	0.22%
Hoxton Park Road, west of Hume Highway	AM	1800	1509	617	0.84	0.34	1981	850	1.10	0.47	2002	857	1.11	0.48	1.07%	0.78%
	PM	1800	1091	932	0.61	0.52	1277	1127	0.71	0.63	1292	1131	0.72	0.63	1.14%	0.32%
Heathcote Road, east of Moorebank Avenue	AM	1800	719	506	0.40	0.28	933	777	0.52	0.43	932	777	0.52	0.43	-0.11%	0.00%
	PM	1800	578	758	0.32	0.42	842	885	0.47	0.49	843	886	0.47	0.49	0.12%	0.11%

V/C ratio greater than 1.00
V/C ration between 0.90 and 1.00
V/C ratio less than 0.90

M5 Motorway

To assess the impact of the Project on the M5 Motorway, the following was undertaken:

- Observed traffic volumes from the 2010 counts were factored to future year values based on growth rates taken from the RMS Strategic Traffic Model (STM).
- Comparison of the traffic generated by the Project to calculate the percentage increase. The traffic generated by the IMEX and interstate terminals would already be present on the road network as it would have been mostly generated at Port Botany, therefore some of the additional traffic is double counted using this approach. These percentage increases are therefore likely to represent a slight over estimate of the increase. The percentage increase is provided in Table 7.23.

Table 7.23 Moorebank IMT percentage increase on M5 during 2030 peak periods

	Direction	2030		
		LV	HV	ALL
AM peak hour				
M5 Motorway west of Moorebank Avenue	EB	0.47%	17.09%	2.26%
	WB	0.00%	24.63%	2.63%
M5 Motorway east of Moorebank Avenue	EB	0.00%	2.23%	0.27%
	WB	0.20%	6.51%	0.82%
PM peak hour				
M5 Motorway west of Moorebank Avenue	EB	0.00%	57.72%	3.31%
	WB	0.42%	21.82%	2.35%
M5 Motorway east of Moorebank Avenue	EB	0.23%	16.19%	1.30%
	WB	0.00%	9.79%	0.48%

EB – Eastbound, WB – Westbound

LV – Light vehicle, HV – Heavy vehicle, ALL – All vehicles

The percentage increase from the traffic generated by Project on the M5 Motorway is under 3.3% of total M5 Motorway traffic during the 2030 AM and PM peak hours. The increase in the heavy vehicle proportion is an overestimate as no allowance has been made for heavy vehicles that would have been on the network anyway.

Traffic weaving on the M5 Motorway

The Hume Highway and Moorebank Avenue Interchanges are located near the M5 Motorway crossing of the Georges River. The proximity of the interchanges results in the easterly oriented ramps of the Hume Highway interchange to be close to the westerly oriented ramps from the Moorebank Avenue interchange.

In the westbound direction, traffic from the M5 Motorway destined for the Hume Highway must weave over a distance of 453 m through the traffic coming from Moorebank Avenue destined for the M5 Motorway. Similarly, in the eastbound direction, traffic from the Hume Highway and destined for the M5 Motorway, must weave over a distance of 361 m through traffic from the M5 Motorway destined for Moorebank Avenue. This section of M5 Motorway must also cater for through traffic on the main carriageways and traffic moving directly between the entry and exit ramps.

Due to the proximity of the two interchanges the resultant traffic weaving tends to control operation during the peak hours rather than the individual exits and entries.

To establish the expected levels of service and hence the spare capacity available for Moorebank IMT traffic, a weaving analysis was undertaken using the HCM 2010 Highway Capacity Manual – Transportation Research Board. Traffic data for the design years was extracted from the Strategic Travel Model (STM, information provided by the Bureau of Transport Statistics). This model presented the projected background traffic and did not include any Moorebank IMT or Sydney Intermodal Terminal Alliance (SIMTA) related background traffic. Details of the input data for the assessment are provided in the revised TIA (Appendix E).

The analysis indicates that the M5 Motorway at this location will be at and/or nearing capacity in future years as a result of the weaving manoeuvres between the two interchanges. The weaving assessment results from the HCS program are shown in the Table 7.24.

Table 7.24 Expected Levels of Service for Weaving at the M5 Motorway Georges River Crossing in 2030 with and without Moorebank IMT

Scenario	Density (pcu/mi/ln) (LoS)	
	2030 AM peak	2031 PM peak
Eastbound		
Base	LoS F	31.4 (LoS D)
With Project	LoS F	31.8 (LoS D)
Westbound		
Base	26.3 (LoS C)	45.9 (LoS E)
With Project	26.7 (LoS C)	46.1 (LoS E)

The assessment indicates the section of the M5 Motorway between Moorebank Avenue and Hume Highway in both east and west bound directions will operate with only minimal increase in density due to the inclusion of the Moorebank IMT. As a result, the LoS with Moorebank IMT does not deviate from the respective base scenario for both AM and PM peak periods.

However, besides the westbound AM peak scenario, all other scenarios produce undesirable LoS with 2030 traffic volumes, with the eastbound AM peak scenario operating at a poor LoS of F.

The volume to capacity ratios for the weaving segment is provided in Table 7.25.

Table 7.25 Expected volume to capacity Ratios at the M5 Georges River Crossing in 2030 with and without Moorebank IMT

Scenario	Volume to Capacity Ratio	
	2030 AM peak	2030 PM peak
Eastbound		
Base	1.515	0.889
With Project	1.516	0.913
Westbound		
Base	0.651	0.988
With Project	0.659	0.991

The analysis indicates the eastbound 2030 AM peak for both base and with Project will be over capacity. For the 2030 PM peak, both eastbound and westbound will operate nearing capacity with only westbound AM peak operating within capacity.

By 2030 the background traffic growth would have resumed all spare capacity on M5 Motorway in both directions in the PM peak and all spare capacity in the eastbound direction in the AM peak. Consequently any Moorebank IMT traffic would experience considerable congestion during these times.

The introduction of Project traffic would result in a minimal change in the volume of the M5 Motorway between Moorebank Avenue and Hume Highway in both directions. For both the weekday AM and PM peak periods, the densities determined with the addition of the Moorebank IMT closely mimic those of the base case for each time scenario. As such, LoS classifications are unchanged for all scenarios.

It is recognised that Moorebank IMT traffic will add to the weaving traffic on the M5 Motorway and the potential contribution of Moorebank IMT traffic to the weaving impact will be analysed in more detail at the next stage of more detailed planning including microsimulation modelling.

Summary of potential road network capacity issues in 2030

Capacity issues are reflected through the presence of congestion during peak periods. The analysis of the traffic generated by Moorebank IMT compared to the congestion forecast to be present on the road infrastructure is summarised in Table 7.26.

Table 7.26 The impact of Moorebank IMT traffic on road infrastructure congestion

Road Infrastructure	Peak hour congestion in 2030	Contribution of Moorebank IMT traffic to congestion issue	Mitigation Measure and Impact
Moorebank Avenue (Anzac Road to M5 Motorway)	Some	Significant adverse impact	Project includes widening of Moorebank Avenue to four lanes and provision of new intersections which reduces congestion to 2015 levels
Moorebank Avenue north of M5 Motorway	Yes	Minor adverse impact	Minor Intersection modifications may be required
Cambridge Avenue	Yes	Insignificant impact	None required
M5 Motorway westbound between Moorebank Avenue and Hume Highway	Yes	The M5 Motorway is heavily congested without Moorebank IMT traffic	TfNSW to explore how to resolve congestion issue on M5 Motorway caused by inadequate weave distance as this is not a direct Project impact.
M5 Motorway eastbound between Moorebank Avenue and Hume Highway	Yes	The M5 Motorway is heavily congested without Moorebank IMT traffic	TfNSW to explore how to resolve congestion issue on M5 Motorway caused by inadequate weave distance as this is not a direct Project impact.
Hume Highway north of M5 Motorway	Yes	Insignificant impact	None required
M7 Motorway	Yes	Insignificant impact	None required
M2 Motorway	Yes	Insignificant impact	None required
M1 Pacific Motorway	Yes	Insignificant impact	None required

Summary

Since exhibition of the EIS, a number of project amendments have occurred resulting in changed traffic impacts, including:

- A requirement to upgrade Moorebank Avenue north of Anzac Road, and the upgrading of the Anzac Road intersection to a major signalised intersection.
- While the traffic impacts at 2030 have slightly improved relative the predictions made in the EIS, the analysis continues to show that by 2030, all intersections will have experienced a reduced LoS as a result of background traffic growth. A number of intersections will have deteriorated to an unacceptable LoS without mitigation.
- Mitigation measures in the form of intersection treatments are prescribed to ensure that for intersections operating at below LoS D, the 'with Moorebank' performance at 2030 is maintained at or below the 'without Moorebank' LoS.
- The impact of traffic from the Project represents less than 3.3% of the total traffic already on the M5 Motorway, the Project would therefore not have a substantial impact on the motorway operation.

The influence of the Project traffic on the surrounding road network can be further mitigated by managing arrival and departure of trucks through the terminal gate during peak periods of congestion.

The localised impact on congestion around Moorebank is offset by the broader network benefits:

- a saving of 56,125 truck vehicle kilometres travelled (VKT) per day; and
- a saving of 1,265 truck vehicle hours travelled (VHT) per day.

The potential contribution of Moorebank IMT traffic to the congestion around Moorebank and at a regional level will be revisited as part of the next stage (Stage 2 SSD) development application process.

7.10.4 Noise and vibration

Introduction

Chapter 12 – *Noise and Vibration* of the EIS provides an assessment of the potential noise and vibration impacts associated with the construction and operation of the Project. A detailed noise and vibration assessment was prepared by SLR Consulting (Technical Paper 2 – *Noise and Vibration Impact Assessment*, Volume 3 of the EIS) which addresses the relevant Commonwealth DoE's EIS Guidelines and the NSW SEARs.

Section 7.8.3 summarises the approach and key findings of the noise and vibration impact assessment from the EIS. The noise and vibration assessment for the revised Project follows the same assessment approach and assesses all development scenarios.

An updated *Noise and Vibration Impact Assessment* report has been prepared by SLR Consulting (2015) which details the assessment of potential noise and vibration levels associated with the proposed construction and operation of the revised Project (refer to Appendix F).

The assessment of noise levels in this report represents an 'unmitigated' conceptual layout. To demonstrate the potential noise levels during the operation of the revised Project can achieve the noise assessment criteria, a concept design with reasonable and feasible noise mitigation was also assessed.

Implications of the revised Project on the assessment

The following changes associated with the revised Project have had implications for the noise and vibration impact assessment:

- The key sources of noise at the IMEX terminal will be operated with the electric powered mobile and fixed plant. The proposed electric plant and equipment with the IMEX terminal have lower source noise emissions than the diesel or hybrid plant assumed in the EIS.
- The container handling area at the IMEX terminal will be an automated process that will not require staff to be within the container handling area and the RMGs will thus not require audible alarms or beepers. Measured noise levels provided by the manufacturer of the RMGs are 10 dBA less when operated without the audible warning alarms.
- Revised locations of the key noise sources at the interstate rail tracks, container handling areas, internal site traffic routes and container storage areas. This has changed the distance between the receptors and the noise sources.
- The warehousing for the IMEX and interstate terminals is located on the western portion of the main IMT site which will assist in screening noise emissions at the suburb of Casula.
- The selection of the southern rail access between the site and the SSFL will result in better noise outcomes for Casula residents compared to the northern and central alignments.
- The revised Project has removed the need for a rail loop to manage entry and departure of trains within the site, which by removing the curved track will reduce the likelihood for train wheel squeal.

Noise and vibration impact assessment (unmitigated)

Scenario 1 – 2016 (construction only)

Table 7.27 shows the predicted construction noise levels at the nearest residential receptors for development Scenario 1.

Table 7.27 Predicted construction noise levels - Scenario 1 of the revised Project

Construction activity	Predicted Noise Level at Residential Receptors (dBA, $L_{Aeq,\ 15min}$)			
	Casula NML = 49 dBA	Wattle Grove NML = 45 dBA	Glenfield NML = 45 dBA	Liverpool NML = 49 dBA
Piling works	41–**55**	**48–57**	43–**48**	47–**50**
Excavation	38–**52**	**46–51**	41–45	45–47
Compaction	38–**52**	**46–51**	41–45	45–47
Heavy vehicles within main IMT site	30–44	38–43	32–37	36–38
Concreting	35–49	43–**48**	37–42	42–45
SSFL rail access and on-site track	38–**52**	38–40	42–**46**	34–36

Note: The predicted noise levels highlighted in bold denotes levels above the daytime noise management level.

The key findings of the noise assessment for the construction activities during Scenario 1 include:

- Where piling, excavation and compaction works are undertaken adjacent to the nearest residential receptors the predicted worst case noise levels trigger the requirement for construction noise mitigation to reduce potential levels by up to 12 dBA.
- For concreting works, predicted noise levels trigger the daytime NML by 3 dBA at nearest receptors in Wattle Grove.
- Potential noise levels from heavy vehicles operating within the onsite haul roads are within the daytime NMLs and would not require specific noise mitigation to reduce the predicted noise levels.
- At all non-residential noise sensitive receptors, the predicted noise levels were within the relevant NMLs and would not trigger the requirement for noise mitigation.
- During standard daytime construction hours the predicted noise levels for the construction of the rail access connection to the SSFL exceed the NMLs at nearest residences at the west of Casula and north of Glenfield by up to 3 dBA.
- There is potential for rail construction works to be required outside of the standard daytime construction hours. Based on NMLs of 37 dBA for Wattle Grove and 38 dBA at all other suburbs, the predicted noise levels of up to 52 dBA would trigger the requirement for specific noise mitigation to control potential sleep disturbance impacts at Casula, Wattle Grove and Glenfield.

Scenario 2a – 2019 (operation and construction):

Table 7.28 shows the predicted construction noise levels at the nearest residential receptors for Scenario 2a of the revised Project.

Table 7.28 Predicted construction noise levels – Scenario 2a of the revised Project

Construction activity	Predicted Noise Level at Residential Receptors (dBA, $L_{Aeq,\ 15min}$)			
	Casula NML = 49 dBA	Wattle Grove NML = 45 dBA	Glenfield NML = 45 dBA	Liverpool NML = 49 dBA
Piling works	41–**51**	43–**49**	41–45	48–**50**
Excavation	38–49	41–**46**	39–42	45–47
Compaction	38–49	40–**46**	39–42	45–47
Heavy vehicles within main IMT site	30–40	32–38	30–34	37–39
Concreting	35–46	37–43	35–39	42–45

Note: The predicted noise levels highlighted in bold denotes levels above the daytime noise management level.

The key findings of the noise assessment for construction activities during Scenario 2a include:

- Predicted worst case noise levels at the nearest residential receptors for piling, excavation and compaction works would trigger the requirement for construction noise mitigation to reduce potential noise levels by up to 4 dBA at Casula, Wattle Grove and Liverpool.
- Predicted noise levels for heavy vehicles within the main IMT site and concreting works are within the NMLs and would not require specific noise mitigation measures to be implemented.

- At all non-residential noise sensitive receptors, the predicted noise levels were within the relevant NMLs and would not trigger the requirement for noise mitigation.

Table 7.29 provides the predicted unmitigated noise levels during the operation of Scenario 2a.

Table 7.29 Predicted unmitigated noise levels during operation of development Scenario 2a

Receptor/Location		Conservative Noise Criteria, $L_{Aeq(15min)}$ dBA	$L_{Aeq(15min)}$ dBA Noise level	
			Neutral	Adverse
R1	Lakewood Crescent, Casula	38	35	38
R2	St Andrews Boulevard, Casula	38	37	**40 (+2)**
R3	Buckland Road, Casula	38	**39 (+1)**	**41 (+3)**
R4	Dunmore Crescent, Casula	38	**39 (+1)**	**41 (+3)**
R5	Leacocks Lane, Casula	38	32	34
R6	Leacocks Lane, Casula	38	33	35
R7	Slessor Road, Casula	38	30	31
R8	Canterbury Road, Glenfield	38	27	27
R9	Ferguson Street, Glenfield	38	30	30
R10	Goodenough Street, Glenfield	38	30	31
R11	Wallcliffe Court, Wattle Grove	37	33	37
R12	Corryton Court, Wattle Grove	37	35	**39 (+2)**
R13	Martindale Court, Wattle Grove	37	34	**39 (+2)**
R14	Anzac Road, Wattle Grove	37	37	**42 (+5)**
R15	Cambridge Avenue, Glenfield	38	30	30
R16	Guise Public School	42	23	23
R17	Yallum Court, Wattle Grove	37	35	**39 (+2)**
R18	Church Road, Liverpool	38	30	35
R19	Glenwood Public School, Glenfield	42	27	28
R20	Glenfield Public School, Glenfield	42	24	25
R21	Hurlstone Agricultural School	42	23	24
R22	Wattle Grove Public School	42	32	37
R23	St Marks Coptic College, Wattle Grove	42	28	33
R24	Maple Grove Retirement Village, Casula	38	24	26
R25	All Saints Catholic College	42	34	36
R26	Casula High School	42	23	25
R27	Casula Primary School, Casula	42	32	35
R28	Lurnea High School	42	22	25
R29	St Francis Xaviers Catholic Church	47	19	24
R30	Impact Church Liverpool	47	24	29
R31	Liverpool West Public School	42	19	24
R32	Liverpool Public School/TAFE NSW	42	21	26
R33	DNSDC1 Site up to end 2014	70	62	63
R34	Glenfield Rise Development, Glenfield	38	28	28
R35	DNSDC1 Site after end 2014	70	37	41

Receptor/Location		Conservative Noise Criteria, $L_{Aeq(15min)}$ dBA	$L_{Aeq(15min)}$ dBA Noise level	
			Neutral	Adverse
R36	Playground Learning Centre Glenfield	42	25	26
R37	Wattle Grove Long Day Care Centre	42	29	34
R38	Casula Powerhouse Arts Centre	50	40	42

Note Bold highlight denotes predicted noise level exceeds the Project specific noise level criteria.
* Receptor R33 will not be occupied at the time of Phase B operations.

The key findings of the noise assessment for the operational components of Scenario 2a include:

- Predicted noise levels during neutral weather conditions comply with the daytime, evening and night-time noise criteria at all assessed receptors. Noise levels comply with the night-time noise criteria at all receptors in Wattle Grove, Liverpool and Glenfield. At the northern extent of Casula, noise levels marginally exceed the 38 dBA night-time noise criteria by 1 dBA.
- Predicted noise levels during adverse weather conditions comply with the daytime and evening noise criteria at all assessed receptors, with the exception of the western extent of Anzac Road where marginal 1 to 2 dBA exceedances of the noise criteria was predicted.
- During the night-time (for adverse weather conditions), predicted noise levels comply with the noise criteria at the majority of receptors, but exceed the noise criteria by 2 to 3 dBA at nearest receptors at the northern extent of Casula and by 2 dbA at nearest receptors at Wattle Grove. At the western extent of Anzac Road noise levels exceed the night-time noise criteria by up to 5 dBA.

Scenario 2b – 2023 (operation and construction)

Table 7.30 shows the predicted construction noise levels at the nearest residential receptors for development scenario 2b of the revised Project.

Table 7.30 Predicted noise levels during construction – Scenario 2b

Construction activity	Predicted Noise Level at Residential Receptors (dBA, $L_{Aeq, 15min}$)			
	Casula NML = 49 dBA	Wattle Grove NML = 45 dBA	Glenfield NML = 45 dBA	Liverpool NML = 49 dBA
Piling works	41–**53**	43–**49**	41–45	47–49
Excavation	38–**50**	40–**47**	39–42	44–46
Compaction	38–**50**	40–**47**	39–42	44–46
Heavy vehicles within main IMT site	30–42	32–39	30–42	36–38
Concreting	35–47	37–44	35–**47**	41–43

Note The predicted noise levels highlighted in bold denotes levels above the daytime noise management level.

The key findings of the noise assessment for the construction activities during Scenario 2b include:

- Predicted worst case noise levels for piling, excavation, compaction and concreting works would trigger the requirement for construction noise mitigation to reduce potential noise levels by up to 4 dBA at Casula and Wattle Grove.

- Predicted noise levels for heavy vehicles within the main IMT site are within the NMLs and would not require specific noise mitigation measures to be implemented. At all non-residential noise sensitive receptors, the predicted noise levels are within the relevant NMLs and would not trigger the requirement for noise mitigation.

Table 7.31 provides the predicted noise levels for the operation of development scenario 2b of the revised Project.

Table 7.31 Predicted unmitigated noise levels during operation of development Scenario 2b

Receptor/Location		**Conservative Noise Criteria, $L_{Aeq(15min)}$ dBA**	**$L_{Aeq(15min)}$ dBA Noise level**	
			Neutral	**Adverse**
R1	Lakewood Crescent, Casula	38	36	**39 (+1)**
R2	St Andrews Boulevard, Casula	38	**39 (+1)**	**41 (+3)**
R3	Buckland Road, Casula	38	**40 (+2)**	**42 (+4)**
R4	Dunmore Crescent, Casula	38	**39 (+1)**	**41 (+3)**
R5	Leacocks Lane, Casula	38	33	35
R6	Leacocks Lane, Casula	38	34	35
R7	Slessor Road, Casula	38	31	32
R8	Canterbury Road, Glenfield	38	28	28
R9	Ferguson Street, Glenfield	38	31	31
R10	Goodenough Street, Glenfield	38	31	31
R11	Wallcliffe Court, Wattle Grove	37	34	37
R12	Corryton Court, Wattle Grove	37	34	**38 (+1)**
R13	Martindale Court, Wattle Grove	37	34	**38 (+1)**
R14	Anzac Road, Wattle Grove	37	37	**42 (+4)**
R15	Cambridge Avenue, Glenfield	38	31	31
R16	Guise Public School	42	24	25
R17	Yallum Court, Wattle Grove	37	35	**39 (+2)**
R18	Church Road, Liverpool	38	30	35
R19	Glenwood Public School, Glenfield	42	29	29
R20	Glenfield Public School, Glenfield	42	25	26
R21	Hurlstone Agricultural School	42	25	25
R22	Wattle Grove Public School	42	32	37
R23	St Marks Coptic College, Wattle Grove	42	28	33
R24	Maple Grove Retirement Village, Casula	38	25	27
R25	All Saints Catholic College	42	35	36
R26	Casula High School	42	24	26
R27	Casula Primary School, Casula	42	32	35
R28	Lurnea High School	42	22	25
R29	St Francis Xaviers Catholic Church	47	20	25
R30	Impact Church Liverpool	47	25	31
R31	Liverpool West Public School	42	20	25
R32	Liverpool Public School/TAFE NSW	42	22	27
R33	DNSDC1 Site up to end 2014	70	62	63

Receptor/Location		Conservative Noise Criteria, $L_{Aeq(15min)}$ dBA	$L_{Aeq(15min)}$ dBA Noise level	
			Neutral	Adverse
R34	Glenfield Rise Development, Glenfield	38	29	30
R35	DNSDC1 Site after end 2014	70	36	41
R36	Playground Learning Centre Glenfield	42	27	27
R37	Wattle Grove Long Day Care Centre	42	29	34
R38	Casula Powerhouse Arts Centre	50	41	43

Note Bold highlight denotes predicted noise level exceeds the Project specific noise level criteria.
* Receptor R33 will not be occupied at the time of Phase B operations.

The key findings of the noise assessment for the operational components of Scenario 2b include:

- Predicted noise levels during neutral weather conditions comply with the daytime, evening and night-time noise criteria at all assessed receptors, with the exception of nearest receptors at the northern extent of Casula where predicted noise levels marginally exceed the night-time noise criteria by up to 2 dBA.
- Predicted noise levels during adverse weather conditions comply with the daytime and evening noise criteria at all assessed receptors with the exception of the western extent of Anzac Road where a marginal 1 to 2 dBA exceedance was predicted. During the night-time, predicted noise levels exceed the noise criteria by up to 4 dBA at the northern extent of Casula and the nearest receptors in Wattle Grove. Noise levels comply with the night-time noise criteria at all other assessed receptors.

Scenario 3 – Full Build – 2030 (operation)

To evaluate the potential changes in received noise levels during the operation of the revised Project, the predicted noise levels for the unmitigated concept design at Full Build 2030 (Scenario 3) have been compared between the EIS and revised Project Table 7.32 summarises the predicted noise levels.

Table 7.32 Comparison of the EIS and revised Project Noise Levels for Scenario 3 – Full Build

Receptor/Location		L_{Aeq} Noise level, dBA		Change in Noise Level, dBA
		EIS	Revised Project	
R1	Lakewood Crescent, Casula	45	41	-4
R2	St Andrews Boulevard, Casula	48	43	-5
R3	Buckland Road, Casula	51	44	-7
R4	Dunmore Crescent, Casula	50	43	-7
R5	Leacocks Lane, Casula	40	37	-3
R6	Leacocks Lane, Casula	41	37	-4
R7	Slessor Road, Casula	33	34	1
R8	Canterbury Road, Glenfield	28	30	2
R9	Ferguson Street, Glenfield	29	33	4
R10	Goodenough Street, Glenfield	31	33	2
R11	Wallcliffe Court, Wattle Grove	41	39	-2
R12	Corryton Court, Wattle Grove	41	40	-1

Receptor/Location		L_{Aeq} Noise level, dBA		Change in Noise Level, dBA
		EIS	Revised Project	
R13	Martindale Court, Wattle Grove	41	40	-1
R14	Anzac Road, Wattle Grove	44	43	-1
R15	Cambridge Avenue, Glenfield	31	33	2
R16	Guise Public School	18	26	8
R17	Yallum Court, Wattle Grove	42	41	-1
R18	Church Road, Liverpool	38	37	-1
R19	Glenwood Public School, Glenfield	25	30	5
R20	Glenfield Public School, Glenfield	24	27	3
R21	Hurlstone Agricultural School	22	27	5
R22	Wattle Grove Public School	40	38	-2
R23	St Marks Coptic College, Wattle Grove	36	35	-1
R24	Maple Grove Retirement Village, Casula	29	29	0
R25	All Saints Catholic College	43	39	-4
R26	Casula High School	29	28	-1
R27	Casula Primary School, Casula	42	37	-5
R28	Lurnea High School	30	27	-3
R29	St Francis Xaviers Catholic Church	29	26	-3
R30	Impact Church Liverpool	35	33	-2
R31	Liverpool West Public School	30	27	-3
R32	Liverpool Public School/TAFE NSW	31	30	-1
R33	DNSDC1 Site up to end 2014	58	64	6
R34	Glenfield Rise Development, Glenfield	30	31	1
R35	DNSDC1 Site after end 2014	43	42	-1
R36	Playground Learning Centre Glenfield	37	29	-8
R37	Wattle Grove Long Day Care Centre	25	35	10
R38	Casula Powerhouse Arts Centre	52	44	-8

The key findings of the noise assessment of the revised Project at Full Build (Scenario 3) when compared to the EIS Full Build development scenario include:

- Noise levels are generally lower with the revised Project with the change in predicted noise levels at each suburb. At all receptor communities the changes are due to a combination of the updated IMEX terminal operations, the revised location of noise sources within the main IMT site and the relocation of warehousing to the west of the main IMT site.
- Predicted noise levels at the majority of residential receptors in Casula are up to 7 dBA lower with the revised Project with only a marginal increase of 1 dBA predicated at Slessor Road.
- At the assessed residences in Wattle Grove and in Liverpool, noise levels have been predicted to be up to 2 dBA lower with the revised Project.

- At the assessed residences in Glenfield the predicted noise levels are up to 4 dBA higher with the revised Project. Nonetheless, the predicted noise levels comply with the noise assessment criteria, which is consistent with the EIS.
- At some of the assessed non-residential receptors predicted noise levels are up to 8 dBA lower with the revised Project. However, noise levels at other non-residential receptors have been predicted to increase by up to 10 dBA. Notwithstanding, the predicted noise levels at all non-residential receptors in the EIS and with the revised Project comply with the noise assessment criteria.

Rail noise levels

Rail freight for the revised Project will operate on the SSFL with IMEX and interstate trains accessing the site via the SSFL on the purpose built rail access. The SSFL officially opened in January 2013 and the initial operation of the Project will be within the capacity of the SSFL.

Analysis of future demand on the SSFL undertaken for the EIS determined a likely need to upgrade the SSFL in the future and this need for capacity increase is foreshadowed by the Australian Rail Track Corporation (ARTC's 2013) SSFL Operational Noise and Vibration Management Plan (ONVMP). The assessed rail noise levels in the noise and vibration management plan are representative of SSFL operations including the capacity for IMEX and interstate rail freight.

As discussed in Section 14 of the Technical Paper 2 – *Noise and Vibration Impact Assessment* (Volume 3 of the EIS), the existing and any future noise mitigation implemented for the SSFL would be expected to attenuate noise contributions from rail freight associated with the IMT project where the IMT project operates within the design capacity of the SSFL.

There has been no change in the predicted rail noise levels from the southern rail access connection to the SSFL and noise levels are predicted to comply with the relevant noise assessment criteria from the RING without the requirement for noise mitigation.

Road traffic noise levels

Whilst the revised Project has resulted in a marginal changes in predicted road traffic noise levels (less than ±1 dBA), the revised designs are predicted to comply with the RNP which is consistent with the outcomes of the road traffic noise assessment in the EIS.

Ground vibration levels

There has been no change in the assessed ground vibration levels during the construction and operation of the Project. Potential ground vibration levels assessed in the EIS and revised Project are expected to comply with the vibration criteria at all receptors.

Noise assessment (Mitigated)

To demonstrate that noise levels during the operation of the revised Project can be controlled to achieve the noise assessment criteria, a conceptual design with reasonable and feasible noise mitigation has been assessed.

The following noise mitigation measures have been included in the Full Build concept design of the revised Project:

- It has been assumed that the interstate terminal would be operated with an automated container handling area and electrically power plant, as per the IMEX terminal. In the event the interstate terminal is not able to operate in this manner; the terminal shall use plant with the lowest available noise emissions.
- To the west of the site, a noise barrier 4.5 m in height has been included at the haul road to mitigate noise from trucks operating within the main site. The noise barrier can be a combination of acoustic barriers, solid walls or earth mounding as long as it fully impedes the line of sight between nearest receptors in Casula and the haul road.

Predicted noise levels during neutral and adverse weather conditions comply with the noise assessment criteria at all assessed receptors with the on-site mitigation.

Recommended noise management and mitigation

The noise management mitigation measures in the EIS are directly applicable to the assessed noise and vibration impacts for the revised Project, these are presented in Table 9.1 of this report.

Additional noise mitigation measures to those recommended in the EIS may include:

- Automated container handling areas in the IMEX and interstate terminals to avoid the use of alarms or beepers on the RMGs.
- Electrification of all plant and equipment at the IMEX and interstate terminals, or alternatively sourcing plant and equipment with noise emission levels equivalent to electrified plant.
- Permanently coupled wagons to limit impact noise events from wagon bunching on the freight trains.
- Reversing of vehicles operating within the Main IMT site equipment would be minimised so as to prevent nuisance caused by reversing alarms. This can be achieved through one-way traffic systems and the use of traffic lights which can also limit the use of vehicle horns.
- To further mitigate potential noise from vehicle horns, the practical application of radio contact between operators and limiting the use of vehicle horns to the daylight hours only would be investigated.
- Broadband reversing alarms are to be used instead of tonal reversing alarms, in particular between the hours of 6.00 pm to 7.00 am. This requirement would extend to the heavy vehicles (trucks) entering and leaving the site and where possible (particularly for night works). This should be included as a contractual requirement for all operators accessing the main IMT site.

Summary

In comparison to the EIS, the predicted operational noise levels associated with the revised project at the most affected receptors are up to 7 dBA lower with decreased levels predicted at all receptors. Potential rail noise levels, road traffic noise levels and ground vibration levels predicted to comply with the relevant criteria and the assessment of impacts is consistent with the EIS.

7.10.5 Local air quality

Introduction

Chapter 17 – *Local air quality* of the EIS provides an assessment of the existing local air quality surrounding the Project site and the predicted local air quality impacts resulting from construction and operation. The chapter summarises the detailed local air quality assessment prepared by Environ Australia Pty Ltd (Technical Paper 7 – *Local air quality impact assessment* in Volume 6 of the EIS) and addresses the Commonwealth Department of Environment (DoE)'s EIS Guidelines and NSW SEARS for the Project.

Table 7.11 in section 7.8.3 summarises the assessment approach and key findings of the local air quality impact assessment from the EIS.

An updated – *Local air quality impact assessment report* (Environ, 2015), has been prepared for the revised Project (refer to Appendix G) which details the local air quality assessment of potential impacts associated with the proposed construction and operation of the revised Project, and in particular to assesses:

- changes to the development phasing of revised Project and associated changes to traffic generation assumptions
- changes to the impact on local receptors due to reconfiguration to the IMT layout and key components.

The air quality assessment criteria adopted for the assessment of local air quality impacts, as described in section 17.1.1 in Chapter 17 – *Local air quality* of the EIS remains unchanged and has been adopted to assess the impacts of the revised Project. In addition, the assessment also uses the baseline meteorology and air quality environment at the Project site, as described in Section 17.2 in Chapter 17 – *Local air quality* of the EIS.

Local air quality impact assessment

For the air quality assessment of the revised Project, atmospheric dispersion modelling was carried out using the AMS/US-EPA regulatory model (AERMOD). This was configured and run to take account of the revised Project and focused on Scenario 1 and Scenario 3 (Full Build) as these collectively represented the highest periods of emissions for the various pollutants.

Scenario 1 – 2016 (construction only)

There were no predicted exceedances of the NSW EPA criteria and NEPM advisory reporting goals for particulate matter or combustion pollutants across all surrounding receptor locations. Full results for Scenario 1 are presented in Appendix B of the *Revised Project Design – Local Air Quality Impact Assessment* (Environ, 2015) (refer to Appendix G of this Report. Incremental (Project-only) isopleth plots for PM_{10}, $PM_{2.5}$ and NO_x are presented in Appendix C of the *Revised Project Design – Local Air Quality Impact Assessment* (Environ, 2015) (refer to Appendix G of this Report).

Scenario 3 – Full Build (2030)

Air pollutant concentrations were predicted to be within NSW EPA criteria and NEPM advisory reporting goals. An exceedance of the annual average $PM_{2.5}$ advisory reporting goal at R33 was predicted to occur due to cumulative concentrations during Full Build activities. Whilst this receptor was relocated in 2014 it has been retained in the assessment for completeness. The likely future land use at R33 would be associated with the SIMTA project. The elevated ambient background is the key contributor to these exceedances.

No other exceedances were predicted across the remaining sensitive receptors for all pollutants assessed during the Full Build scenario.

Mitigation measures

Section 17.4 in Chapter 17 – *Local air quality* of the EIS summarises the proposed mitigation measures and safeguards for the Project. Following the local air quality assessment of the revised Project, these measures are still relevant and will be applied to the Project. For completeness, these management and mitigation measures are presented in Table 9.1 of this report.

Summary

Predicted impacts of the revised Project show minor variance from the impacts predicted in the air quality assessment presented in Chapter 17 – *Local air quality* of the EIS. The predictive dispersion modelling demonstrates that concentrations of most pollutants (TSP, PM_{10}, NO_x, CO, SO_2, benzene, toluene, xylene, 1,3-butadiene, acetaldehyde and PAHs) emitted would be below acceptable ambient air quality criteria and would not adversely affect the receiving environment.

The key findings of the local air quality assessment are summarised as follows:

- incremental (Project-only impacts excluding the contribution of ambient air quality) air pollutant concentrations and dust deposition rates associated with all modelled scenarios were predicted to be within NSW EPA criteria and NEPM advisory reporting goals at all surrounding receptor locations;
- taking elevated background airborne PM concentrations into account, no exceedances were predicted for cumulative 24-hour average PM_{10} and $PM_{2.5}$ beyond those already recorded due to bushfire events in 2013;
- exceedance of the annual average NEPM advisory reporting goal for cumulative $PM_{2.5}$
- is predicted for one receptor (R33) in the Full Build scenario (Scenario 3). This receptor was relocated in 2014, however has been retained for completeness. The likely future land use at R33 would be associated with the SIMTA project. The elevated ambient background is the key contributor to these exceedances; and
- all incremental cumulative and gaseous pollutants assessed are below applicable NSW EPA assessment criterion for all scenarios.

7.10.6 Health impact assessment and human health risk

Introduction

Chapter 25 – *Human health risks and impacts* of the EIS describes the potential human health risks and impacts that may arise from activities associated with the construction and operation of the Moorebank Intermodal Terminal (IMT) Project. A detailed Health Impact Assessment (HIA) and Human Health Risk Assessment (HHRA) were prepared by Environmental Risk Services (Technical Paper 15 – *Human Health Risk Assessment* and Technical Paper 16 – *Health Impact Assessment* in Volume 9 of the EIS). Both these Technical Papers address the Commonwealth Department of the Environment (DoE)'s EIS Guidelines and the NSW SEARs.

Table 7.11 in section 7.8.3 of this report summarises the approach and key findings of the HIA and HHRA for the EIS.

Implications of the revised Project on the impact assessment

Changes associated with the revised Project, including the reconfiguration to the IMT layout, development phasing and timing, and the associated changes to the traffic generation, noise and vibration impacts and local air quality impacts the human health risk and impacts associated with the revised Project and been reassessed.

Human Health Risk Assessment

As discussed in section 7.9.5 of this report, the local air quality assessment has been revised and addresses only two development scenarios; Scenario1 (during Phase A) and Scenario 3 (at Full Build).

The HHRA for the revised Project assessed:

- predicted concentrations of emissions of oxides of nitrogen (nitrogen dioxide, carbon monoxide, and sulphur dioxide) against relevant guidelines to protect community health; and
- predicted concentration of individual volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs) derived from the Project to health based air guidelines.

The detailed results are presented in the HHRA for the revised Project in Appendix H of this report. A summary of the key findings are presented below.

Nitrogen Dioxide

Concentrations of nitrogen dioxide predicated for the assessment of the revised Project are well below the relevant health based guideline. Hence there are no adverse health effects expected in relation to exposures to nitrogen dioxide in the local area. The concentrations predicted are similar to those presented in the EIS and the outcomes in relation to impacts on public health are unchanged.

Carbon monoxide

Concentrations of carbon monoxide above are well below the relevant health based guideline. Hence there are no adverse health effects expected in relation to exposures to carbon monoxide in the local area. The concentrations predicted are similar to those presented in the EIS and the outcomes in relation to impacts on public health are unchanged.

Sulphur dioxide

Concentrations of sulfur dioxide are well below the relevant health based guideline. Hence there are no adverse health effects expected in relation to exposures to sulfur dioxide in the local area. The concentrations predicted are similar to those presented in the EIS and the outcomes in relation to impacts on public health are unchanged.

Polycyclic Aromatic Hydrocarbons and Volatile Organic Compounds

All the maximum predicted concentration of all key polycyclic aromatic hydrocarbons (PAHs) and volatile organic compounds (VOCs) likely to be derived from emission sources (vehicles and locomotives) associated with the revised Project are well below acute and chronic guidelines that are based on the protection of human health (including sensitive individuals). Hence there are no adverse health effects expected in relation to exposures to VOCs and PAHs in the local area. The concentrations predicted are similar to those presented in the EIS and the outcomes in relation to impacts on public health are unchanged.

Particulates

The calculated risks and population incidence associated with exposure to PM_{10} and $PM_{2.5}$ in the community associated with the revised Project are consistent with the levels of risk and increased incidence presented in the HHRA in Volume 9 of the EIS.

On this basis the conclusions presented in the EIS remain unchanged in relation to potential exposures to PM_{10} and $PM_{2.5}$ derived from the Project.

Summary

Based on the revised Project scenarios considered the conclusions presented in the EIS in relation to impacts on the health of the local community are unchanged.

Health Impact Assessment

The HIA for the revised Project (Appendix H of this Response to Submissions report) presents a review of the changes to the technical assessments in relation to traffic generation, noise and vibration, local air quality and human health risk and how these may affect the assessment, outcomes and recommendations presented in the HIA in Volume 9 of the EIS.

A summary of the key findings of the HIA for the revised Project is presented below:

Traffic assessment

The traffic assessment in relation to the revised Project has identified some changes to the proposed upgrade of Moorebank Avenue; however the traffic impacts present in Chapter 11 – *Traffic, transport and access* in the EIS have not changed.

From a health impact perspective the conclusions presented in Chapter 25 – *Human health risk and impacts* of the EIS remain unchanged, i.e. the health outcomes relating to traffic congestion should be positive as long as all the proposed mitigation measures are implemented.

Noise and vibration and human health

The human health assessment presented in Chapter 25 – *Human health risks and impacts* of the EIS identified that where the noise criteria were not met there was the potential for adverse effects on the health of the community.

For the revised scenarios, as with the other scenarios presented in the EIS, the worst case assessment predicts that noise criteria would be exceeded at some locations without additional noise mitigation measures. Such measures should be adopted to ensure the health outcomes related to noise are neutral for the revised Project.

Air quality and human health

The levels of oxides of nitrogen, sulfur dioxide, carbon monoxide, volatile organic compounds and polycyclic aromatic hydrocarbons during construction and operation of the revised Project are all estimated to be acceptable for all Project scenarios evaluated (Scenario 1 and Scenario 3 Full Build).

The assessment of health impacts associated with changes in both $PM_{2.5}$ and PM_{10} concentrations in the local community has been revised based on the changes in the ground level concentrations predicted for the assessment scenarios evaluated.

The assessment of impacts to human health for the revised Project has identified minor variations in the health risks and impacts presented in Chapter 25 – *Human health risk* of the EIS. However the conclusions presented in the EIS remain unchanged.

No additional mitigation measures for human health impact have been identified in relation to the revised Project.

Summary

Based on the assessment of the revised Project, the conclusions presented in Chapter 25 – *Human health risks and impacts* of the EIS in relation to impacts on the health of the local community are unchanged.

In addition, the recommendations presented in the EIS in relation to mitigation or enhancing health benefits remain unchanged. Some additional noise mitigation measures have been outlined for the revised Project and these should be considered in conjunction with other mitigation measures outlined in the relevant assessments.

7.11 Assessment of cumulative impacts

7.11.1 Basis of cumulative impact assessment

For the proposed amendments to the development, three realistic cumulative scenarios have been assessed to determine the cumulative impacts of both the Moorebank IMT Project and the SIMTA IMT project.

The cumulative impact assessment also assesses the impacts of the new concept layout as described in section 7.4 of this report.

Cumulative Scenario A (previously Scenario 1 in the EIS):

Cumulative scenario A assumes that the SIMTA site would operate only as an intensified warehousing development that would support the operation of the Moorebank IMT Project at Full Build (2030) (refer to Figure 7.12). A number of assumptions have been made to define and assess cumulative Scenario A consisting of:

- The Moorebank IMT operating at Full Build as proposed in the EIS (i.e. 1.05 million TEU per annum for the IMEX terminal facility, 500,000 TEU per annum for the interstate terminal facility and 300,000 sq. m of warehousing);
- The SIMTA development having indicative warehouse capacity of 300,000 sq. m gross floor area (GFA)
- Both sites operating at 24 hours a day, seven days a week; and
- The SIMTA development having an operational workforce of 1,470 staff on site per day (three shifts).

Cumulative Scenario B (previously Scenario 3 in the EIS):

Cumulative B consists of an IMEX terminal on the SIMTA site only with throughput of 1 million TEU per year, as well as 300,000 sq. m of warehousing at 2030. An interstate terminal of 500,000 TEU per year and 300,000 sq. m of warehousing would be located on the IMT site. The scenario is taken to represent the precinct sites at Full Build (2030) (refer to Figure 7.13).The following assumptions were made for cumulative Scenario B:

- Both sites operating at 24 hours a day, seven days a week;
- The SIMTA development having an operational workforce of 2,258 staff on site per day (three shifts per day); and
- The Moorebank IMT site would have an operational workforce of 1,800 staff per day.

Cumulative Scenario C1

Cumulative scenario C has been split into C1 (an interim scenario at 2020) and C2 (final scenario from 2030). Scenario C1 consists of the Moorebank IMT site operating at 250,000 TEU IMEX, 250,000 TEU Interstate and 100,000 sq. m warehousing. The SIMTA site would operate at 250,000 TEU IMEX (their Stage 1 DA) and 200,000 sq. m warehousing (refer to Figure 7.14).

Cumulative Scenario C2

Scenario C2 consists of the Moorebank IMT site operating at 550,000 TEU IMEX, 500,000 TEU Interstate and 300,000 sq. m warehousing. The SIMTA site would operate at 500,000 TEU IMEX (their ultimate capacity under the PAC determination) and 300,000 sq. m warehousing (refer to Figure 7.15).

The following sections provide the key findings of the impact assessments of the cumulative scenarios.

7.11.2 Cumulative traffic and transport assessment

For all full-build scenarios the total traffic generation from the IMT activities is largely the same for the cumulative scenarios as it is for the individual Moorebank IMT site (i.e. a total 1.55 million TEU). However for Scenario B, a total 1.5 million TEU is assumed, as SIMTA's IMEX proposal is for a one million TEU facility instead of the 1.05 million TEU proposed for the Moorebank IMT.

The cumulative scenarios at Full Build include a total 600,000 sq. m of warehousing, which results in increased impacts on the surrounding road network compared to the development of the Moorebank IMT only.

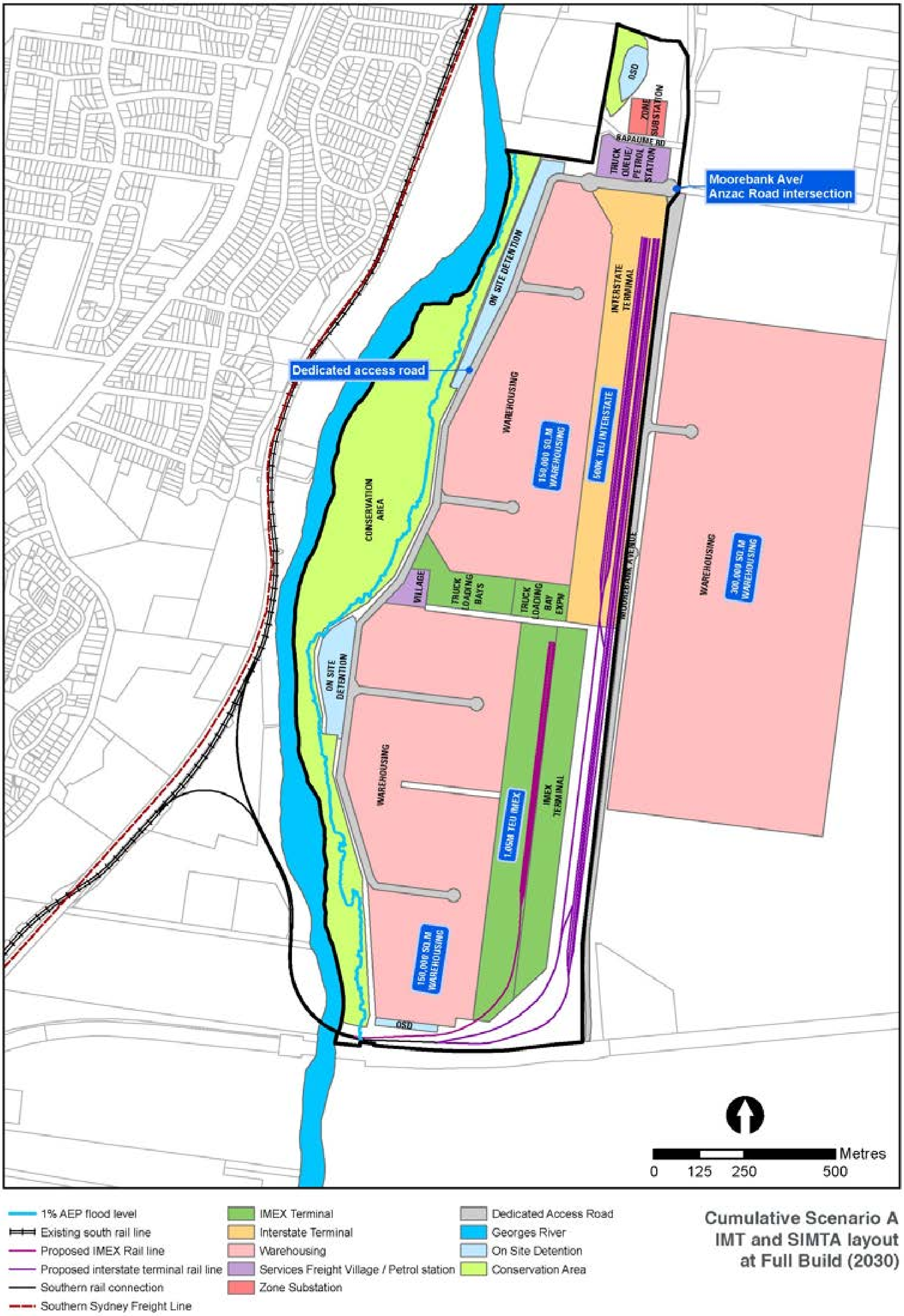

Figure 7.12 Cumulative Scenario A – IMT and SIMTA layout at Full Build (2030)

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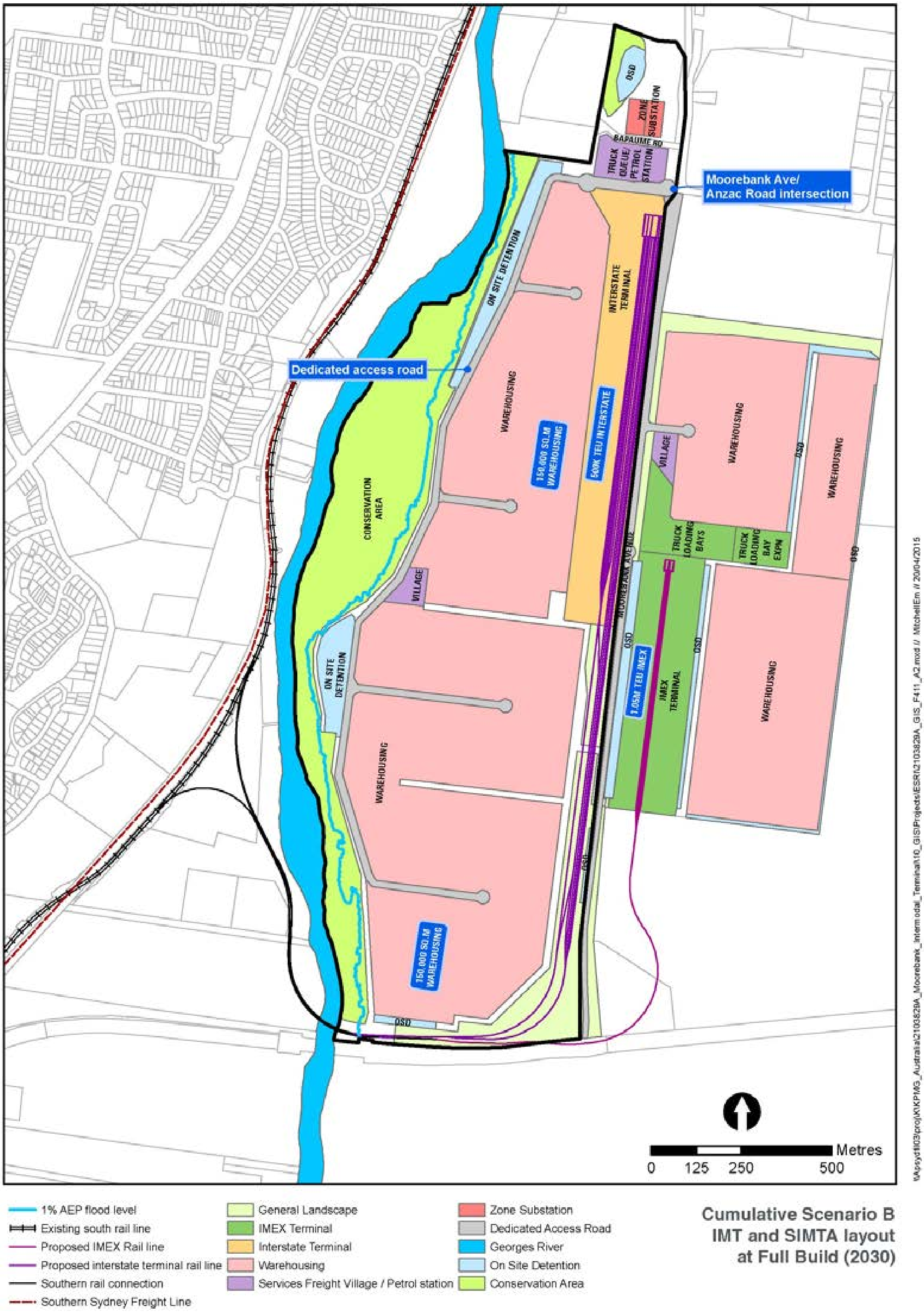


Figure 7.13 Cumulative Scenario B – IMT and SIMTA layout at Full Build (2030)

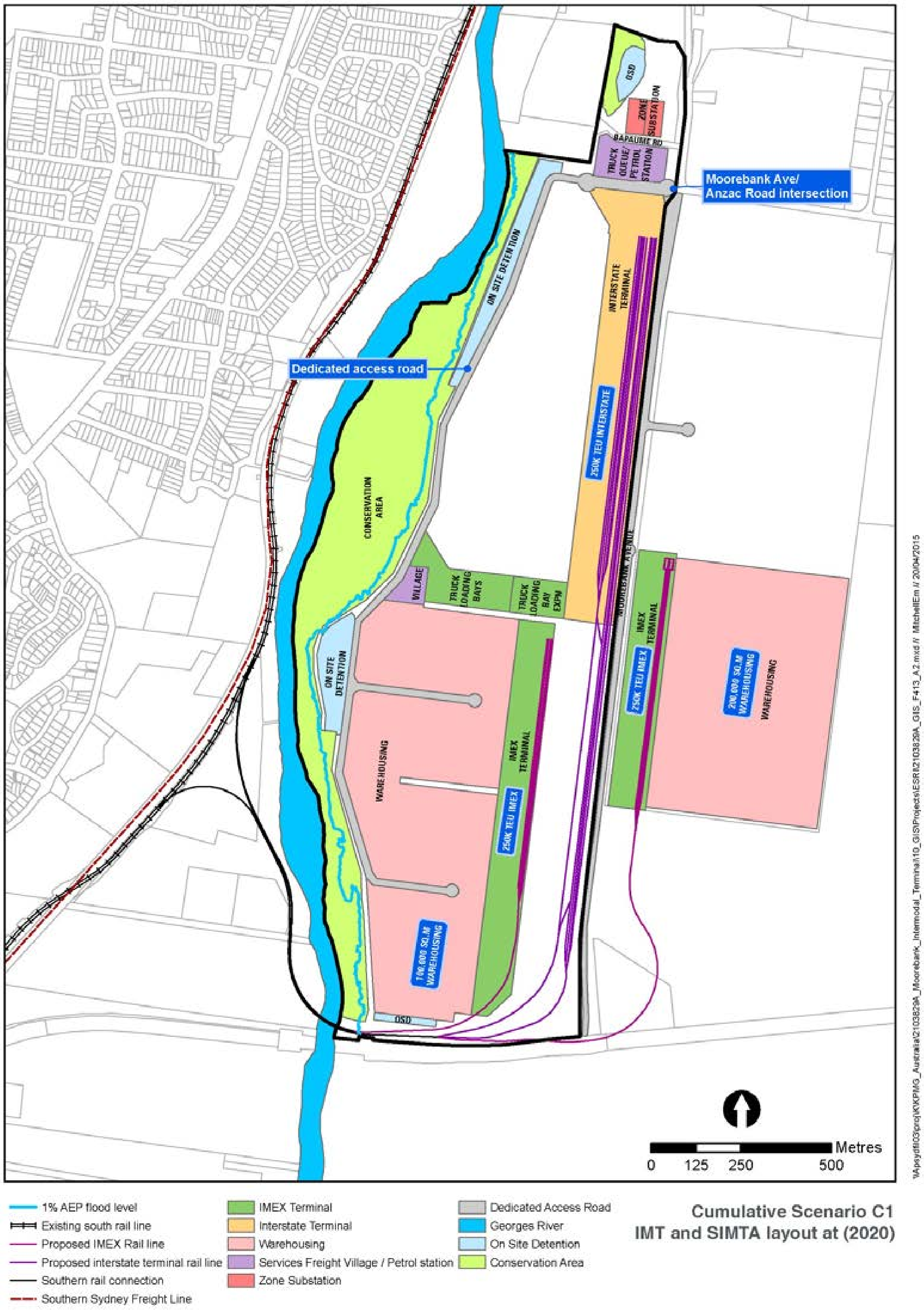


Figure 7.14 Cumulative Scenario C1 – IMT and SIMTA layout at 2020

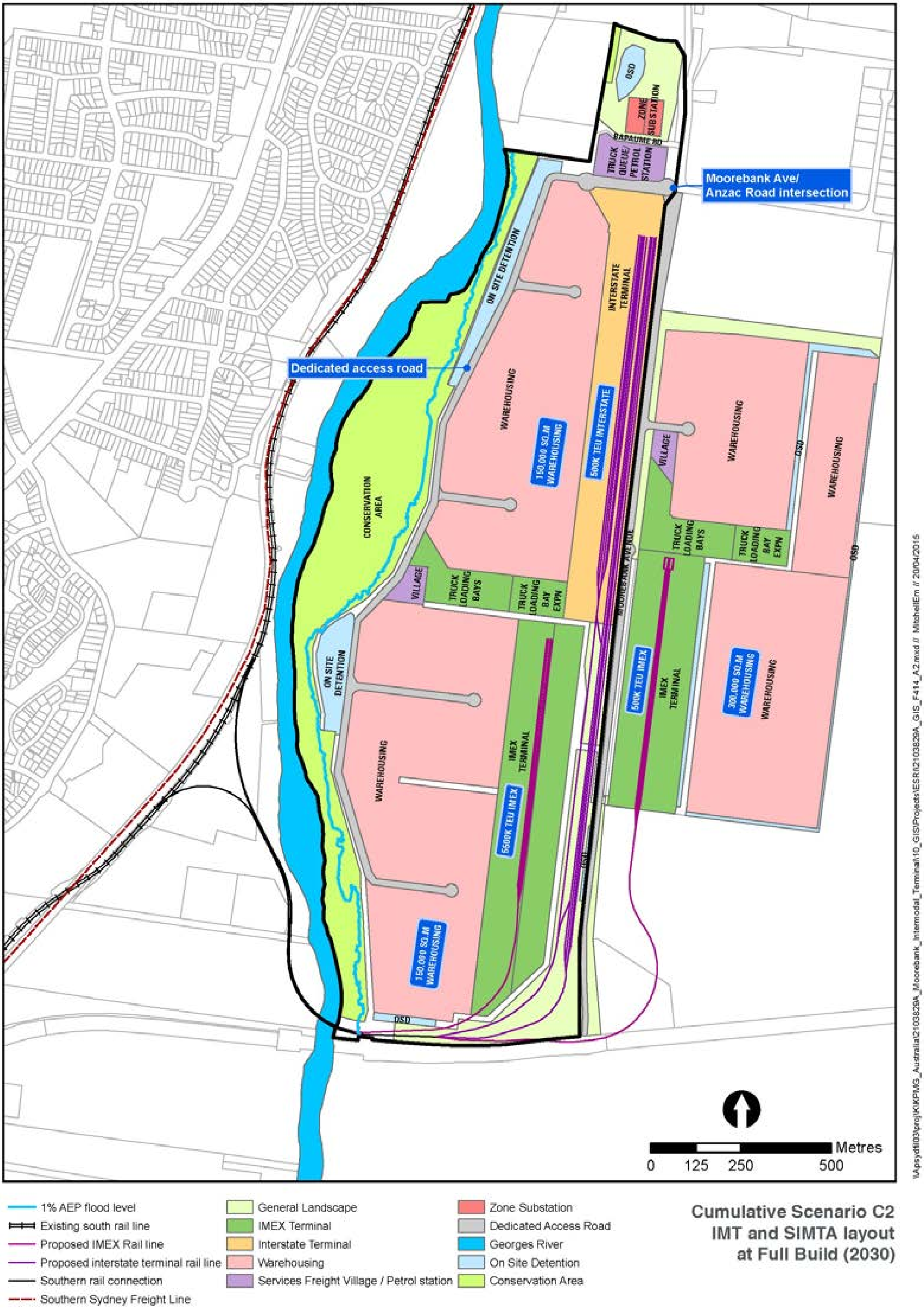


Figure 7.15 Cumulative Scenario C2 – IMT and SIMTA layout at 2030

Assumptions

For these cumulative scenarios it is assumed that:

- The traffic generated by warehousing by Moorebank IMT is based upon Deloitte traffic generation rates for heavy vehicles and staffing requirements for light vehicles.
- The traffic generated by standalone warehousing on the SIMTA site or surplus warehousing on the Project site utilises the RMS daily trip generation rate, with 8.7% of daily trips occurring during peak hours.
- The SIMTA site would be developed in accordance with the concept layout identified in Figure 7.16 with three access locations on Moorebank Avenue (northern, central and southern accesses).
- The traffic generated by the SIMTA standalone warehouse operation is based upon RMS trip generation rates.
- The heavy vehicle distribution for the SIMTA site is based upon the Freight Movement Model (FMM) distribution from the M5 Motorway and from the SIMTA EIS onto Moorebank Avenue.
- The light vehicle distribution for Moorebank IMT is based upon the Sydney Strategic Travel Model (STM) for Moorebank Avenue and from intersection traffic volume distributions on the wider road network (beyond Moorebank Avenue).
- The light vehicle distribution for SIMTA is based upon the SIMTA EIS for Moorebank Avenue and from intersection traffic volume distributions on the wider road network (beyond Moorebank Avenue).
- Both sites are assumed to be operational 24-hours a day seven days a week.
- The majority of staff would arrive and depart outside the peak periods on the road network and the maximum traffic generation would occur during the shift changeover (at 6.00 am, 2.00 pm and 10.00 pm) for the Project site.
- The majority of staff would arrive and depart within the peak periods on the road network and the maximum traffic generation would occur during the shift changeover (at 8.00 am and 5.00 pm) for the SIMTA site.
- Light vehicle trip generation was assumed to be during peak hours, i.e. all inbound in the AM peak and all outbound in the PM peak, and heavy vehicles were assumed to be evenly distributed between inbound and outbound movements.
- A heavy vehicle peak hour traffic profile of 7.7% for the AM peak and 9.3% for the PM peak utilised for both Moorebank IMT and SIMTA sites.
- The assessment would consider cumulative operations of the two developments at year 2030 – when both are at full build operational levels. This allows for an assessment of potential ‘worst case’ impacts resulting from the two developments.

Traffic generation

Traffic generation for cumulative scenarios is shown in Table 7.34 below.

Table 7.33 Cumulative scenario daily and peak hourly traffic generation

Cumulative traffic			LV	HV
Site	**Scenario A**			
Moorebank IMT	AM peak hour traffic	Inbound	83	212
		Outbound	0	212
	PM peak hour traffic	Inbound	0	257
		Outbound	83	257
	Total daily vehicle trips		5,723	5,522
SIMTA	AM peak hour traffic	Inbound	399	66
		Outbound	0	66
	PM peak hour traffic	Inbound	0	79
		Outbound	399	79
	Total daily vehicle trips		4,593	1,707
Combined	AM peak hour traffic	Inbound	482	278
		Outbound	0	278
	PM peak hour traffic	Inbound	0	336
		Outbound	482	336
	Total daily vehicle trips		10,316	7,229
Site	**Scenario B**			
Moorebank IMT	AM peak hour traffic	Inbound	310	115
		Outbound	0	115
	PM peak hour traffic	Inbound	0	140
		Outbound	310	140
	Total daily vehicle trips		5,050	3,001
SIMTA	AM peak hour traffic	Inbound	692	102
		Outbound	0	102
	PM peak hour traffic	Inbound	0	78
		Outbound	630	78
	Total daily vehicle trips		3,614	2,638
Combined	AM peak hour traffic	Inbound	1002	217
		Outbound	0	217
	PM peak hour traffic	Inbound	0	218
		Outbound	1002	218
	Total daily vehicle trips		8,664	5,639
Site	**Scenario C1**			
Moorebank IMT	AM peak hour traffic	Inbound	174	153
		Outbound	0	153
	PM peak hour traffic	Inbound	0	170
		Outbound	174	170
	Total daily vehicle trips		4,099	3,420

Cumulative traffic			**LV**	**HV**
SIMTA	AM peak hour traffic	Inbound	292	54
		Outbound	0	54
	PM peak hour traffic	Inbound	0	52
		Outbound	478	52
	Total daily vehicle trips		3,632	1,365
Combined	AM peak hour traffic	Inbound	465	207
		Outbound	0	207
	PM peak hour traffic	Inbound	0	222
		Outbound	652	222
	Total daily vehicle trips		7,731	4,785
Site	**Scenario C2**			
Moorebank IMT	AM peak hour traffic	Inbound	68	157
		Outbound	0	157
	PM peak hour traffic	Inbound	0	191
		Outbound	68	191
	Total daily vehicle trips		5,386	4,098
SIMTA	AM peak hour traffic	Inbound	494	85
		Outbound	0	85
	PM peak hour traffic	Inbound	0	78
		Outbound	649	78
	Total daily vehicle trips		4,788	2,167
Combined	AM peak hour traffic	Inbound	562	242
		Outbound	0	242
	PM peak hour traffic	Inbound	0	269
		Outbound	717	269
	Total daily vehicle trips		10,174	6,265

Traffic distribution

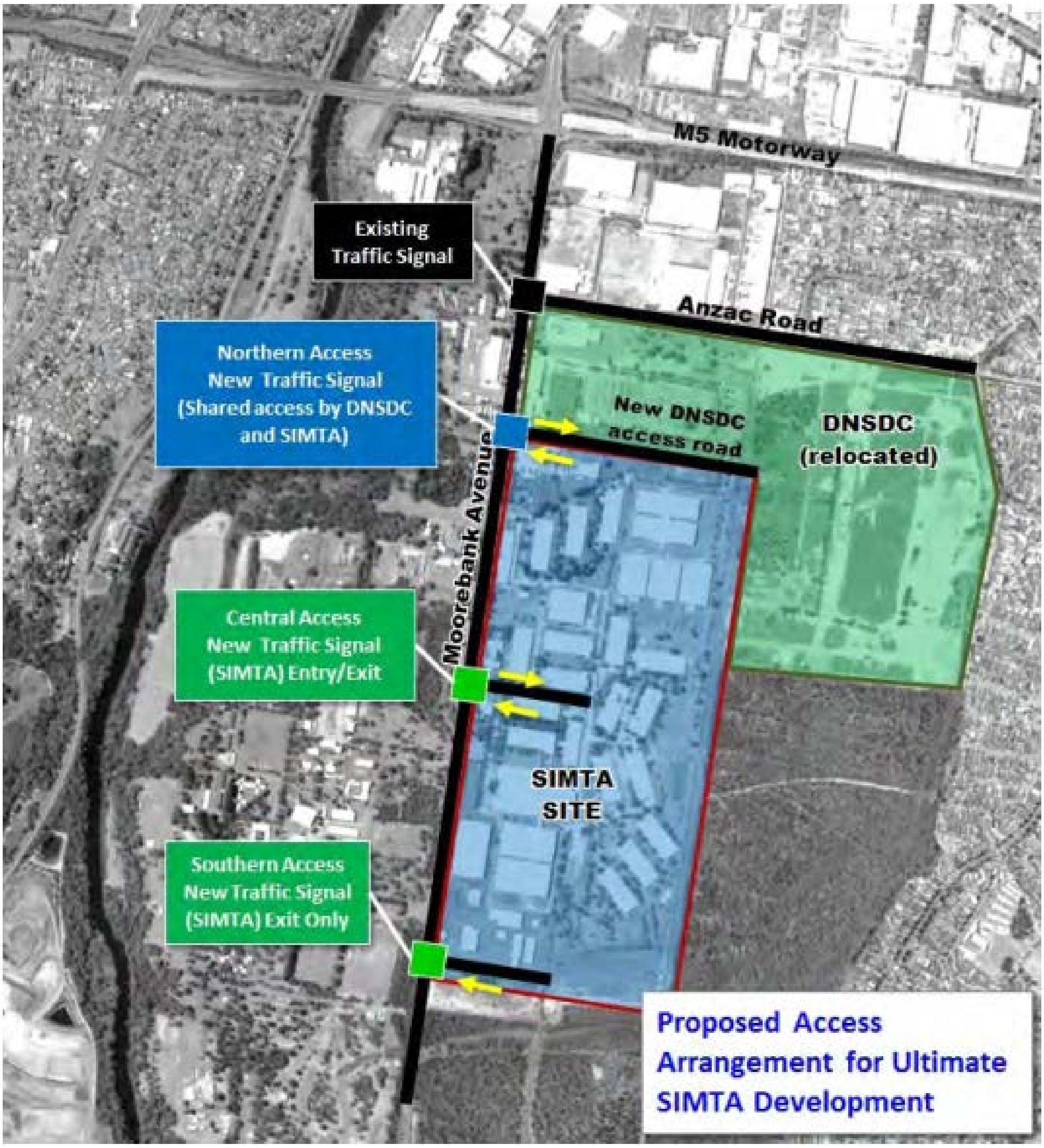
Traffic generation and distribution for the Moorebank IMT site is as detailed in Section 7.10 of this report, while the traffic distribution for the SIMTA site (all cumulative scenarios) is shown in Table 7.35. This is based on the Hyder Consulting Traffic Impact Assessment distributions.

Table 7.34 SIMTA traffic distribution

Direction (Moorebank Avenue to)	Distribution (%) weekday AM peak		
	Light vehicles	Container truck	Rigid truck
M5 West Motorway	18%	41%	35%
Hume Highway North	16%	28%	25%
Moorebank Avenue North	14%	14%	22%
M5 East Motorway	29%	3%	3%
Hume Highway South	13%	13%	10%
Anzac Road East	5%	0%	0%
Moorebank Avenue South	5%	0%	5%

SIMTA site access

Proposed access locations for the SIMTA site are shown in Figure 7.15, based on the SIMTA Traffic and Transport Assessment prepared by Hyder Consulting, the Northern and Central accesses would be utilised by both light and heavy vehicle for ingress and egress and the Southern access for heavy vehicle egress only. These accesses have been assumed for all three cumulative scenarios, including both C1 (2020) and C2 (2030).



Source: SIMTA Traffic and Transport Assessment, Hyder Consulting 2013

Figure 7.16 Proposed SIMTA site access locations

Intersection performance

The performance of intersections for all cumulative scenarios at 2030 were assessed, with results presented in Table 7.35 below.

A number of recommended infrastructure upgrades have been described in section 7.10 that would need to be implemented to prevent a deterioration of level of service for the intersections affected by the project. The upgrades are intended to address impacts associated with the Moorebank IMT-only, and were not designed to address impacts associated with the cumulative scenarios (which include a total of 600,000 sq. m warehousing). However for comparison the impacts of these improvements under the cumulative scenarios are presented in Table 7.35 below.

Table 7.35 Cumulative impacts on intersections affected by the project

Intersection	Scenario	Year	AM peak				PM peak			
			DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
I-01 – Hume Highway/ Orange Grove Road	Cumulative Scenario A	2030 Cumulative A	1.10	49	D	420	1.14	82	F	528
		2030 Cumulative A with intersection upgrades/modifications	1.10	49	D	420	1.03	68	E	479
	Cumulative Scenario B	2030 Cumulative B	1.11	50	D	425	1.11	78	F	479
		2030 Cumulative B with intersection upgrades/modifications	1.11	49	D	429	1.00	67	E	499
	Cumulative Scenario C1	2020 Cumulative C1	0.94	33	C	283	1.04	59	E	376
		2020 Cumulative C1 with intersection upgrades/modifications	N/A	N/A	N/A	N/A	1.00	56	D	322
	Cumulative Scenario C2	2030 Cumulative C2	1.10	49	D	417	1.13	80	F	502
		2020 Cumulative C2 with intersection upgrades/modifications	1.10	48	D	421	1.01	64	E	445
02 – Hume Highway/ Elizabeth Drive	Cumulative Scenario A	2030 Cumulative A	1.17	101	F	579	1.07	67	E	429
		2030 Cumulative A with intersection upgrades/modifications	1.17	80	F	579	1.00	63	E	429
	Cumulative Scenario B	2030 Cumulative B	1.17	99	F	562	1.07	68	E	430
		2030 Cumulative B with intersection upgrades/modifications	1.17	78	F	562	1.00	62	E	430
	Cumulative Scenario C1	2020 Cumulative C1	1.16	66	E	343	1.03	53	D	358
		2020 Cumulative C1 with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario C2	2030 Cumulative C2	1.27	104	F	515	1.16	70	E	434
		2020 Cumulative C2 with intersection upgrades/modifications	1.27	104	F	515	1.16	63	E	385
I-03 – Hume Highway/ Memorial Avenue	Cumulative Scenario A	2030 Cumulative A	1.26	105	F	610	1.23	62	E	557
		2030 Cumulative A with intersection upgrades/modifications	1.26	91	F	526	1.23	59	E	557
	Cumulative Scenario B	2030 Cumulative B	1.26	104	F	591	1.23	61	E	504

Intersection	Scenario	Year	AM peak				PM peak			
			DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
		2030 Cumulative B with intersection upgrades/modifications	1.26	91	F	510	1.23	60	E	504
	Cumulative Scenario C1	2020 Cumulative C1	1.06	60	E	381	1.24	50	D	338
		2020 Cumulative C1 with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario C2	2030 Cumulative C2	1.26	104	F	603	1.38	68	E	477
		2020 Cumulative C2 with intersection upgrades/modifications	1.26	91	F	520	1.30	60	E	428
I-04 - Hume Highway/ Hoxton Park Road/ Macquarie Street	Cumulative Scenario A	2030 Cumulative A	1.26	125	F	557	1.41	89	F	669
		2030 Cumulative A with intersection upgrades/modifications	1.10	115	F	596	1.32	71	F	536
	Cumulative Scenario B	2030 Cumulative B	1.26	129	F	599	1.41	85	F	608
		2030 Cumulative B with intersection upgrades/modifications	1.20	114	F	541	1.29	69	E	491
	Cumulative Scenario C1	2020 Cumulative C1	1.05	60	E	360	1.33	55	D	402
		2020 Cumulative C1 with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario C2	2030 Cumulative C2	1.26	126	F	540	1.49	90	F	584
		2020 Cumulative C2 with intersection upgrades/modifications	1.19	111	F	505	1.30	70	E	510
I-05 – Hume Highway/ Reilly Street	Cumulative Scenario A	2030 Cumulative A	1.05	34	C	614	1.12	47	D	1016
		2030 Cumulative A with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario B	2030 Cumulative B	1.07	33	C	595	1.12	41	C	926
		2030 Cumulative B with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario C1	2020 Cumulative C1	0.97	18	B	328	0.97	28	B	578
		2020 Cumulative C1 with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario C2	2030 Cumulative C2	1.08	34	C	607	1.06	54	D	1065

Intersection	Scenario	Year	AM peak				PM peak			
			DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
		2020 Cumulative C2 with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
I-06 – Newbridge Road/ Moorebank Avenue	Cumulative Scenario A	2030 Cumulative A	1.85	173	F	892	1.22	139	F	739
		2030 Cumulative A with intersection upgrades/modifications	1.66	154	F	720	1.43	124	F	742
	Cumulative Scenario B	2030 Cumulative B	1.93	184	F	967	1.20	125	F	631
		2030 Cumulative B with intersection upgrades/modifications	1.51	156	F	667	1.33	110	F	658
	Cumulative Scenario C1	2020 Cumulative C1	1.20	57	E	341	1.11	64	E	300
		2020 Cumulative C1 with intersection upgrades/modifications	1.17	54	D	315	1.14	54	D	405
	Cumulative Scenario C2	2030 Cumulative C2	1.86	173	F	896	1.21	131	F	678
		2020 Cumulative C2 with intersection upgrades/modifications	1.42	144	F	598	1.36	116	F	689
I-07 – Heathcote Road/ Moorebank Avenue	Cumulative Scenario A	2030 Cumulative A	1.46	203	F	795	1.46	136	F	717
		2030 Cumulative A with intersection upgrades/modifications	1.30	200	F	472	1.28	89	F	441
	Cumulative Scenario B	2030 Cumulative B	1.44	208	F	768	1.50	147	F	736
		2030 Cumulative B with intersection upgrades/modifications	1.30	204	F	473	1.28	91	F	441
	Cumulative Scenario C1	2020 Cumulative C1	1.26	135	F	560	1.12	34	C	363
		2020 Cumulative C1 with intersection upgrades/modifications	1.12	107	F	441	1.03	27	B	197
	Cumulative Scenario C2	2030 Cumulative C2	1.45	205	F	781	1.49	144	F	730
		2020 Cumulative C2 with intersection upgrades/modifications	1.30	202	F	473	1.28	89	F	441
I-08 – Moorebank Avenue/ Industrial Park Access	Cumulative Scenario A	2030 Cumulative A	1.29	232	F	1375	0.80	11	A	143
		2030 Cumulative A with intersection upgrades/modifications	1.24	193	F	1280	N/A	N/A	N/A	N/A
	Cumulative Scenario B	2030 Cumulative B	1.26	209	F	1276	0.76	8	A	144

Intersection	Scenario	Year	AM peak				PM peak			
			DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
		2030 Cumulative B with intersection upgrades/modifications	1.21	170	F	1182	N/A	N/A	N/A	N/A
	Cumulative Scenario C1	2020 Cumulative C1	1.16	150	F	1018	0.46	8	A	93
		2020 Cumulative C1 with intersection upgrades/modifications	1.16	150	F	1018	0.44	8	A	88
	Cumulative Scenario C2	2030 Cumulative C2	1.27	220	F	1319	0.79	10	A	171
		2020 Cumulative C2 with intersection upgrades/modifications	1.22	180	F	1226	0.61	9	A	127
I-09 – Moorebank Avenue/ Church Road	Cumulative Scenario A	2030 Cumulative A	1.06	653	F	101	1.49	1257	F	766
		2030 Cumulative A with intersection upgrades/modifications	1.06	37	C	101	1.48	490	F	765
	Cumulative Scenario B	2030 Cumulative B	1.05	654	F	91	1.40	1144	F	679
		2030 Cumulative B with intersection upgrades/modifications	1.05	36	C	91	1.40	413	F	676
	Cumulative Scenario C1	2020 Cumulative C1	0.84	501	F	73	1.07	235	F	312
		2020 Cumulative C1 with intersection upgrades/modifications	0.84	22	B	73	1.07	155	F	310
	Cumulative Scenario C2	2030 Cumulative C2	1.03	652	F	94	1.44	1269	F	716
		2020 Cumulative C2 with intersection upgrades/modifications	1.03	35	C	94	1.43	446	F	715
I-10 – Heathcote Road/ Nuwarra Road	Cumulative Scenario A	2030 Cumulative A	1.44	178	F	1190	1.37	148	F	856
		2030 Cumulative A with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario B	2030 Cumulative B	1.44	179	F	1202	1.43	151	F	855
		2030 Cumulative B with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario C1	2020 Cumulative C1	1.13	60	E	335	1.11	68	E	426
		2020 Cumulative C1 with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario C2	2030 Cumulative C2	1.44	178	F	1191	1.39	153	F	921

Intersection	Scenario	Year	AM peak				PM peak			
			DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
		2020 Cumulative C2 with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
I-11 – Newbridge Road/ Nuwarra Road	Cumulative Scenario A	2030 Cumulative A	1.26	183	F	1167	1.1	39	C	321
		2030 Cumulative A with intersection upgrades/modifications	1.33	172	F	1040	N/A	N/A	N/A	N/A
	Cumulative Scenario B	2030 Cumulative B	1.28	175	F	1104	1.1	41	C	307
		2030 Cumulative B with intersection upgrades/modifications	1.28	168	F	1041	N/A	N/A	N/A	N/A
	Cumulative Scenario C!	2020 Cumulative C1	1.11	87	F	635	1.03	31	C	211
		2020 Cumulative C1 with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario C2	2030 Cumulative C2	1.25	179	F	1133	1.18	45	D	291
		2020 Cumulative C2 with intersection upgrades/ modifications	1.28	171	F	1070	N/A	N/A	N/A	N/A
I-12 – Newbridge Road/ Brickmans Drive/ Governor Macquarie Drive	Cumulative Scenario A	2030 Cumulative A	1.24	173	F	1303	1.62	82	F	658
		2030 Cumulative A with intersection upgrades/modifications	1.24	161	F	1303	1.09	70	E	570
	Cumulative Scenario B	2030 Cumulative B	1.24	166	F	1245	1.60	80	F	643
		2030 Cumulative B with intersection upgrades/modifications	1.23	154	F	1245	1.08	68	E	524
	Cumulative Scenario C1	2020 Cumulative C1	1.07	85	F	745	1.09	47	D	312
		2020 Cumulative C1 with intersection upgrades/modifications	1.07	81	F	712	N/A	N/A	N/A	N/A
	Cumulative Scenario C2	2030 Cumulative C2	1.24	169	F	1270	1.61	84	F	651
		2020 Cumulative C2 with intersection upgrades/ modifications	1.21	152	F	1229	1.09	69	E	545
I-13 – Moorebank Avenue/ M5 Motorway	Cumulative Scenario A	2030 Cumulative A	1.05	40	C	307	1.31	125	F	1217
		2030 Cumulative A with intersection upgrades/modifications	0.98	28	B	209	0.98	54	D	376
	Cumulative Scenario B	2030 Cumulative B	1.12	78	F	533	1.36	108	F	160

Intersection	Scenario	Year	AM peak				PM peak			
			DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
		2030 Cumulative B with intersection upgrades/modifications	0.98	31	C	251	0.97	49	D	335
	Cumulative Scenario C1	2020 Cumulative C1	0.91	24	B	157	1.05	47	D	562
		2020 Cumulative C1 with intersection upgrades modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario C2	2030 Cumulative C2	1.06	40	C	312	1.28	98	F	1145
		2020 Cumulative C2 with intersection upgrades/modifications	0.98	29	C	186	1.00	49	D	340
I-14 – Hume Highway/ M5 Motorway	Cumulative Scenario A	2030 Cumulative A	1.35	111	F	1109	1.39	118	F	745
		2030 Cumulative A with intersection upgrades/modifications	1.32	97	F	1109	1.39	110	F	745
	Cumulative Scenario B	2030 Cumulative B	1.33	103	F	1109	1.39	129	F	839
		2030 Cumulative B with intersection upgrades/modifications	1.30	99	F	1109	1.34	121	F	839
	Cumulative Scenario C1	2020 Cumulative C1	1.16	46	D	419	1.21	78	F	538
		2020 Cumulative C1 with intersection upgrades/modifications	1.10	39	C	363	1.03	48	D	450
	Cumulative Scenario C2	2030 Cumulative C2	1.34	100	F	1109	1.40	125	F	803
		2020 Cumulative C2 with intersection upgrades/modifications	1.31	96	F	1109	1.26	114	F	780
I-15 – Cambridge Avenue/ Canterbury Road	Cumulative Scenario A	2030 Cumulative A	1.25	160	F*	383	0.61	14	A	28
		2030 Cumulative A with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario B	2030 Cumulative B	1.47	256	F	538	0.63	14	A	29
		2030 Cumulative B with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario C1	2020 Cumulative C1	0.70	24	B	53	0.53	12	A	16
		2020 Cumulative C1 with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario C2	2030 Cumulative C2	1.23	262	F	612	0.61	14	A	28

Intersection	Scenario	Year	AM peak				PM peak			
			DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
		2020 Cumulative C2 with intersection upgrades/modifications	0.73	20	B	49	0.61	14	A	25
I-0A – Moorebank Avenue/ Anzac Road	Cumulative Scenario A	2030 Cumulative A	1.13	89	F	661	1.61	124	F	613
		2030 Cumulative A with intersection upgrades/modifications	0.94	42	C	246	1.01	44	D	295
	Cumulative Scenario B	2030 Cumulative B	1.44	197	F	1354	1.20	74	F	429
		2030 Cumulative B with intersection upgrades/modifications	0.97	42	C	342	0.96	46	D	337
	Cumulative Scenario C1	2020 Cumulative C1	0.98	47	D	365	0.93	33	C	283
		2020 Cumulative C1 with intersection upgrades modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario C2	2030 Cumulative C2	1.25	128	F	931	1.10	62	E	559
		2020 Cumulative C2 with intersection upgrades/modifications	1.00	55	D	381	1.00	47	D	335
I-0B – Moorebank Avenue/ New DNSDC Access (SIMTA Northern Access)	Cumulative Scenario A	2030 Cumulative A	0.58	3	A	54	0.80	9	A	128
		2030 Cumulative A with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario B	2030 Cumulative B	0.64	3	A	101	0.91	21	B	334
		2030 Cumulative B with intersection upgrades/modifications	0.64	4	A	101	0.86	11	A	165
	Cumulative Scenario C1	2020 Cumulative C1	0.53	2	A	36	0.71	9	A	106
		2020 Cumulative C1 with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario C2	2030 Cumulative C2	0.62	2	A	59	0.85	14	A	225
		2020 Cumulative C2 with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
I-0C – Moorebank Avenue/ SIMTA Central Access	Cumulative Scenario A	2030 Cumulative A	0.58	2	A	30	0.77	8	A	103
		2030 Cumulative A with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario B	2030 Cumulative B	0.63	3	A	62	0.87	17	B	245

Intersection	Scenario	Year	AM peak				PM peak			
			DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
		2030 Cumulative B with intersection upgrades/modifications	0.63	3	A	62	0.80	11	A	138
	Cumulative Scenario C1	2020 Cumulative C1	0.62	3	A	49	0.77	13	A	158
		2020 Cumulative C1 with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario C2	2030 Cumulative C2	0.93	5	A	103	1.03	32	C	336
		2020 Cumulative C2 with intersection upgrades/modifications	0.85	4	A	61	0.85	16	B	206
I-0D – Moorebank Avenue/ SIMTA Southern Access	Cumulative Scenario A	2030 Cumulative A	0.57	4	A	121	0.74	2	A	26
		2030 Cumulative A with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario B	2030 Cumulative B	0.60	6	A	136	0.77	2	A	33
		2030 Cumulative B with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario C1	2020 Cumulative C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		2020 Cumulative C1 with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cumulative Scenario C2	2030 Cumulative C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		2020 Cumulative C2 with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Details of the timing of the recommended upgrades are presented in Table 7.20. The modelled results for all cumulative scenarios are presented in section 7.10.

Intersection treatments to address cumulative impacts

Table 7.35 above identifies that a number of intersections will, by 2030 under all cumulative scenarios will be operating at an unacceptable level of service as a result of background traffic growth, in conjunction with traffic generated by the Moorebank precinct.

Table 7.36 below identifies the treatments that would be required, and by what date, for affected intersections under cumulative scenarios A, B and C. Mitigation treatments would only be applied if an intersection is operating at level of Service (LoS) E or worse as a result of the precinct (i.e. cumulative) traffic above the background growth and cumulative impacts by others. Treatments would not be recommended where a resulting LoS of D or above is achieved, even where performance has deteriorated as a result of the Project.

Indicative timing of these upgrades is provided in Table 7.36 based on current projections for background traffic growth and anticipated increases in container throughput (or 'ramp up') over time for the IMT. However, in recognition of the uncertainties over actual throughput increases (due to factors such as future economic growth rates), any funding contribution of the IMT towards these upgrades would be based on the following circumstances:

- That certain throughput levels at the terminal had been achieved. These throughputs are outlined in column 1 of Table 7.36.
- That it can be further demonstrated (as part of any subsequent planning approval stage) that the intersection performance would have deteriorated to a level of service E or worse (where previously operating at a LoS D or above) were it not for the implementation of the upgrades outlined in Table 7.36.

The upgrades are required due to a combination of background traffic growth and traffic generated by the Project plus the SIMTA project. They are presented as potential road network solutions but are not nominated for delivery by this project as they are based on a number of assumptions which will be proven or otherwise during operations in the period 2018–2030. The delivery funding and mechanisms for delivery of any network upgrades will be subject to further assessment in consultation with NSW government during subsequent development approval stages. Intersections I-0B and I-0C in Table 7.36 are intersections that would only be constructed in the event that the SIMTA site is developed (i.e. they would not exist under an IMT-only scenario).

Table 7.36 Summary of key intersection upgrade requirements taking account of cumulative traffic

Throughputs triggering IMT contributions to upgrades	Cumulative scenario	Upgrade description	Intersections	Upgrade year
375,000 TEU	C1	Signal timing changes (brought forward from 2023 for IMT-only).	I-01 – Hume Highway/ Orange Grove Road I-06 – Newbridge Road/ Moorebank Avenue	2020
		Signal timing changes, extend short right turn lane on M5 east Motorway to 230 m (brought forward from 2023 for IMT-only).	I-14 – Hume Highway/ M5 Motorway	

Throughputs triggering IMT contributions to upgrades	Cumulative scenario	Upgrade description	Intersections	Upgrade year
1.55 million TEU	C2	Signal timing changes, additional 70 m right turn lane on Elizabeth Drive in the westbound direction.	I-02 – Hume Highway/ Elizabeth Drive	2030
	A, B and C2	Signal timing changes for an additional 75 m right turn lane on the Hume Highway in the southbound direction.	I-04 – Hume Highway/ Hoxton Park Road	
	A, B and C2	Signal timing changes, extend left turn lane on Newbridge Road to 150 m in the westbound direction.	I-06 – Newbridge Road/ Moorebank Avenue	
	A, B and C2	Signal timing changes, short left turn lane of 100 m to Moorebank Avenue slip lane (dual signalised slip lane westbound).	I-13 – Moorebank Avenue/ M5 Motorway	
	A and C2	Signal timing changes; provide a dedicated left turn lane on Moorebank Avenue north.	I-0A – Moorebank Avenue/ Anzac Road	
	B	As for A and C2 plus additional right turn lane on Moorebank Avenue South.		
	B	Provide dual right-turn lanes on SIMTA central access.	I-0B – Moorebank Avenue/ new DNSDC access/ SIMTA northern access	
	B	Provide dual right-turn lanes on SIMTA southern access.	I-0C – Moorebank Avenue/ SIMTA central access	

M5 Motorway

An assessment of the trips generated by Moorebank IMT and SIMTA IMT for each of the four cumulative scenarios (A, B, C1 and C2) on the M5 Motorway east and west of Moorebank Avenue has been undertaken for both directions of travel during the AM and PM peak periods. The percentage increase in overall traffic volumes is provided in Table 7.37 below.

Table 7.37 Cumulative traffic percentage increase to the M5 Motorway from Moorebank IMT and SIMTA during weekday peak periods in 2030

		Moorebank IMT only	Cumulative scenario A	Cumulative scenario B	Cumulative scenario C2
AM peak hour					
M5 Motorway west of Moorebank Avenue	EB	2.26%	5.30%	7.79%	5.56%
	WB	2.63%	3.51%	2.94%	3.19%
M5 Motorway east of Moorebank Avenue	EB	0.27%	0.31%	0.20%	0.25%
	WB	0.82%	2.79%	4.44%	3.04%

		Moorebank IMT only	Cumulative scenario A	Cumulative scenario B	Cumulative scenario C2
PM peak hour					
M5 Motorway west of Moorebank Avenue	EB	3.31%	4.37%	2.95%	3.56%
	WB	2.35%	5.24%	6.69%	6.07%
M5 Motorway east of Moorebank Avenue	EB	1.30%	3.61%	5.03%	4.71%
	WB	0.48%	0.51%	0.29%	0.39%

EB – Eastbound, WB – Westbound

These results suggest the combined development of Moorebank IMT and SIMTA is not likely to have a substantial impact on the operation of the M5 Motorway with the following percentage increases in total traffic volumes:

- up to a 5% increase in total traffic volumes under cumulative scenario A;
- up to a 8% increase in total traffic volumes under cumulative scenario B; and
- up to a 6% increase in total traffic volumes under cumulative scenario C2.

Summary

The combined traffic associated with the Moorebank IMT and an adjacent SIMTA operation could be accommodated within the proposed upgrades to Moorebank Avenue for cumulative scenarios A, B, C1 and C2. Modifications to the Moorebank Avenue and Anzac Road intersection would be required to accommodate cumulative scenario traffic.

The cumulative scenarios are not likely to have a substantial impact on the operation of the M5 Motorway or the regional road network.

7.11.3 Cumulative noise and vibration

Site based noise

Due to the conceptual nature of the possible cumulative operation of the Moorebank IMT and SIMTA projects, the NSW INP amenity noise criteria have been applied for the purpose of evaluating potential cumulative noise impacts.

Scenario A:

Table 7.38 summarises the predicted cumulative noise levels for Scenario A at Full Build for neutral and adverse weather conditions.

Table 7.38 Predicted cumulative noise levels – Scenario A

Residential Receptor	Predicted Noise Levels, $L_{Aeq, dBA}$	
	Neutral weather	Adverse weather
Casula	27–**42**	29–44
Wattle Grove	35–40	39–44
Glenfield	29–32	29–33

Residential Receptor	Predicted Noise Levels, L_{Aeq}, dBA	
Liverpool	32–34	38–40
Non-Residential Noise Sensitive Receptors	21–43	25–44

Note Bold highlight denotes predicted noise level exceeds the night-time NSW INP amenity noise criteria.

During neutral weather conditions, the predicted cumulative noise levels comply with the daytime, evening and night-time amenity noise criteria at all assessed receptors in Wattle Grove, Glenfield and Liverpool. The noise levels at assessed receptors at Casula comply with the daytime and evening amenity noise criteria, but exceed the night-time noise criteria by 2 dBA at the northern extent of Casula.

During adverse weather conditions, the predicted cumulative noise levels comply with the daytime, evening and night-time NSW amenity noise criteria at all assessed receptors in Wattle Grove, Glenfield and Liverpool. Predicted noise levels at the north of Casula comply with the daytime and evening amenity noise criteria but exceed the night-time noise criteria by 4 dBA at the northern extent of Casula and the western extent of Wattle Grove at Anzac Road.

Scenario B:

Table 7.39 summarises the predicted cumulative noise levels for Scenario B for neutral and adverse weather conditions. The predicted cumulative noise levels are contingent on noise levels from SIMTA IMEX terminal not exceeding 40 dBA.

Table 7.39 Predicted cumulative noise levels – Scenario 1

Residential Receptor	Predicted Noise Levels, L_{Aeq}, dBA	
	Neutral weather	Adverse weather
Casula	27–**43**	29–**45**
Wattle Grove	38–**43**	40–**45**
Glenfield	31–34	31–34
Liverpool	33–33	38–38
Non-Residential Noise Sensitive Receptors	26–43	26–44

Note Bold highlight denotes predicted noise level exceeds the night-time NSW INP amenity noise criteria

During neutral weather conditions, the predicted cumulative noise levels comply with the daytime, evening and night-time amenity noise criteria at all assessed receptors in Glenfield and Liverpool. The noise levels at assessed receptors in Casula and Wattle Grove comply with daytime and evening amenity noise criteria but exceed the night-time amenity noise criteria by 3 dBA at the northern extent of Casula and the western extent of Wattle Grove at Anzac Road.

During adverse weather conditions, the predicted cumulative noise levels comply with the daytime, evening and night-time amenity noise criteria at all assessed receptors in Glenfield and Liverpool. The noise levels at assessed receptors in Casula and Wattle Grove comply with the daytime and evening noise criteria but exceed the night-time amenity criteria by 5 dBA at the northern extent of Casula and the western extent of Wattle Grove at Anzac Road.

Scenario C1:

Table 7.40 summarises the predicted cumulative noise levels for Scenario C1 for neutral and adverse weather conditions.

Table 7.40 Predicted cumulative noise levels – Scenario C1

Residential Receptor	Predicted Noise Levels, L_{Aeq}, dBA	
	Neutral weather	Adverse weather
Casula	25–40	26–**42**
Wattle Grove	35–39	38–**42**
Glenfield	29–32	30–32
Liverpool	30–30	35–35
Non-Residential Noise Sensitive Receptors	22–40	24–42

Note Bold highlight denotes predicted noise level exceeds the night-time NSW INP amenity noise criteria

During neutral weather conditions, the predicted cumulative noise levels comply with the daytime, evening and night-time amenity noise criteria at all assessed receptors.

During adverse weather conditions, the predicted cumulative noise levels comply with the daytime, evening and night-time amenity noise criteria at all assessed receptors with the exception of the northern extent of Casula and the nearest receptors on Anzac Road in Wattle Grove where the night-time noise criteria is marginally exceeded by 2 dBA.

Scenario C2:

Table 7.42 summarises the predicted cumulative noise levels for Scenario C2 for neutral and adverse weather conditions.

Table 7.41 Predicted cumulative noise levels – Scenario C2

Residential Receptor	Predicted Noise Levels, L_{Aeq}, dBA	
	Neutral weather	Adverse weather
Casula	27–**41**	28–**43**
Wattle Grove	35–40	37–**42**
Glenfield	31–33	31–34
Liverpool	30–32	34–34
34	24–41	26–43

Note Bold highlight denotes predicted noise level exceeds the night-time NSW INP amenity noise criteria

During neutral weather conditions the cumulative noise levels comply with daytime, evening and night-time noise criteria at the northern extent of Casula.

During adverse weather conditions the predicted cumulative noise levels comply with the daytime and evening amenity noise criteria at all assessed receptors. Noise levels comply with the night-time noise criteria at the majority of receptors with exceedance of up to 3 dBA predicted at the northern extent of Casula and 2 dBA at the western extent of Wattle Grove at Anzac Road.

Cumulative road traffic noise

The *Traffic and Transport Assessment* for this report (refer to Appendix E) considered the daily total road traffic movements for the cumulative scenarios. The road traffic volumes do not significantly change from those assessed for the Scenario 3 in the EIS.

Noise mitigation for cumulative operations

To comply with the amenity noise criteria, predicted noise levels would need to be reduced by up to 4 dBA for Scenario A and up to 5 dBA for Scenario B, up to 2 dBA for Scenario C1 and up to 3 dBA for Scenario C2.

Adopting the noise mitigation measures assessment described above would reduce predicted noise levels by at least 5 dBA and achieve compliance at all assessed receptors.

Predicted noise levels during construction are generally consistent between the EIS and the revised Project as the construction activities will be the same within the Project site. However there have been some minor changes to predicted noise levels at specific receptors due to potential work site locations changing with the revised project concept design. There has been no change to the recommendations for noise and vibration management and mitigation during construction.

During operation, predicted worst case noise levels for the revised Project are up to 6 dBA less than the EIS. Furthermore, fewer receptor areas have been predicted to experience unmitigated noise levels above the noise assessment criteria i.e. the noise impact footprint of the Project has been reduced with the revised project concept design. Consequently, with the application of reasonable and feasible noise mitigation measures the revised project concept design would more readily achieve the noise assessment criteria than the EIS concept designs.

The noise levels assessed for the Project road traffic network and rail freight operations on a southern rail access connection and ground vibration levels during construction and operation were all predicted to comply with relevant assessment criteria for both the EIS and revised Project concept designs.

7.11.4 Local air quality

Air dispersion modelling was conducted and used to assess potential cumulative impacts of operations at the Project site and at the adjacent SIMTA site.

Scenario A

Air pollutant concentrations due to the combination of emissions from the two proposed operations were predicted to be within NSW EPA criteria and NEPM advisory reporting goals. The following criteria exceedances were predicted to occur for the Cumulative Scenario A activities:

- one additional exceedance of the cumulative 24-hour average PM_{10} assessment criterion at R33, located directly within the SIMTA site;
- five additional exceedances of the cumulative 24-hour average $PM_{2.5}$ advisory reporting goal at R33, located directly within the SIMTA site; and
- exceedance of the cumulative annual average $PM_{2.5}$ advisory reporting goal at R33, located directly within the SIMTA site.

No other exceedances were predicted across the remaining sensitive receptors for all pollutants assessed during Cumulative Scenario A. Incremental (cumulative SIMTA concentration only) isopleth plots for PM_{10}, $PM_{2.5}$ and NO_x are presented in Appendix E of the *revised Project – Local Air Quality Assessment* report (Environ, 2015) in Appendix G of this Reponses to Submissions report.

Scenario B

The following criteria exceedances were predicted to occur for the Cumulative Scenario B activities:

- three additional exceedances of the cumulative 24-hour average $PM_{2.5}$ advisory reporting goal at R33, located directly within the SIMTA site; and
- exceedance of the cumulative annual average $PM_{2.5}$ advisory reporting goal at R33, located directly within the SIMTA site.

No other exceedances were predicted across the remaining sensitive receptors for all pollutants assessed during the Cumulative Scenario B. Incremental (cumulative SIMTA concentration only) isopleth plots for PM_{10}, $PM_{2.5}$ and NO_x are presented in Appendix E of the *revised Project – Local Air Quality Assessment* report (Environ, 2015) in Appendix G of this report.

Scenario C1

The following criteria exceedances were predicted to occur for Cumulative Scenario C1 activities:

- one additional exceedance of the cumulative 24-hour average PM_{10} assessment criterion at R33;
- three additional exceedances of the cumulative 24-hour average $PM_{2.5}$ advisory reporting goal at R33; and
- exceedance of the cumulative annual average $PM_{2.5}$ advisory reporting goal at R33.

No other exceedances were predicted across the remaining sensitive receptors for all pollutants assessed during Cumulative Scenario C1. Incremental (cumulative SIMTA concentrations only) isopleth plots for PM_{10}, $PM_{2.5}$ and NO_x are presented in Appendix E of the *Revised Project – Local Air Quality Assessment* report (Environ, 2015) in Appendix G of this report.

Scenario C2

The following criteria exceedances were predicted to occur for Cumulative Scenario C2 activities:

- three additional exceedances of the cumulative 24-hour average $PM_{2.5}$ advisory reporting goal at R33; and
- exceedance of the cumulative annual average $PM_{2.5}$ advisory reporting goal at R33.

No other exceedances were predicted across the remaining sensitive receptors for all pollutants assessed during Cumulative Scenario C2. Incremental (cumulative SIMTA concentrations only) isopleth plots for PM_{10}, $PM_{2.5}$ and NO_x are presented in Appendix E of the *Revised Project – Local Air Quality Assessment* report (Environ, 2015) in Appendix G of this report.

Summary of cumulative local air quality impacts

The cumulative assessment of local air quality impacts can be summarised as follows:

- Cumulative incremental (IMT and SIMTA only) concentrations are below NSW EPA and NEPM advisory reporting goals at all surrounding receptor locations, for all assessed site configurations;
- Additional exceedance of the NSW EPA 24-hour average PM_{10} criterion and NEPM advisory reporting goal for 24-hour average $PM_{2.5}$ is predicted to occur at R33;
- Cumulative annual average (IMT and SIMTA-only increment plus background) $PM_{2.5}$ concentrations are in exceedance of the NEPM advisory reporting goal at receptor R33;
- Exceedance at R33 is attributable to the location of R33 directly amongst SIMTA site; and
- No other cumulative (IMT and SIMTA-only increment plus background) pollutant exceedances are predicted for any scenario at any of the surrounding receptor locations.

A comparison of the predicted SIMTA scenarios with the EIS AQIA and the revised Project design for maximum predicted 24-hour average PM_{10} concentrations at each sensitive receptor has been undertaken. Only Cumulative Scenario A and B were comparable with the Cumulative Scenarios presented in the EIS.

For the majority of surrounding receptor locations, the predicted concentrations arising from cumulative IMT and SIMTA site emissions do not vary significantly from the EIS AQIA and the revised AQIA.

Based on the magnitude of incremental concentrations predicted for all pollutants assessed at all surrounding receptors, excluding R33, the likelihood of adverse impacts in the surrounding environment arising from cumulative operations at the two sites is very low.

7.11.5 Cumulative health impact assessment and human health risk

Cumulative Health impact assessment and human health risk

Traffic assessment

A review of the cumulative traffic impact assessment from a health perspective has identified that the cumulative scenarios are not likely to have a substantial impact on the operation of the M5 Motorway or the regional road network and therefore the conclusions presented in the EIS remain unchanged.

Noise assessment

For the cumulative scenarios evaluated the following noise impacts were identified:

- Cumulative Scenario A: the assessment identified noise impacts in excess of the adopted night-time noise level criteria at Casula. The Project should consider feasible and reasonable noise mitigation measures to reduce noise levels by up to 4 dBA.
- Cumulative Scenario B: the assessment identified noise impacts in excess of the adopted night-time noise level criteria at Wattle Grove. The Project should consider feasible and reasonable noise mitigation measures to reduce noise levels by up to 5 dBA.

- Cumulative Scenarios C1 and C2: the assessment identified noise impacts in excess of the adopted night-time noise level criteria at Casula and Wattle Grove. The Project should consider feasible and reasonable noise mitigation measures to reduce noise levels by up to 2 dBA for Scenario C1 and up to 3 dBA for Scenario C2.

The revised assessment has resulted in lower noise impacts (up to 7 dBA less) from those presented in the EIS, however the requirement to undertaken reasonable and feasible noise management measures to reduce the human health noise impacts to acceptable levels, as presented in the EIS, remains unchanged.

Air quality

The assessment of cumulative impacts from the operation of both the Moorebank and SIMTA sites are considered to be low (not significant).

The human health risk assessment has identified risks to commercial / industrial properties on Moorebank Avenue currently within the SIMTA site boundary. Mitigation measures are required to minimise exposure to particulates at those sites, however, as all the identified receptors would be relocated with the development of the SIMTA site these receptors have been discounted from further consideration in the cumulative assessment.

Chapter 8
Additional technical investigations since EIS

8. Additional technical investigations since the EIS

This chapter provides details of technical investigations that have been undertaken since the exhibition of the Environmental Impact Assessment (EIS). The technical assessments presented in this chapter are unrelated to the technical assessments conducted as a result of the amendments to the proposal (which are reported in Chapter 7 – *Proposed amendments to the development* of this Response to Submissions Report).

8.1 Biodiversity offset planning

8.1.1 Changes to the Biodiversity Offset Strategy since the EIS

The Biodiversity Offset Strategy (BOS) has changed in response to changes to the proposed biodiversity offset areas and in response to the submission provided by the Office of Environmental Heritage (OEH). This section discusses the changes to the BOS since the EIS exhibition and incorporates:

- changes in the application of the Framework for Biodiversity Assessment (FBA) methodology to further consider the revised southern rail access corridor;
- changes to the Version 1.03 (Office of Environment and Heritage 2014a) credit calculator used in the Technical Paper 3 – *Ecological Impact Assessment* in Volume 4 of the EIS); and
- changes to Version 4.0 credit calculator used in January 2015.

In summary, the revised BOS has incorporated:

- further assessment of the measures taken to avoid and minimise the direct and indirect impacts of a development proposal on biodiversity values as required by Section 8 of the FBA and NSW *Offset Policy 2014*;
- assessment of matters requiring further consideration under the FBA;
- changes in the boundary and extent of the proposed biodiversity offset areas;
- changes in the proposed application and flexibility of the FBA variation rules; and
- commitment to take all reasonable steps in searching for residual ‘like for like’ offsets for the Project in accordance with the FBA.

The detailed BOS is provided in Appendix C of this report.

8.1.2 Changes in the boundary and extent of the proposed biodiversity offset areas

In addition to presenting changes to the proposed biodiversity offsets areas the revised BOS also provides an estimate of ecosystem and species credits generated from these offset areas (refer to Figure 8.1).

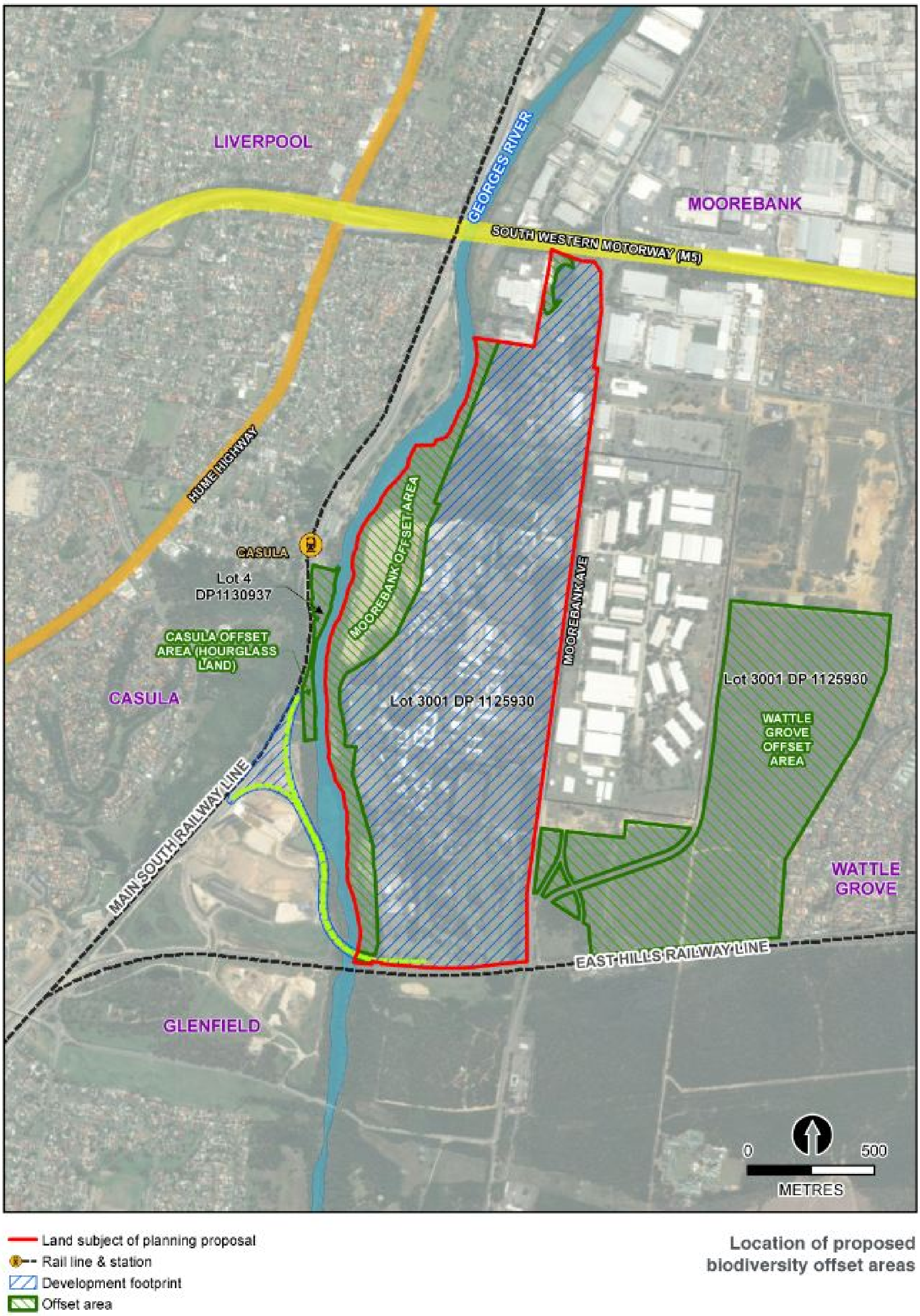


Figure 8.1 Location of proposed biodiversity offset areas

A summary of the changes in the areas and credit generated for the proposed biodiversity offsets include the following:

- an increase in the width of the onsite Moorebank conservation area, extending east of the 1% flood line and therefore increasing the future conservation and riparian corridor to a total area of 32.9 ha, incorporating 20.8 ha of remnant Riparian Forest and Alluvial Woodland vegetation;

- an increase in the area of the Wattle Grove offset to include additional lands to the north of the 'boot toe', incorporating approximately 10 ha of additional Castlereagh Swamp Woodland and Castlereagh Scribbly Gum Woodland as well as additional populations of the threatened flora species *Persoonia nutans and Grevillea parviflora*;

- a decrease in the estimated Alluvial Woodland credits generated from the Moorebank and Casula offsets from 183 to 70 due to temporarily excluding the generation of credits on the proposed 'low condition' Alluvial Woodland areas identified for rehabilitation. These areas will provide ecosystem credits; however, the quantification of the credits generated requires further field data and will be subject to a formal assessment under Chapter 12 of NSW BioBanking Assessment Methodology 2014 (BBAM) (in particular Table 6, Equation 7 and, where appropriate, Appendix 7) in the development of a BioBanking agreement for the final offset package;

- an increase in the number of Castlereagh Swamp Woodland credits from 180 to 213 corresponding with the increased areas of the Wattle Grove offset;

- an increase in the number of Riparian Forest credits from 129 to 255 corresponding with changes to the areas of the Moorebank and Casula Offsets and revised FBA credit calculator;

- an increase in the number of Castlereagh Scribbly Gum Woodland credits from 260 to 301 corresponding with the increased areas of the Wattle Grove offset; and

- provision of 852 species credits for *Persoonia nutans* and 14,200 species credits for *Grevillea parviflora subsp. Parviflora,* incorporating the results of additional targeted field surveys within the Wattle Grove offset by GHD and Hyder in 2014, as well as the increased areas of the Wattle Grove offset.

A summary of the revised impacts and proposed offsets in areas (ha) and credits is provided below in Table 8.1 for ecosystems and Table 8.2 for species.

Table 8.1 Summary of vegetation to be impacted and FBA ecosystem credits required to offset the impacts

Vegetation community or species	Assigned Biometric vegetation type	Vegetation formation (Cleared estimate)	Area or number to be Impacted (ha)	Red Flag	Conservation Status	Estimated credits required	Area (ha)	Estimated credits provided	Proposed Offset Area (ha)	Balance Credits	Approx. Balance Area
Alluvial Woodland	ME018 Forest Red Gum – Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin	Coastal Valley Grassy Woodlands (95)16.1	28.1	Yes	*Threatened Species Conservation Act* 1995 (TSC Act) E	844	84.4	703	4.9	-774	-78.0
Riparian Forest	ME044 Sydney Blue GumXBangalay – Lilly Pilly moist forest in gullies and on sheltered slopes, southern Sydney Basin[1]	Wet Sclerophyll Forests (45)	3.6	Yes[2]	TSC Act E	91	9.1	2,553	15.9	164	16.4
Endangered Ecological Community (EEC) RFEF[4]			31.7			935	93.5	325	20.8	-610	-64.5
Castlereagh Swamp Woodland	ME005 Parramatta Red Gum woodland on moist alluvium of the Cumberland Plain, Sydney Basin	Dry Sclerophyll Forests (45)	0.9	Yes	TSC Act E	30	3	213	23.5	183	18.4

Vegetation community or species	Assigned Biometric vegetation type	Vegetation formation (Cleared estimate)	Area or number to be Impacted (ha)	Red Flag	Conservation Status	Estimated credits required	Area (ha)	Estimated credits provided	Proposed Offset Area (ha)	Balance Credits	Approx. Balance Area
Castlereagh Scribbly Gum Woodland	ME003 Hard-leaved Scribbly Gum – Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin	Dry Sclerophyll Forests (50)	16.1	Yes[2]	TSC Act V	444	44.4	301	33.6	-143	-14.3
TOTAL			**48.7**			**1,409**	**140.9**	**8,363**	**77.6**	**-753**	**-75**

Note: [1] indicates closest available similar vegetation type in the BBAM calculator.

[2] indicates that a threatened ecological community could not be selected in the calculator despite the observed communities being threatened ecological communities

[3] credit estimate excludes potential credits generated from low condition areas identified for rehabilitation of Alluvial Woodland. The contribution of these areas to any final offset package will be assessed in accordance with the proposed methodology identified by OEH in the submissions provided 5/12/14 as part of the Biodiversity Offset package and any formal biobanking agreement.

[4] = Riparian Forest and Alluvial Woodland vegetation communities have been considered the same vegetation formation in accordance with OEH submission comments provided 5/12/14.

Table 8.2 Summary of species to be impacted and FBA credits required to offset the impacts

Scientific name	Common name	No. of individuals recorded to be impacted	No. of credits required	No. of individuals recorded in offsets	No. of credits generated
Persoonia nutans	Nodding Geebung	10	769	120	852
Grevillea parviflora subsp. parviflora	Small-flower Grevillea	16	229	2,000+	14,200
Acacia pubescens		0	0	300+	1,130
Total		**26**	**998**	**2,420**	**16,182**

8.1.3 Changes in the proposed application and flexibility of the FBA variation rules

The BOS no longer proposes a modified application of the FBA variation rules and identifies only the quantum of ecosystems credits within the proposed offsets that directly address the Projects impacts and 'like for like' requirements.

The BOS does however include the Riparian Forest vegetation as a 'like for like' ecosystem swap for the Alluvial Woodland vegetation, as referred by OEH.

8.1.4 Summary of short fall 'like for like' and residual offset requirements

The proposed offset areas do not currently meet the entire quantum of ecosystem credit requirements for the Project's development impacts under the FBA methodology. The shortfall in ecosystem credits provided by the proposed offsets is associated with the Alluvial Woodland and Castlereagh Scribbly Gum Woodland vegetation communities. A summary is provided below in Table 8.3.

Table 8.3 Summary of shortfall of ecosystem credits and vegetation types to be impacted

Vegetation community or species	Assigned Biometric vegetation type	Vegetation formation	Percent cleared in CMA	Conservation Status	Deficit credits required
Alluvial Woodland	ME018 Forest Red Gum – Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin	Coastal Valley Grassy Woodlands	95	TSC Act E	-610
Castlereagh Scribbly Gum Woodland	ME003 Hard-leaved Scribbly Gum – Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin	Dry Sclerophyll Forests	50	TSC Act V	-143

8.1.5 Commitment to take all reasonable steps in searching for residual 'like for like' offsets for the project in accordance with the FBA.

The BOS has identified that despite the currently proposed biodiversity offsets, the Project has a residual offset requirement for Alluvial Woodland and Castlereagh Scribbly Gum Woodland vegetation communities in accordance with the FBA and NSW Offset Policy 2014.

MIC is committed to undertaking all reasonable steps to secure the matching ecosystem credit/species credits in accordance with the FBA, including:

- checking the BioBanking public register and placing an expression of interest for credits wanted for at least six months;

- liaising with OEH (or Fisheries NSW office for aquatic biodiversity) and relevant local councils to obtain a list of potential sites that meet the requirements for offsetting;
- considering properties for sale in the required area; and
- providing evidence of why offset sites are not feasible.

If MIC can demonstrate that all reasonable steps listed above have been undertaken but if specific ecosystem or species credit requirements still cannot be found, MIC will discuss the shortfall with the consent authority. If agreed by the consent authority that '*all reasonable steps to secure a matching ecosystem credit have been taken by the proponent'*, then alternative offset arrangements will be provided. These may include:

- variation of the offset rules for matching ecosystem credits, by allowing ecosystem credits created for a Plant Community Type (PCT) from the same vegetation formation as the PCT to which the required ecosystem credit relates to; or
- a supplementary offset for the PCT where the PCT is associated with an Endangered Ecological Community (EEC) or a Critically Endangered Ecological Community (CEEC).

In summary, the proposed BOS consists of a dual offsets approach including offsets within and outside the Project site to achieve an improved conservation outcome, which combines the long-term protection and/or enhancement of existing habitat in moderate to good condition with the restoration, rehabilitation, and re-establishment of habitat in poor condition.

The proposed BOS is underpinned by sound ecological principles to improve or maintain the existing biodiversity values of the local area. Three offset sites have been identified which provide 121.7 ha of land suitable for use as offsets for the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and TSC Act listed Threatened species and Endangered ecological communities. The revised offsets areas were proportionate to the impact in both size and scale, providing between 107% and 236% of the offset requirements for affected biodiversity under the EPBC Act.

The maximum offset requirements of the Project under the NSW Offsets Policy 2014 were quantified using the FBA Credit Calculator Version 4.0 (Office of Environment and Heritage 2014a) as up to **1,409** ecosystem credits or approximately 140 ha and **1,004** species credits.

The proposed offsets meet some of the Project's ecosystem credit requirements in accordance with the FBA and NSW Offset Policy 2014. The revised BOS has identified that despite the proposed biodiversity offsets, the Project has a residual offset requirement for 610 Alluvial Woodland credits and 143 Castlereagh Scribbly Gum Woodland credits in accordance with the FBA.

MIC is committed to undertaking all reasonable steps to secure the matching ecosystem credits and providing an offset package that meets the quantum of the offset requirements in accordance with the FBA.

8.2 Heritage

Aboriginal heritage

Chapter 20 – *Aboriginal heritage* of the EIS provides an assessment of the Aboriginal heritage items including an assessment of the cultural heritage significance and potential impacts.

The cultural heritage significance and potential impacts on Aboriginal heritage values were assessed by undertaking:

- a literature and database review;
- an archaeological field survey of the site;
- subsurface testing;
- an Aboriginal consultation program; and
- significance and impact assessment.

Section 20.1 of Chapter 20 – *Aboriginal heritage* and section 3 of the Technical Paper 10 – *Aboriginal Heritage Impact Assessment* in Volume 7 of the EIS provide a detailed description of the assessment approaches. Two data gaps were identified in Technical Paper 10 – *Aboriginal Heritage Impact Assessment* in Volume 7 of the EIS:

- subsurface testing at Moorebank Representative Sample area 2 (MRSAR2); and
- scar tree assessment.

MIC is committed to addressing these data gaps during its response to submissions and this assessment is provided below.

Additional subsurface testing at MRSAR2

The findings of the literature review and field surveys were used to identify potential archaeological deposits (PADs) and archaeological sensitive landforms for subsurface testing. Subsurface testing was undertaken in September 2012 on the main intermodal terminal (IMT) site and in July/August 2013 on the Northern Powerhouse Land. Due to health and safety concerns associated with MRSAR2, it was not possible to access and test at this location.

In August 2014, subsequent test excavations within MRSAR2 were completed at seven locations with pit depths varying between 17 and 50 cm depth.

During this test program a total of 34 artefacts were recovered, consisting of untouched flakes and one retouched flake confirming the archaeological potential of the area. The testing of MRSA2 further supports the results of the 2012 excavation program, which indicated that intact deposits do occur upon the Tertiary terrace edge within the Project site. Following the findings of the subsurface testing at MRSA2, the sample area and surrounding area has been re-designated as MA14.

The testing program at MRSA2 confirms the significance assessment of the Moorebank IMT study area and supports the conclusion of the Technical Paper 10 – *Aboriginal Heritage Impact Assessment* (Volume 7 of the EIS), which showed that the areas of greatest Aboriginal significance and research value are the landforms within and immediately bordering the Georges River.

The full results, including photographic evidence, are documented in the Moorebank IMT *Aboriginal Heritage Assessment – Addendum, Archaeological Subsurface Testing – MRSA2* (NOHC, September 2014) in Appendix J of this Response to Submissions report.

Additional scar tree assessment

During the 2010 archaeological field survey of the Moorebank IMT site and adjacent lands, eight archaeological recordings were made. These consisted of three scarred trees of possible Aboriginal origin (MA6, MA7 and MA8). A summary description of these sites in presented in Table 8.4.

Table 8.4 Summary of 2010 Aboriginal scarred trees field survey results

Site	Description
MA6	The scarred tree is an old growth Eucalyptus in fair to good health, with a number of hollows and missing limbs. The scar was of an irregular and asymmetrical shape and was assessed to be of possible Aboriginal origin.
MA7	The scarred tree was recorded as a smooth barked Eucalyptus (Red gum). The tree is located close to a playing field and the Tertiary terrace edge, and is approximately 80–100 m from the river. The scar regrowth is irregular and the age of the tree and the scar may be post-European settlement. It was assessed to be of possible Aboriginal origin.
MA8	The scarred tree was recorded as a rough barked Eucalyptus, becoming smooth barked two-thirds of the way up the trunk. The tree is located approximately 60 m from the river. The scar may have been caused by machinery during the cutting and benching of the area. A possible Aboriginal origin is supported by the possible age and symmetrical shape of the scar, the amount of scar regrowth and the tree type, as well as its proximity to the Georges River. MA8 is outside the construction footprint, so it was not considered further as part of the assessment of potential scar trees.

The Aboriginal heritage assessment undertaken for the EIS concluded there was uncertainty about the origin of the scars at MA6 and MA7 and their scientific and educational value. As such, further assessment was proposed. As MA8 is located within the conservation zone and outside the construction footprint, no further assessment was undertaken, although its significance as a potential scar tree remains.

In 2014, draft methodology for the further assessment of MA6 and MA7 was prepared by Navin Officer Heritage Consultants (NOHC) and presented to the Registered Aboriginal Parties for consultation and then to the NSW Department of Planning and Environment (NSW DP&E) for approval, as part of the environmental assessment. Following feedback and agreement of the methodology from the Registered Aboriginal Parties, the methodology was further developed further and additional data was obtained on the trees and scar sizes in November 2014. The data was analysed by dendrologist Dr Matthew Brookhouse and can be summarised as follows:

- Core samples were taken from both trees, at locations adjacent to and distant from each tree's scar.
- Detailed data were taken on scar size and location, on the diameter of each tree, and the depth of each scar.

- Estimating the age of a scar involved calculating the difference in tree diameter between the scar surface and the current outer surface of the tree (in other words, the amount of growth that has occurred since the formation of the scar), and measuring the rate at which the post-scar growth has occurred, by measuring the width of tree rings evident in the core samples and calculating the amount of growth per year that the tree has experienced. This enables an estimate of the period of time, in years, over which the post-scar growth has occurred. This period represents the number of years between the formation of the scar and the present day.
- Of eight core samples taken, five were unusable due to fractures that occurred during the coring process.
- One usable core sample was obtained from MA6, and two usable core samples were obtained from MA7. The limitations in the data did not prevent an estimate of the age of both scars to be made.
- The core sample from MA6 showed a slow rate of growth consistent with the observations that the tree is mature and senescent (approaching the end of its lifespan). The scar is estimated to be between 265 and 219 years old, placing the creation of the scar either in the pre-contact period, or shortly after European contact.
- The core sample from MA7 showed a faster rate of growth consistent with the observations that the tree is healthy and growing vigorously with no signs of dieback. The scar is estimated to be 86 years old, placing the creation of the scar in 1928.
- Aerial photography shows the two trees were present on the site in the 1930s, which is consistent with the estimated age of the two scars indicating that the trees pre-date the 1930s.
- The age estimates obtained are considered as maximum ages for the two scars (265 years for MA6 and 86 years for MA7).

Options for managing MA6 and MA7 should be explored in consultation with the RAPs. Management of the two trees is contingent upon the trees' cultural value, which can only be comprehensively assessed by the Aboriginal community.

If a scar is considered not to be of Aboriginal origin, and consequently the tree is not held to have any cultural value, then destruction of the tree could proceed without constraint.

If a scar is considered to be of Aboriginal origin, and is considered to hold cultural value as a result, then several alternative management strategies could be considered including:

- conservation of the tree(s) in situ, which would involve designing the Project to ensure that the tree(s) would not be impacted; and/or
- salvage and conservation of the tree(s), or the scarred portion of the tree's trunk, at a location outside the Project area.

If consensus cannot be reached among the RAPs, a precautionary approach is recommended. This would involve acting upon statements of the tree(s) holding cultural value, even if only a minority of Registered Aboriginal Parties view either or both trees as holding cultural value.

The full result of the scarred tree assessment is presented in Appendix I of this Response to Submissions report, with a summary analysis provided by NOHC (2015) in Appendix J.

European heritage

Chapter 21 – *European heritage* of the EIS provides an assessment of the European heritage items, including an assessment of cultural heritage significance and the potential impacts on European heritage values as a result of the Project. The cultural heritage significance and potential impacts on European heritage values were assessed by undertaking:

- a literature and database review of statutory and non-statutory listings;
- initial field surveys of the built environment and non-built environment (potential for sub-surface deposits) of the Project site;
- archaeological test excavation;
- assessment of cultural landscape and social values; and
- assessment of the heritage significance and heritage impacts for individual items and the Project site as a whole.

The assessment concluded that the Project would have impacts on European heritage items within and adjacent to the proposed construction footprint. The assessment also identified that an impact mitigation program would include archival recording of all those items of Commonwealth, state and local significance in the Project area not already included in a program of archival recording for the Moorebank Unit Relocation (MUR) Project.

During the assessment the following items were identified as requiring archival recording prior to development:

- Cullen Universal Steel Truss (CUST));
- Royal Australian Air Force (RAAF) STRARCH Hangar;
- Royal Australian Engineers (RAE) Museum and Australian Army Museum of Military Engineering Collections;
- Transport Compound Workshop (Building 99);
- Explosives Detection Dog Cemetery and Memorial (MH1);
- Commemorative Gardens (MH6); and
- remaining elements of the RAE Chapel.

To fulfil the requirements of the mitigation measure presented in the EIS, NOHC undertook a field survey in July 2014 to record the salient physical aspects of the Moorebank Cultural Landscape, including those items identified above. The significance of the items was assessed against:

- NSW assessment criteria – defined by the NSW Heritage Branch for the assessment of cultural heritage significance of items and places not including Aboriginal heritage from the pre-contact period (NSW Heritage Office & DUAP 1996, NSW Heritage Office 2000); and

- Commonwealth Heritage Criteria (SEWPAC 2011) – the Commonwealth Heritage List is a register of natural and cultural heritage places owned or controlled by the Australian Government. These may include places associated with a range of activities such as communications, Customs, Defence or the exercise of government. The EPBC Act establishes this list and nominations are assessed by the Australian Heritage Council.

A full description of the assessment criteria is provided in the *School of Military Engineering Steele Barracks, Moorebank NSW; Cultural Heritage Archival Recordings* (NOHC, 2014) appended to this report (Appendix K).

The archival recording involved:

- preparation of scale site plans as required, including the measurement of important dimensions, aspects and materials;
- creation of a digital photographic record, including recording required metadata;
- limited additional research of documentary and oral sources;
- data review, processing and compilation; and
- report writing and production.

The significance assessment was undertaken using the NSW assessment criteria.

- Table 8.5 summarises the results of the significance assessment.

Table 8.5 Summary of the significance assessment

Item	Significance
Moorebank Cultural Landscape	The Moorebank Cultural Landscape is the product of numerous phases of landscape occupation and use spanning Indigenous occupation (pre-European settlement) through to the present day. Many of these phases of use and associated cultural history patterns are evidenced within different portions of the landscape. The toponyms, buildings, spatial organisation, memorials, archaeological deposits and elements of the natural landscape have various strong and/or special associations with Thomas Moore, the Australian Army (particularly the School of Military Engineering (SME)) and the Aboriginal community. Furthermore, the archaeological deposits identified within the Project area have the potential to yield information that would contribute to an understanding of its cultural history. The landscape as a whole is also notable as a locally distinct and representative cultural landscape. This item is significant at a local level against NSW criteria. This item is significant against Commonwealth heritage listing criteria.
CUST Hut	The oldest surviving building in the SME site. It is a rare example of a Cullen Unified Steel Truss (CUST) building still in use, and more so in military ownership in NSW. The building has historic significance to the SME site and technical significance of an increasingly rare construction system for clear span vaulted warehouses. The site has strong and special association with Lieutenant Colonel D.R. (Dan) Cullen and is important in the history and development of the SME site. The integrity and intactness of this structure provides for a high level of technical significance. The possible subsurface integrity of this site represents significant archaeological research potential at a local level. This site is significant against NSW criteria. This site is significant against Commonwealth heritage listing criteria.

Item	Significance
RAAF STRARCH Hangar	The integrity and intactness of this structure provides for a high level of technical significance, albeit without associated archaeological research potential. Refer to the Museum Collection regarding items within the structure. This site has local and state significance against NSW criteria. This site is significant against Commonwealth heritage listing criteria.
Transport Compound Workshop (Building 99)	The Transport Compound Workshop is locally rare, within the context of the Moorebank Cultural Landscape, as a WWII era building that remains in situ. This building also contributes to the historical significance of the Moorebank Cultural Landscape. This item is significant at a local level against NSW criteria. This item does not meet the threshold for listing against any Commonwealth Heritage List criteria.
Commemorative Gardens (MH6)	The Commemorative Garden, as a memorial, possesses significant social value at a local level albeit without archaeological research potential. This site is significant against NSW criteria. This site is significant against Commonwealth heritage listing criteria.
Explosives Detection Dog Cemetery and Memorial	These values relate to the history, development and practice of dog training and handling within the SME corps. The cemetery and Memorial possess significant historical and social value at a local level albeit without archaeological research potential. This site is significant against NSW criteria A, B, and D. This site is significant against Commonwealth heritage listing criteria.

The full archival recording, photographic records and assessment of significance is documented in the *School of Military Engineering Steele Barracks, Moorebank NSW; Cultural Heritage Archival Recordings* (NOHC, 2014) appended to this report (Appendix K).

Chapter 9
Revised environmental management measures

9. Revised environmental management measures

This chapter present the revised environmental management measures that MIC proposes to implement to reduce the identified environmental impacts associated with the construction and operation of the Project.

9.1 Overview

Chapter 28 – *Environmental Management Framework* of the EIS documented a range of environmental management measured that MIC and its nominated developer/operator would implement to reduce the identified environmental impacts associated with the construction and operation phases of the project.

Subsequent to the public exhibition of the EIS, MIC proposes to emend the environmental management measures for the Project in response to:

- Issues raised in submissions received during the public exhibition period (as outlined in Chapter 5 – *Response to government agency submissions* and Chapter 6 – *Response to community submissions* of this report).
- Concept design layout changes proposed in Chapter 7 - *Proposed amendments to the development* of this report.
- Additional investigations undertaken since the public exhibition of the EIS (as described in Chapter 8 – *Additional technical investigations since the EIS* of this report).
- Further review and rationalisation of the environmental management measures presented in the EIS, including removal of measures focused on the northern and central rail access options.

As stated in the EIS, the environmental management framework would include an overarching Environmental Management System (EMS) that complies with AS/NZS ISO 140001:2004 (refer to Figure 9.1). This EMS would be developed at the next stage of approval. In accordance with the Australian Government Environmental Management System Tool (DoE undated), the EMS would comprise a structured system to:

- identify environmental impacts associated with the organisation's business activities (including confirming and clarifying impacts of the Project detailed in this EIS);
- assess how the organisation meets its legal and other requirements relating to environmental aspects;
- plan for and demonstrate that steps have been taken to reduce or prevent environmental harm from occurring as a result of the organisation's business activities; and
- improve environmental performance (by applying the principle of continuous improvement).

The EMS would include an Environmental Policy that articulates the overall intentions and directions of the GBE (and/or the selected contractor(s)) regarding its environmental performance, and provides a formal means for management to express commitment to environmental management and improvement.

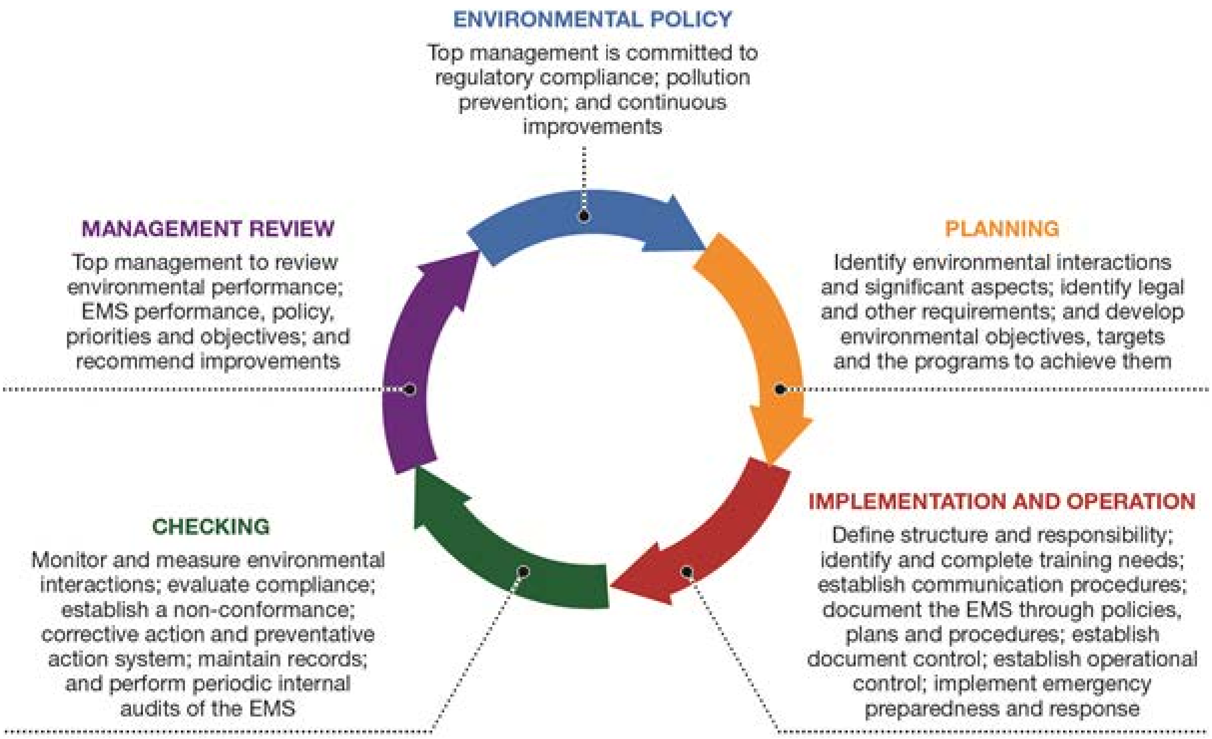


Figure 9.1 Overall environmental management framework for the Project

Beneath the EMS would sit a suite of environmental management plans (EMPs), for example construction environmental management plans (CEMPs) and operational environmental management plans (OEMPs).

9.2 Project environmental objectives

The overarching environmental objectives of the Project are as follows:

- Comply with all relevant environmental standards and approvals during the life of the Project.
- Provide a high standard of environmental management which reflects good planning, implementation and recognition of all features of the environment.
- Comply with statutory requirements, regulatory approvals and regulatory reporting (Commonwealth and NSW).
- Protect people, the environment and property.
- Commit to achieving the highest possible performance in all aspects of the Project in regard to environmental practices.
- Establish, implement and maintain an EMS.

More specific environmental objectives have been developed as part of the Provisional EMPs (included in Volume 2, Appendix G of the EIS).

9.3 Environmental measures

Table 9.1 outlines the revised environmental management and mitigation measures for the Project. This table supersedes Table 28.2 Management and mitigation measures from Chapter 28 *Environmental management framework* in the EIS. As described in Section 28.3 of the EIS, the table includes various categories of measurement including:

- Measures marked 'M' in column 3 of the table are mandatory and are firm mitigation commitments. There is still some potential for these measures to be reviewed or new measures to be added.
- Measures marked 'SR' in column 3 of the table are subject to review during staged State significant development (SSD) approval processes and/or detailed design, when more detail about the Project design and operation would be available.
- Column 4 details the proposed timing of implementation of the measures.
- Columns 5 and 6 provide explanation and/or additional information regarding:
  - why the individual measures are proposed, i.e. what potential risk/outcome are they designed to mitigate (column 5); and
  - how effective the individual measures are expected to be in mitigating the potential risk/outcome, relative to an unmitigated condition (column 6).
- Definitions of the predicted risks/outcomes shown in Column 5 are taken from the risk definition matrix in Table 29.4 of Chapter 29 – *Environmental risk analysis*.
- In column 6, Note 2: Where the effectiveness of measures was not quantifiable, predicted effectiveness was assessed qualitatively using the following definitions:
  - High predicted effectiveness – high likelihood that potential risk/impact can be mitigated based on proven experience on other similar projects and/or specialist knowledge.
  - Medium predicted effectiveness – medium likelihood that potential risk/impact can be mitigated based on proven experience on other similar projects and/or specialist knowledge.
  - Low predicted effectiveness – low likelihood that potential risk/impact can be mitigated based on proven experience on other similar projects and/or specialist knowledge.

The final four columns indicate the relevance of each measure to the construction and operation of the IMT site and the southern rail access option.

To supplement the mitigation and management measures, a suite of Provisional Environmental Management Plans (EMPs) were produced for the project, showing in detail the management measures that would be required to be applied during project construction and operation. These are contained as Appendix H of the EIS (EIS Volume 2).

Table 9.1 Environmental management

No.	Mitigation measure	Mandatory (M)/ subject to review (SR)	Implementation phase	Predicted risk/outcome if measure not implemented (i.e. reason for proposed measure)	Predicted effectiveness of measure(s) or outcome relative to unmitigated condition	Applicability	
						IMT site	Southern rail access connection
General environmental management **Proposed environmental framework**							
1A	An EMS that complies with AS/NZS ISO 140001:2004 would be developed and implemented on the Project site.	M	Detailed design	High risk that overall environmental impacts of Project would not be managed effectively.	High level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
1B	EMPs including CEMPs and OEMPs would be prepared for the Project. At this point, Provisional EMPs (included in Volume 2, Appendix H of the EIS) have been prepared and would be updated as more is known about the Project phasing including detailed design, construction and operation.	M	Detailed design and/or Early Works and construction	High risk that overall environmental impacts of Project would not be managed effectively.	High level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
Consultation							
2A	A Community Engagement Plan (CEP) would be prepared to outline community involvement and consultation activities in the pre-construction, construction and operation phases. As a minimum, the CEP would include appropriate measures for community involvement, including: • a direct telephone number (24 hour); • an email address; • a postal address; • regular project updates; • a community liaison representative; and scheduled meetings with a local representative body such as a community consultative (or liaison) committee. The CEP would also set out the requirements, such as timeframes, for responding to contact received from community members.	M	Early Works, construction and operation	High risk that community impacts would not be effectively mitigated, plus high level of anxiety/concern in community regarding the Project and its impacts.	High level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
2B	The CEP would be prepared to ensure: • the community and stakeholders have a high level of awareness of all processes and activities associated with the Project; • accurate and accessible information is made available; and • a timely response is given to issues and concerns raised by stakeholders and the community.	M	Early Works, construction and operation	As per measure 2A.	As per measure 2A.	●	●
Sustainability							
3A	The final design would (as a minimum) provide for sustainability outcomes in accordance with the sustainability initiatives identified in Table 9.4 in Chapter 9 of the EIS – Project sustainability.	SR	Detailed design	High risk that ecologically sustainable development objectives listed in Table 9.4 of the EIS would not be achieved.	High level of effectiveness in mitigating risk when combined with measure 3B. Not possible/appropriate to quantify. Expected to achieve ecologically sustainable development objectives listed in Table 9.4 of the EIS.	●	●
3B	Implementation of sustainability initiatives would be monitored and audited in accordance with the monitoring framework developed prior to the commencement of detailed design. This framework would identify sustainability indicators for monitoring.	M	Early Works, construction and operation	As per measure 3A	As per measure 3A.	●	●

No.	Mitigation measure	Mandatory (M)/ subject to review (SR)	Implementation phase	Predicted risk/outcome if measure not implemented (i.e. reason for proposed measure)	Predicted effectiveness of measure(s) or outcome relative to unmitigated condition	Applicability	
						IMT site	Southern rail access connection
Traffic, transport and access							
4A	The Project team would continue to liaise with Australian Rail Track Corporation (ARTC), Transport for NSW (TfNSW) and other stakeholders on the rail freight network regarding the capacity of the network beyond the Southern Sydney Freight Line (SSFL) (including for interstate rail transport). As part of the Stage 2 SSD approval(s) process further analysis would be undertaken to determine likely demand distribution and capacity across the rail freight network.	M	Pre-construction, construction and operation Project Approval assessment process	Moderate risk that rail freight network capacity is inadequate to service full development of Project (import/export (IMEX) and interstate).	Effectiveness limited as Project cannot control wider network upgrades (beyond scope of Project). Not possible/appropriate to quantify.	●	●
4B	Install a variable message signage system within the Project site to direct heavy vehicles and facilitate safe and efficient access and navigation.	SR	Detailed design, construction and operation	Moderate injury risk associated with pedestrian–vehicle collision or vehicle–vehicle collision due to poor signage.	High level of effectiveness. Not possible/appropriate to quantify.	●	N/A
4C	Consider the provision of pedestrian and cyclist connections from Moorebank Avenue into the Project site for the warehouse developments and the IMT site.	SR	Detailed design, construction and operation	Moderate pedestrian and cyclist injury risk.	High level of effectiveness. Not possible/appropriate to quantify.	●	N/A
4D	Provide staff storage and shower areas to promote cycling, jogging and walking as modes of transport.	SR	Detailed design, construction and operation	Minor risk – reduced incentive to switch from car travel to sustainable transport.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	N/A
4E	Negotiate with bus operators for the provision of additional bus stops and increased bus services between the Project site and nearby public transport interchange hubs to reduce the volume of light vehicles generated by staff. Facilitate discussions with Transdev and TfNSW about future bus services for the IMT site.	SR	Detailed design	Minor risk – reduced incentive to switch from car travel to sustainable transport.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	N/A
4F	Undertake detailed design and staging of the Project rail link construction works to ensure: • connection with the SSFL is designed to minimise construction impacts on SSFL operations; • connection with the SSFL would allow trains to leave and enter the SSFL at a maximum design speed of 45 kilometres per hour (km/h); • trains entering and leaving the Project site have an appropriate staging area (i.e. arrival and departure roads) to enable smooth interface and minimum disruption to other operations on the SSFL; and • the Project's internal train control system and signalling integrates with the SSFL system. Undertake consultation with the ARTC and appropriate rail operators throughout the detailed design and construction of the proposed rail link to the SSFL to minimise disturbance to SSFL operations.	SR	Detailed design and construction	Moderate impact on safe operation of SSFL.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	●

No.	Mitigation measure	Mandatory (M)/ subject to review (SR)	Implementation phase	Predicted risk/outcome if measure not implemented (i.e. reason for proposed measure)	Predicted effectiveness of measure(s) or outcome relative to unmitigated condition	Applicability	
						IMT site	Southern rail access connection
4G	Prior to all further development application stages, in consultation with Transport for NSW and other relevant agencies of NSW Government ensure that adequate arrangements are in place to ensure that: 1. the impacts of additional traffic associated with the future development approval stage will be within the capacity of the road network, taking account of background traffic growth and planned road network improvements. 2. arrangements are in place (irrespective of funding source) for the on-time delivery of the necessary road network improvements referred to in point 1 above. The contribution of MIC towards road network improvements as envisaged by Mitigation Measure 4G would be subject to the following conditions: • That certain throughput levels at the terminal had been achieved. These throughputs are outlined in column 1 of Table 7.20. • That it can be further demonstrated (as part of any subsequent planning approval stage) that the intersection performance would have deteriorated to a Level of Service E or worse (where previously operating at a LoS D or above) were it not for the implementation of the upgrades outlined in Table 7.20.	M	Detailed design and future development applications.	Major risk to traffic road network.	Medium-high level of effectiveness. Refer to Table 7.19 for quantification of proposed improvements.	N/A	N/A
Traffic management plans							
4H	Reducing the volumes of construction vehicles travelling during peak periods, especially if the increase in traffic generated by construction activities impedes on the operation of Moorebank Avenue.	SR	Early Works and construction	Moderate risk of exacerbating peak hour traffic congestion and delays to construction deliveries (and waste/spoil removal).	Medium level of effectiveness if implemented. Quantification of traffic impacts not undertaken to date.	●	N/A
4I	Maintain access to neighbouring properties. It is particularly important that the ABB site has access throughout the construction stages as the proposed works have potential to affect its operation.	M	Early Works and construction	Risk of adverse impacts on ongoing operation of businesses.	High level of effectiveness. Not possible/appropriate to quantify.	●	N/A
4K	Develop a communication plan to provide information to the relevant authorities, bus operators and local community. This is particularly important as there is potential for multiple contractors to be present on Project site at any one time. The communication plan will need to incorporate a contact list with the chain of command.	M	Early Works and construction	Risk of poor community understanding of impacts on their activities.	Medium level of effectiveness. Effectiveness will depend on the nature of the plan and mechanisms for disseminating information.	●	●
4L	Implement Traffic Control Plans (TCPs) to inform drivers of the construction activities and locations of heavy vehicle access locations.	M	Early Works and construction	Risk of poor community understanding of impacts on their activities.	Medium level of effectiveness. Effectiveness will depend on the nature of the TCPs and mechanisms for disseminating information.	●	●
4M	Obtain Road Occupancy Licences (ROLs) as necessary, including for the upgrade of Moorebank Avenue.	M	Early Works and construction	Statutory requirements.	High level of effectiveness.	●	●
4N	Develop an emergency response plan for the upgrade of Moorebank Avenue during Phase A. During this phase, emergency vehicles using Moorebank Avenue as a transport route would need to be considered, as well as emergency access to adjoining properties.	M	Construction	Risk of suboptimal emergency response – risk to human life and property.	Medium to high level of effectiveness. Not possible/appropriate to quantify.	●	N/A
4O	During the Early Works development phase, traffic on Moorebank Avenue would be monitored during peak periods to ensure that queuing at intersections does not impact on other road users.	M	Early Works	Moderate risk of exacerbating traffic congestion and delays to construction deliveries.	Medium to high level of effectiveness. Not possible/appropriate to quantify.	●	N/A
4P	Modify access locations in response to the development of the Moorebank Avenue upgrade. During this stage numerous access locations may be required for the transportation of spoil and material.	M	Construction	Moderate risk of exacerbating traffic congestion and delays to construction deliveries.	Medium to high level of effectiveness. Not possible/appropriate to quantify.	●	N/A
4Q	Provision of alternate suitable pedestrian, cycle and public transport facilities during the construction of Moorebank Avenue upgrades retaining well defined and well signed routes, paths and bus stop locations.	SR	Construction	Minor risk of exacerbating traffic congestion and delays to construction deliveries.	Medium level of effectiveness.	●	N/A

No.	Mitigation measure	Mandatory (M)/ subject to review (SR)	Implementation phase	Predicted risk/outcome if measure not implemented (i.e. reason for proposed measure)	Predicted effectiveness of measure(s) or outcome relative to unmitigated condition	Applicability	
						IMT site	Southern rail access connection
Noise and vibration **Construction noise and vibration**							
5A	A construction noise and vibration management plan (CNVMP) would be included in the CEMP to document mechanisms for demonstrating compliance with the Project approvals and commitments made in this EIS.	M	Detailed design and construction	Moderate risk of breaching construction noise goals.	Medium level of effectiveness – may not guarantee compliance as indicated by Chapter 17 – *Noise and vibration*.	●	●
5B	The appropriateness of the noise and vibration management and mitigation measures in 5C to 5T are to be further investigated as part of the Stage 2 SSD approval(s) process. These measures, or their replacement measures, are to be implemented through the CNVMP prior to and during all noise-generating construction works for each of the Project phases.	M	SSD approval process and construction	Risk of exceedance of construction and operational noise goals.	Medium to high level of effectiveness. Not possible/appropriate to quantify.	●	●
5C	Standard construction working hours should be restricted to between 7.00 am and 6.00 pm (Monday to Friday) and between 8.00 am and 1.00 pm on Saturdays. No works would be undertaken on Sundays or public holidays, unless they are necessary to minimise impacts on the local community, maintaining health and safety onsite, and/or where site conditions (such as rail possession works) expressly require construction outside these times. Night works would be programmed to minimise the number of consecutive nights that works affect the same receptors.	SR	Construction	Moderate risk of complaints for work outside standard hours.	Medium to high level of effectiveness.	●	●
5D	Works may be permitted outside of the standard daytime construction hours where: • requested by the NSW Police, RMS and other authorities, such as when delivery of materials/equipment to site requires temporary road closures; • required to maintain health and safety, avoid injury or loss of life, or prevent environmental damage; • they would not be audible at the nearest receivers; and/or • required to be undertaken during rail possessions to maintain the operational service of adjacent rail corridors.	SR	Construction	Refer to Item 5X.	Refer to Item 5X.	●	●
5E	During site inductions and toolbox talks, all site workers (including subcontractors and temporary workforce) are to be made aware of the hours of construction and how to apply practical, feasible and reasonable measures to minimise noise and vibration when undertaking construction activities (including when driving vehicles).	SR	Construction	Moderate risk of breaching construction noise goals, resulting in complaints.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	●
5F	Quieter and less vibration-emitting construction methods would be applied where feasible and reasonable. For example, when piling is required, bored piles rather than impact-driven piles would minimise noise and vibration impacts.	SR	Construction	Major risk of breaching construction noise goals, resulting in complaints.	Medium level of effectiveness. Quantification depends on activity/source.	●	●
5G	The construction site would be arranged to minimise noise impacts by locating potentially noisy activities away from the nearest receivers wherever possible.	SR	Construction	Major risk of breaching construction noise goals, resulting in complaints.	High level of effectiveness. Quantification depends on activity/source.	●	●
5H	Where possible, equipment that emit directional noise would be oriented away from sensitive receptors.	SR	Construction	Moderate to high risk of impact resulting in complaints.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	●
5I	Reversing of vehicles and mobile equipment would be minimised so as to prevent nuisance caused by reversing alarms. This could be achieved through one-way traffic systems and the use of traffic lights which could also limit the use of vehicle horns.	SR	Construction	Moderate to high risk of impact resulting in complaints.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	●

No.	Mitigation measure	Mandatory (M)/ subject to review (SR)	Implementation phase	Predicted risk/outcome if measure not implemented (i.e. reason for proposed measure)	Predicted effectiveness of measure(s) or outcome relative to unmitigated condition	Applicability	
						IMT site	Southern rail access connection
5J	Where work is proposed in the vicinity of residences, potentially affected residents would be advised, at least two weeks prior to the commencement of works, of the potential noise and vibration levels and the proposed management measures to control environmental impacts.	SR	Construction	Moderate risk of impact resulting in complaints.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	●
5K	Whenever possible, loading and unloading areas would be located away from the nearest residences.	SR	Construction	Major risk of breaching construction noise goals, resulting in complaints.	High level of effectiveness.	●	●
5L	Broadband reversing alarms would be used instead of tonal reversing alarms, in particular outside standard working hours (such as during night-time rail possession works). Subcontractors would also be notified of this requirement and, where possible (particularly for night works), this would be included as a contractual requirement.	SR	Construction	Major risk of breaching construction noise goals, resulting in complaints.	High level of effectiveness.	●	●
5M	Equipment that is used intermittently would be shut down when not in use.	SR	Construction	Level of risk depends on source but potential breaching of construction noise goals, resulting in complaints.	Level of effectiveness depends on activity/source.	●	●
5N	All engine covers would be kept closed while equipment is operating.	SR	Construction	Source dependent but major risk of breaching construction noise goals, resulting in complaints.	High level of effectiveness.	●	●
5O	Where possible, trucks associated with the work would not be left standing with their engines operating in streets adjacent to or within residential areas.	SR	Construction	Major risk of breaching construction noise goals, resulting in complaints.	High level of effectiveness.	●	●
5P	Traffic speeds would be signposted. All drivers would be expected to comply with speed limits and to implement responsible driving practices to minimise unnecessary acceleration and braking. Traffic movements should be scheduled to minimise continuous traffic flows (convoys).	SR	Construction	Major risk of breaching construction noise goals resulting in complaints.	High level of effectiveness.	●	●
5Q	The site manager (as appropriate) should provide a community liaison phone number and permanent site contact so that any noise and/or vibration related complaints can be received and addressed in a timely manner. Consultation and cooperation between the site and its neighbours would assist in limiting uncertainty, misconceptions and adverse reactions to noise and vibration.	SR	Pre-construction and construction	Major risk of noise complaints.	High level of effectiveness.	●	●
5R	Attended noise and ground vibration measurements would be undertaken at monthly intervals and upon receipt of adverse comment/complaints during the construction program, to confirm that noise and vibration levels at adjacent communities and receptors are consistent with the predictions in this assessment and any approval and/or licence conditions.	SR	Construction	Moderate risk of community backlash in the event of no response to complaints. Minor risk of identifying non-compliance.	High level of effectiveness.	●	●
5S	If noise generating construction works are undertaken outside the standard daytime construction hours and/or measured construction noise levels at nearest residences are greater than 75 dB(A) L_{Aeq}, the following additional noise mitigation measures would be considered: • Localised acoustic screens, comprising a solid structure such as plywood fencing to surround noise generating construction plant or work locations. To be effective for ground level noise, the screens would be lined with acoustic absorptive material, at least 2 m in height and installed within 5 m of the noise source. • Dominant noise-generating mechanical plant would be fitted with feasible noise mitigation controls such as exhaust mufflers and engine shrouds. • Respite periods of one hour are recommended for every continuous three-hour period of work; alternatively, daytime works would be scheduled between 9.00 am and 12.00 pm, and between 2.00 pm and 5.00 pm. • Where practical, noisy construction work would be undertaken during the less sensitive 6.00 pm to 10.00 pm evening period.	SR	Construction	Level of risk depends on source but potential breach of construction noise goals, resulting in complaints.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	●

No.	Mitigation measure	Mandatory (M)/ subject to review (SR)	Implementation phase	Predicted risk/outcome if measure not implemented (i.e. reason for proposed measure)	Predicted effectiveness of measure(s) or outcome relative to unmitigated condition	Applicability	
						IMT site	Southern rail access connection
5T	Depending on the specific construction works undertaken, construction noise mitigation may need to be implemented: • where piling works (required for all rail access connection options) are undertaken within approximately 600 m of residences in Casula and within approximately 800 m of residences in Glenfield; • for rail access connection works where daytime construction works undertaken within 450 m of nearest receptors in Casula; and where rail construction is required up to 1400 m from residences outside the standard daytime hours, such as during track possession works.	SR	Construction	Major risk of noise complaints.	Medium level of effectiveness. Not possible/appropriate to quantify.	N/A	●
Operational noise and vibration							
5U	To achieve the noise reductions outlined in Table 7.30 of this report and the Revised Project Noise and Vibration Impact Assessment report in Appendix F, mitigation treatments would need to reduce noise from all dominant noise sources. The Project would implement reasonable and feasible noise mitigation to control potential noise levels. In the event that the Project does not meet the assessment criteria at receptors, if the Project has reduced noise levels to be as low as practicable, the NSW Industrial Noise Policy (INP) (EPA 2000b) notes that: • achievable noise limits can be negotiated with regulators and the community. • the Project specific noise mitigation measures and noise levels outlined in Table 7.30 of this report and in the Noise and Vibration Assessment (Appendix F) should not automatically be interpreted as conditions for approval without consideration of other factors (environmental, social and economic) consistent with the objectives of the EP&A Act. In this regard, where appropriate, the INP notes that noise limits can be set above the Project specific noise levels.	SR	Detailed design and operation	Major risk of breaching operation noise goals, leading to complaints.	High level of effectiveness.	●	●
5V	Operational plant and equipment would be selected with the lowest practicable noise emissions.	SR	Detailed design and operation	Major risk of breaching operation noise goals, leading to complaints.	High level of effectiveness.	●	N/A
5W	Mechanical components on fixed and mobile equipment, such as motors, gearboxes and exhausts, would include enclosures and acoustic insulation (lagging) to limit noise emissions. The appropriate design of acoustic enclosures and acoustic insulation can reduce source noise levels of individual plant and equipment by 10 dB(A) or more.	SR	Detailed design and operation	Major risk of breaching operation noise goals, leading to complaints.	High level of effectiveness.	●	N/A
5X	Where feasible, motors and mechanical noise-generating components of the rail mounted gantries (RMGs) would be located near to ground level rather than at the top of the gantry.	SR	Detailed design and operation	Risk of ongoing complaints.	Moderate to high level of effectiveness.	●	N/A
5Y	Where feasible, and where it would produce a lower noise emission, electric motors and vehicles would be operated instead of diesel powered equipment.	SR	Detailed design and operation	Risk of ongoing complaints.	Moderate to high level of effectiveness.	●	N/A
5Z	The following measures would be incorporated into the design and operation of the freight trains on the rail track on the main IMT site to control potential operational noise: • The track on the rail access connection would be designed to minimise acute changes in vertical alignment, to reduce the requirement for locomotives to operate at high throttle on the ascent or under heavy braking on the descent. The rail lines would also comprise continuously welded track to remove joints. • The rail access connection bridge would be designed as a concrete or composite/concrete structure to minimise potential re-radiated noise from vibrating sections of the elevated track. Detailed noise analysis would be undertaken to identify both airborne and re-radiated noise contributions, to effectively mitigate total noise	SR	Detailed design and operation	Risk of ongoing complaints.	High level of effectiveness.	●	N/A

No.	Mitigation measure	Mandatory (M)/ subject to review (SR)	Implementation phase	Predicted risk/outcome if measure not implemented (i.e. reason for proposed measure)	Predicted effectiveness of measure(s) or outcome relative to unmitigated condition	Applicability	
						IMT site	Southern rail access connection
	emissions. • Locomotives accessing the main IMT site should have approval to operate on the network consistent with the noise limits for locomotives detailed in relevant Railway Systems Activities Licences.						
5AA	Unless for health and safety reasons, heavy vehicles should avoid the use of horns within the main IMT site.	SR	Detailed design and operation	Risk of ongoing complaints.	High level of effectiveness.	●	N/A
5AB	To further control potential rail noise from wheel squeal the following measures are proposed: • The turn radius of curved track sections would be greater than 500 m to reduce tight turns in the alignment. • Track greasing systems should be investigated on curved sections of track to lubricate and reduce friction at the wheel–rail interface. • The track maintenance system would include measures such as grinding to remove rail roughness, treatment of roughness on the wheels of locomotives and wagons, and adjustment of bogie-suspension tracking and brake system set up.	SR	Detailed design and operation	Risk of ongoing complaints.	High level of effectiveness.	●	N/A
5AC	Where feasible, all rail tracks would be designed to maximise the separation distance between rail lines and the nearest residences.	SR	Detailed design and operation	Risk (dependent on track design) of breaching operation noise goals, leading to complaints.	High level of effectiveness, but dependent on track design.	●	N/A
5AD	Noise walls or noise barriers would be installed within the main IMT site to impede the line of sight between noise sources and the nearest receptors. Where a noise wall or barrier fully impedes the line of sight to all dominant noise sources, a reduction in received noise level of 10 dB(A) or more can be achieved. In regard to noise walls or barriers: • Noise walls/barriers would need to be solid structures, typically constructed of concrete or similar material. • Additional absorptive material could be applied to the internal facades of the noise walls/barriers to reduce reflected noise from the wall/barriers. • TEU containers could be used as noise barriers where they are stacked, to effectively impede the direct line of sight to nearest receptors. This is likely to require an operational management procedure to ensure the container areas adjacent to the residential communities are maintained so that the containers are at the maximum practicable height at all times (typically up to 5 TEU). • To provide effective noise control the noise walls/barriers would need to achieve a transmission loss of at least 10 dB(A) more than the insertion loss. • Onsite noise walls/barriers would be constructed at the earliest opportunity in the Project development to provide noise attenuation during all subsequent construction and operation phases. • Subject to further consideration of environmental, social and economic impacts, earth mounding could be considered as an alternative to, or in conjunction with, noise walls/barriers to attenuate the propagation of noise between the site and nearest affected receptors. Where earth mounding can fully impede the line of sight to dominant noise sources, it may be possible to reduce noise from ground level sources by 6 dB(A) L_{Aeq} or more. For the southern rail access, it is proposed that earth mounding be considered on the main IMT site, at the western extent of the IMEX and interstate rail lines.	SR	Detailed design and operation	Risk of breaching operation noise goals, leading to complaints.	High level of effectiveness, but dependent on wall design.	●	N/A

No.	Mitigation measure	Mandatory (M)/ subject to review (SR)	Implementation phase	Predicted risk/outcome if measure not implemented (i.e. reason for proposed measure)	Predicted effectiveness of measure(s) or outcome relative to unmitigated condition	Applicability	
						IMT site	Southern rail access connection
5AE	Where feasible, all onsite buildings and structures would be designed and constructed to impede noise from ground level operation of heavy vehicles, side picks and ITVs. The preferred Project has located the warehouse buildings to the west of the site to impede the propagation of noise to Casula.	SR	Detailed design and operation	Risk of ongoing complaints.	Effectiveness will depend on the design of the IMT. Potential for medium to high effectiveness.	●	N/A
Operational noise management							
5AF	Before to the start of each phase of operations, an operational noise and vibration management plan (ONVMP) would be developed and implemented. The ONVMPs would detail the staged operation of the Project, the potential offsite operational noise levels as determined during the detailed design process, and all measures to manage and mitigate operational noise and vibration.	SR	Pre-operation and operation	Moderate risk of breaching operation noise goals, leading to complaints.	High level of effectiveness.	●	●
5AG	As a minimum, the ONVMP would include: • the operational noise criteria/limits as defined by the relevant Project approvals and Environmental Protection Licence; • identification of all surrounding receptors and land use that would be potentially sensitive to noise and vibration; • identification of all noise and vibration generating operations and the timing of these operations; • the location and specification of any onsite and offsite noise mitigation, including the requirement for future mitigation as part of the staged operation; • detailed measures for managing operational noise, including checklist and auditing procedures to ensure measures are implemented before the start of noise generating activity; • procedures for the monitoring and reporting of operational noise and vibration; • procedures for consultation with the community regarding operational noise and vibration; and • complaint handling procedures.	SR	Pre-operation and operation	Moderate risk of breaching operation noise goals, leading to complaints.	High level of effectiveness.	●	●
5AH	During detailed design, where practical and feasible to do so, consideration would be given to: • undertaking locomotive maintenance during the daytime and evening period between 7.00 am and 10.00 pm; • operating heavy vehicles to limit the requirement for reversing and audible reversing alarms, such as the use of one-way systems for onsite roads; and • appropriate commitment – either contractual or operational – that rail operators accessing the site would be required to undertake regular maintenance of all trains to address wheel flat spots and locomotive exhausts.	SR	Pre-operation and operation	Moderate risk of breaching operation noise goals, leading to complaints.	High level of effectiveness.	●	●
Further assessment							
5AI	The noise and vibration measures described in 5U–5AH above would be subject to further consideration during detailed design. At that point, the predicted noise impacts and the likely effectiveness of the measures (or equivalent alternative measures) would be further investigated. This further investigation would include consideration of potential environmental, social and economic impacts of the measures. It is also proposed that the following points be considered in the further assessment of potential impacts and design of mitigation measures:	M SR (mitigation measures)	Detailed design	High risk of complaints.	Potentially high level of effectiveness, depending on the outcomes of the assessment and the mitigation measures employed as a result.	●	●

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						IMT site	Southern rail access connection
	• Assessment of potential noise emissions from any concrete batching plant, and implementation of any required noise mitigation, would be undertaken by the appointed construction contractor upon confirmation of the design and operation of the concrete batching plant. • During detailed design of the Project, consideration of either an automated container handling area or electrically powered plant for the interstate terminal (as per the IMEX terminal), or alternatively the use of plant with the lowest available noise emissions. • During the detailed design of the Project, the specification of operating plant and machinery for the Project would be confirmed. This would include the provision of one-third octave band noise emission data from equipment vendors to facilitate a detailed assessment of annoyance characteristics in accordance with the NSW Industrial Noise Policy (INP) (EPA 2000b). • To the west of the site, consideration of a noise barrier 4.5 m in height at the haul road to mitigate noise from trucks operating within the Project site using a combination of acoustic barriers, solid walls or earth mounding to fully impede the line of sight between the nearest receptors in Casula and the haul road. • To verify the predicted noise levels and recommended noise mitigation in the noise and vibration assessment, the predictive assessment of potential noise levels would be revised for the detailed design of the construction and operation of the southern rail access. This would include detailed assessment of sleep disturbance impacts from rail spur operations. Where deemed necessary, mitigation measures may be required to reduce and control maximum noise events from sources such as locomotive exhausts and wagon bunching. • In accordance with Appendix 2 of NSW EPA's (2013) Rail Infrastructure Noise Guideline (RING) an additional noise impact assessment would be undertaken where the Project is expected to increase the designed capacity of the SSFL. Where feasible, this assessment would reference verified SSFL rail noise levels from the post-commissioning rail noise surveys undertaken by the ARTC. • The specific vibration propagation characteristics can be highly variable depending on the ground conditions at a given location. It is recommended that ground vibration impacts be reviewed during the detailed design, particularly where Project rail track would pass within 50 m of residences.						
Noise and vibration monitoring							
5AJ	The ambient noise monitoring surveys within Casula, Wattle Grove and Glenfield would be continued throughout the construction and operation of the Project (with annual reporting of noise results up to two years beyond the completion of Full Build). The noise surveys would quantify any potential noise from the Project and identify any trends/changes in the ambient noise environment during the progressive development. The measured noise levels and contribution from the operation of the Project would be continually applied to the detailed design of the Project to ensure it includes appropriate mitigation measures to reduce and control noise during construction and operation. The monitoring data would also include any changes to the ambient noise environment from new or changed developments in the area. In the event of any noise or vibration related complaint or adverse comment from the community, noise and ground vibration levels would be	SR	Detailed design, construction and operation	If recommended measures are not implemented, complaints handling could become difficult.	High level of effectiveness.	●	●

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	measured at the potentially affected premises, where feasible. In accordance with procedures in the CNVMP and ONVMP, the measured noise and/or vibration levels would then be assessed to ascertain if remedial action is required.						
Biodiversity							
6A	Following detailed design and before construction, detailed flora and fauna mitigation measures would be developed and presented as part of the CEMP. These detailed measures would incorporate the measures listed in 6B to 6W. The CEMP would address: • general impact mitigation • staff/contractor inductions • vegetation clearing protocols • pre-clearing surveys and fauna salvage/translocation • rehabilitation and restitution of adjoining habitat • weed control • pest management • monitoring. The plans would include clear objectives and actions for the Project including how to: • minimise human interferences to flora and fauna • minimise vegetation clearing/disturbance • minimise impact to threatened species and communities • minimise impacts to aquatic habitats and species undertake flora and fauna monitoring at regular intervals.	M	Early Works and construction	Without a detailed description of the steps required to implement each measure and identification of the party responsible, there is a risk that measures would not be correctly implemented.	High level of effectiveness. Not possible/appropriate to quantify.	●	●
6B	Vegetation clearing would be restricted to the construction footprint and sensitive areas would be clearly identified during the construction process as exclusion zones.	M	Early Works and construction	If vegetation clearing is not restricted to the construction footprint, unnecessary clearing could cause additional impacts on biodiversity.	High level of effectiveness. Not possible/appropriate to quantify.	●	●
6C	The exclusion zones would be marked on maps, which would be provided to contractors, and would also be marked on the ground using high visibility fencing (such as barrier mesh).	M	Early Works and construction	Without clear delineation of clearing limits and no-go areas, there is a risk of unnecessary vegetation clearing and associated impacts on biodiversity.	High level of effectiveness. Not possible/appropriate to quantify.	●	●
6D	A trained ecologist would accompany clearing crews to ensure disturbance is minimised and to assist in relocating any native fauna to adjacent habitat.	M	Early Works and construction	Without input from an ecologist, there is a higher risk that native animals would be injured or killed. Unqualified staff may not recognise potential shelter sites (e.g. tree hollows, woody debris) or have the skills necessary to assist animals to relocate to adjacent habitat.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	●
6E	A staged habitat removal process would be developed and would include the identification and marking of all habitat trees in the area. Where feasible, clearing of hollow-bearing trees would be undertaken in March and April when most microbats are likely to be active (not in torpor) but are unlikely to be breeding or caring for young, and when threatened hollow-dependent birds in the locality are also unlikely to be breeding. Pre-clearing surveys would be conducted 12 to 48 hours before vegetation clearing to search for native wildlife (e.g. reptiles, frogs, Cumberland Land Snail) that can be captured and relocated to the	M	Early Works and construction	Without the implementation of a staged habitat removal process, there is a higher risk that native animals would be injured. Without appropriate pre-clearing surveys, and encouragement to leave roosts, animals are more likely to remain in habitat during clearing and to be at risk of injury or death.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	●

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	retained riparian vegetation of the Georges River corridor. Vegetation would be cleared from a 10 m radius around habitat trees to encourage animals roosting in hollows to leave the tree. A minimum 48 hour waiting period would allow animals to leave. After the waiting period, standing habitat trees would be shaken (where safe and practicable) under the supervision of an ecologist to encourage animals roosting in hollows to leave the trees, which may then be felled, commencing with the most distant trees from secure habitat. Felled habitat trees would either be immediately moved to the edge of retained vegetation, or left on the ground for a further 24 hours before being removed from the construction area, at the discretion of the supervising ecologist. All contractors would have the contact numbers of wildlife rescue groups and would be instructed to coordinate with these groups in relation to any animal injured or orphaned during clearing.						
6F	Relocation of animals to adjacent retained habitat would be undertaken by an ecologist during the supervision of vegetation removal.	M	Early Works and construction	Native animals disturbed during vegetation removal would be at risk of being injured or killed by vehicle/plant movements and predation.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	●
6G	An ecologist would supervise the drainage of any waterbodies on the Project site and would relocate native fish (e.g. eels), tortoises and frogs to the edge of the Georges River and/or the existing pond at the northern end of the IMT site.	M	Early Works and construction	Native aquatic animals disturbed during drainage of water bodies would be at risk of being injured or killed by earthworks, predation and desiccation/exposure.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	●
6H	The design of site fencing and any overhead powerlines would consider the potential for collision by birds and bats and minimise this risk where practicable.	M	Early Works and construction	Powerlines can be collision and electrocution hazards for wildlife, particularly birds, bats and arboreal mammals. Fences can be collision hazards and, where they include barbed or razor wire, entanglement hazards. Powerlines and fences are therefore potential ongoing sources of wildlife injury and/or mortality.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	●
6I	The potential for translocation of threatened plant species as individuals or as part of a soil translocation process would be considered during the detailed development of the CEMP.	M	Early Works and construction	If no individuals or progeny of the threatened plants recorded on site are used in vegetation restoration, a small reduction in the genetic variation within the local populations of these species is possible.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	●
6J	Consideration would be given to fitting roost boxes to the bridge over the Georges River to provide roost sites for the Large-footed Myotis and other species of microbats (e.g. Eastern Bentwing-bat) which may utilise such structures. Provision of roost boxes under bridges has been identified as priority action for the recovery of the Large-footed Myotis.	SR	Detailed design	The Project may result in the removal of some potential roost sites (tree hollows) for the Large-footed Myotis. Without provision of roost boxes, a reduction in the availability of roosting habitat for this species may occur.	Medium level of effectiveness. Not possible/appropriate to quantify.	N/A	●
6K	Important habitat elements (e.g. large woody debris) would be moved from the construction area to locations within the Project site which would not be cleared during the Project, or to stockpiles for later use in vegetation/habitat restoration.	M	Pre-construction	If habitat elements such as large woody debris are not moved into retained habitat, animals that have been displaced by clearing and which rely on these resources may lack sufficient shelter or foraging habitat to persist.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	●
6L	Winter-flowering trees would be preferentially planted in landscaped areas of the Project site to provide a winter foraging resource for migratory and nomadic nectar-feeding birds and the Grey-headed Flying-fox.	SR	Construction	Without the implementation of this measure, the Project would result in a greater long-term reduction in winter habitat for nectar-feeding species.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	●

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6M	A bridge/viaduct would be used for the railway crossing of the Georges River. This may allow connectivity of terrestrial habitat along the river banks underneath the bridge.	M (connectivity SR)	Detailed design	If connectivity of terrestrial habitat is severed, this would reduce the potential for movement of animals along the eastern banks of the Georges River to the north of the site; however, riparian habitat to the north of the site is highly degraded.	Medium level of effectiveness. Not possible/appropriate to quantify.	N/A	●
6N	Options for maintaining habitat connectivity would be investigated during the detailed design phase of the Project, and may include establishing native vegetation and placing habitat elements such as rock piles and large woody debris under the bridge to provide cover for fauna.	SR	Detailed design	As above.	Medium level of effectiveness. Not possible/appropriate to quantify...	●	●
6O	Erosion and sediment control measures such as silt fencing and hay bales would be used to minimise sedimentation of streams and resultant impacts on aquatic habitats and water quality.	M	Pre-construction	Without adequate control measures in place there would be a risk of a substantial increase in turbidity and sediment deposition in the Georges River. This could affect aquatic ecosystems by reducing light availability for aquatic plants, and visibility and oxygen availability for aquatic animals.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	●
6P	The detailed design process for the bridge over the Georges River would consider disturbance to aquatic habitat and fish passage conditions. The design would as a minimum adhere to the fish friendly passage guidelines (Fairfull & Witheridge 2003) for waterway crossings.	M	Detailed design	If the design does not consider fish movement, there is a risk that the bridge may adversely affect fish passage along the Georges River.	High level of effectiveness. Not possible/appropriate to quantify.	N/A	●
6Q	Opportunities for planting of detention basins with native aquatic emergent plants and fringing trees would be explored in the detailed design of the Project and, if practicable, implemented so that they would provide similar habitat in the medium term to that lost through the removal of existing basins.	SR	Detailed design	If detention basins are not planted with native vegetation, there would be a reduction in the availability of this type of habitat for native waterbirds and frogs. This habitat is, however, likely to be of relatively low importance to threatened biodiversity.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	N/A
6R	The CEMP would include detailed measures for minimising the risk of introducing weeds and pathogens.	M	Construction	Without a detailed description of the steps required to implement weed management measures and identification of the party responsible, there is a risk that measures would not be correctly implemented and that weed species would proliferate.	High level of effectiveness. Not possible/appropriate to quantify.	●	●
6S	The Project would include a long-term program of weed removal and riparian vegetation restoration in the Georges River corridor, which would include monitoring landscaped areas for the presence of noxious and environmental weeds. A preliminary weed management strategy is provided in Appendix E of Technical Paper 3 – *Ecological Impact Assessment* in Volume 4 of the EIS, setting out the principles for the management of the riparian zone.	M	Pre-construction, construction and operation	Without a long-term program of weed removal and riparian vegetation restoration, weeds would be unlikely to be adequately controlled, and would be likely to dominate the vegetation of the site in the future.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	N/A
6T	The Biosecurity division of the Commonwealth Department of Agriculture would be consulted on the detailed design of the Project and its operation, to ensure that all legal requirements and appropriate management measures related to biosecurity are implemented.	M	Detailed design	If appropriate biosecurity measures are not in place, it is possible that exotic species not currently established in the region (e.g. Red Imported Fire Ant) could be introduced and spread from the site.	High level of effectiveness. Not possible/appropriate to quantify.	●	●
6U	During detailed design, appropriate design and landscape/vegetation management measures would be implemented to reduce the bushfire risk and threat to biodiversity.	M	Detailed design	If fire onsite is relatively frequent and/or intense, it may result in a reduction in habitat quality and loss of animal and plant species.	High level of effectiveness. Not possible/appropriate to quantify.	●	●
6V	The management of the conservation lands along the Georges River would include management of fire regimes to promote biodiversity conservation.	M	Pre-construction, construction and operation	As above.	As above.	●	●

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6W	The detailed design process would consider the potential groundwater impacts on ground-dependent ecosystems. In most cases, these impacts would be mitigated at the design phase.	M	Detailed design	If significant changes to groundwater conditions were to occur, vegetation and fauna habitat may be adversely affected, possibly resulting in a reduction in native biodiversity.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	●
6X	The management plan for the Georges River riparian corridor (refer to Appendix E of Technical Paper 3 – *Ecological Impact Assessment* in Volume 4 of the EIS) would be implemented and would include a monitoring program designed to detect operational impacts.	M	Operation	Without a management plan, the biodiversity conservation objectives of the Georges River riparian corridor may not be achieved. If monitoring of operational impacts from the Project site is not conducted, they cannot be identified and mitigated.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	N/A
Biodiversity Offsets strategy							
6Y	The Biodiversity Offsets Strategy detailed in Appendix C of the Response to Submissions report will be implemented.	M	Detailed design, construction and operation	Without the establishment of biodiversity offsets, the Project would result in a net reduction in biodiversity values in the region.	Medium level of effectiveness. Not possible/appropriate to quantify at this stage.	●	●
6Z	A riparian restoration plan for the Georges River riparian zone and Casula offset area would be implemented. The objectives of the plan include: • restoration and revegetation of the riparian zone of the site to be consistent with, and complementary to, areas of remnant indigenous vegetation within the Georges River corridor (approximately16.7 hectares (ha) of land to be revegetated); • long-term eradication and suppression of the most detrimental weed species on the site including vine and woody weeds (approximately 20.0 ha of land to undergo a weed control program); • consolidation and widening of the existing vegetation corridor of Georges River where feasible; • improved habitat values for native animals and plants, particularly threatened species; and • management of undesirable animal species including introduced animal species and some Australian native animals which may be detrimental to the biodiversity of the Project site.	M	Detailed design, construction and operation	In the absence of active management and restoration, the biodiversity values of the Georges River riparian zone would continue to decline as a result of competition from introduced plants.	Medium level of effectiveness. Not possible/appropriate to quantify.	●	N/A
6AA	Measures to manage undesirable animal species include: • monitoring of the site for the presence of introduced and undesirable animal species as part of fauna monitoring; • cooperating with government bodies, interest groups and adjacent landowners in regional pest management programs including the NSW Department of Primary Industries (DPI), the NSW Office of Environment and Heritage (OEH), and the Invasive Animal Cooperative Research Centre interest groups (e.g. Australasian Pest Bird Network and local landowners); • managing the use of nest boxes by undesirable species by removing the eggs and/or young of introduced animals (e.g. Black Rat and Common Myna) under appropriate permit conditions; • removing any insect colonies (bees, wasps, termites, ants found in nest boxes); and • modifying or moving nest boxes to discourage use by undesirable species.	SR	Construction and operation	Without management measures, undesirable species may have a moderate impact on flora and fauna.	Moderate to high level effectiveness.	●	●

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Hazards and risks							
7A	To minimise the risk of leakages involving natural gas, liquid natural gas (LNG) and flammable and combustible liquids to the atmosphere: • appropriate standards for a gas reticulation network, including AS 2944-1 (2007) and AS 2944-2 (2007), would be referred to in the detailed design process; • correct schedule pipes would be used; • a fire protection system would be installed if necessary for gas users; • cathodic protection would be installed for external corrosion if appropriate; and • access to the Project site would be secure.	M	Detailed design, construction and operation	High	High predicted effectiveness.	●	●
7B	To minimise the risks of leakage of LNG and liquid petroleum gas (LPG) and flammable liquids during transport: • materials would be transported according to the Australian Dangerous Goods (ADG) Code, relevant standards and regulations; and • contractors delivering the gas would be trained, competent and certified by the relevant authorities.	M	Detailed design, construction and operation	High	High predicted effectiveness.	●	●
7C	To minimise hazards associated with venting of natural gas, LNG and LPG: • LNG storage would be designed to AS/NZS 1596-2008 standards; • access to the Project site would be secure; and • significant separation distances to residences and other assets would be put in place.	M	Detailed design, construction and operation	High	High predicted effectiveness.	●	●
7D	Storage of flammable/combustible liquids would be carried out in accordance with AS 1940, with secondary containment in place and location away from drainage paths.	M	Detailed design, construction and operation	Moderate	High predicted effectiveness.	●	●
7E	Standby or emergency generators and transformers would all have secondary containment.	M	Detailed design, construction and operation	Moderate	High predicted effectiveness.	●	●
7F	Oil coolers would generally be located in areas where leaks and runoff are appropriately controlled at source or in a retention basin.	M	Detailed design, construction and operation	Moderate	High predicted effectiveness.	●	●
7G	All systems would be designed in accordance with good engineering practice.	M	Detailed design	High	High predicted effectiveness.	●	●
7H	Appropriate testing, alarm systems, and workplace health and safety (WHS) safety precautions would be implemented.	M	Detailed design	Moderate	Moderate predicted effectiveness.	●	●
7I	No hazardous or regulated wastes would be disposed of onsite.	M	Construction and operation	Moderate	High predicted effectiveness.	●	●
7J	All offsite disposals would be carried out by approved transport operators and to approved facilities.	M	Construction and operation	Moderate	Moderate predicted effectiveness.	●	●
7K	Other dangerous goods, including any waste materials present on the Project site, would be suitably contained, with secondary containment and runoff controls implemented where appropriate to prevent leaks or spills migrating to environmentally sensitive areas, in particular via stormwater systems that drain to the Georges River.	M	Construction and operation	Moderate	High predicted effectiveness.	●	●

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Bushfire risks							
7L	The aims and objectives of 'Planning for Bush Fire Protection' (RFS 2006) would be further considered, and the Rural Fire Service (RFS) consulted, during detailed design.	SR	Detailed design	Moderate	Moderate predicted effectiveness.	●	●
7M	A bushfire management plan would be prepared for the Project site to develop the bushfire management measures in detail, in consultation with the RFS. The bushfire management plan would detail the interaction between the Project footprint and biodiversity offset areas. In the event that no vegetation clearing is undertaken, the bushfire risk assessment and bushfire management plan would be updated and appropriate mitigation measures provided in the design of the IMT.	M	Detailed design	High	High predicted effectiveness.	●	●
7N	Internal roads would be designed to enable safe access for emergency services and to allow crews to work with equipment aboard the vehicle, including providing: • two-wheel drive, sealed all weather roads; • internal perimeter road to be at least two lanes wide (8 m kerb to kerb); • a minimum vertical clearance of 4 m; • curves with a minimum inner radius of 6 m; and • roads with capacity to carry fully loaded fire-fighting vehicles (15 tonnes).	M	Detailed design	Moderate	High predicted effectiveness.	●	●
7O	Options would be considered to relocate administration buildings in the south-eastern corner of the Project site to an area further from the bushfire hazard.	SR	Detailed design	Moderate	Moderate predicted effectiveness.	●	N/A
7P	Water supplies for fire-fighting would be easily accessible and located at regular intervals, including: • reticulated water supply using a ring main system for the perimeter road; • fire hydrant spacing, sizing and pressures complying with AS 2419.1–2005; • location of hydrants outside of any road carriageway; and • ensuring all aboveground water pipes external to buildings are metal, including any taps.	M	Detailed design	High	High predicted effectiveness.	●	●
7Q	Electricity services would be located to limit the possibility of ignition of surrounding bushland or the fabric of buildings, including: • where practicable, locating electrical transmission lines underground; • where overhead electrical transmission lines are proposed, lines would be installed with short pole spacing (30 m); and • no part of a tree would be closer to a power line than the distance set out in the specifications of Vegetation Safety Clearances issued by Energy Australia (NS179, April 2002).	M	Detailed design	Moderate	High predicted effectiveness.	●	●
7R	Gas services would be located to avoid ignition of surrounding bushland or the fabric of buildings, including: • ensuring all aboveground gas service pipes external to buildings are metal (including connections); and • ensuring reticulated or bottled gas is installed and maintained in accordance with AS 1596 and the requirements of relevant authorities.	M	Detailed design	Moderate	Moderate predicted effectiveness.	●	●

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7S	A fuel management plan would be developed for the conservation zone and offset areas taking into consideration the ecological values of this area, including the presence of threatened biodiversity.	M	Detailed design	High	High predicted effectiveness.	●	N/A
7T	A landscape management plan would be developed for any landscaped gardens within the Project site.	M	Detailed design	Moderate	High predicted effectiveness.	●	N/A
7U	A fire safety and evacuation plan would be developed that would: • include training requirements for staff on fire prevention and safety; • provide a fire escape plan (designated meeting points and escape routes), and require regular fire drills; • outline provision of a functional fire alarm system; • outline equipment use restrictions during fire bans; and • outline measures for arson prevention, including provision of adequate lighting and security to deter trespassers.	M	Detailed design	High	High predicted effectiveness.	●	●
7V	A more detailed bushfire risk assessment would be undertaken following finalisation of design and layout, in consultation with the NSW RFS.	M	Detailed design	Moderate	High predicted effectiveness.	●	●
Contamination and soils							
8A	Further investigations for the southern rail access would be undertaken including a targeted intrusive investigation to gather data on soils and groundwater quality so that management and/or remediation options can be evaluated.	M	Detailed design	Moderate risk that unidentified contamination in area could impact on construction deliveries, human health.	Medium to high level of effectiveness in identifying potential for contamination to be present on this portion of land.	N/A	●
8B	Before construction, a remediation program would be implemented in accordance with the Moorebank Intermodal Terminal Preliminary Remediation Action Plan (RAP). The program will have been formally reviewed and approved by the Site Auditor under Part 4 of the NSW Contaminated Land Management Act 1997 (CLM Act).	M	Detailed design and Early Works	Regulatory requirement, potential major risk to human health and the environment if remediation of identified contamination is not undertaken.	Medium to high level of effectiveness in mitigating impacts if remediation program is implemented.	●	●
8C	A CEMP would be prepared by the contractor for all excavation and remediation works and would include requirements for decontamination facilities at the Project site.	M	Detailed design and Early Works	Moderate to high risk that remediation works could have detrimental impact on the environment.	High level of effectiveness in preventing environmental incidents as a result of remediation program.	●	●
8D	An unexploded ordnance (UXO) management plan would be developed for the Project site. This plan would detail a framework for addressing the discovery of UXO or explosive ordnance waste (EOW) to ensure a safe environment for all Project staff, visitors and contractors.	M	Early Works	High risk to life and health of site workers if a UXO management plan is not implemented and communicated.	High level of effectiveness if implemented and communicated to site staff.	●	N/A
8E	Before or during remediation works, further investigation works would be undertaken to address identified knowledge gaps. These further investigations are identified in 8F–8I.	M	Detailed design	Moderate risk that areas of contaminated soil or groundwater are not identified or remediated and complete site validation is not achieved.	High level of effectiveness in closing data gaps and achieving site validation.	●	N/A
8F	Further testing of soils would be undertaken to confirm the presence of acid sulfate soils (ASSs). If ASSs are detected, a management plan would be developed in accordance with the ASSMAC Assessment Guidelines (1998), with active ongoing management through the construction phases. Offsite disposal would need to be in accordance with the NSW Waste Classification Guidelines Part 4: Acid Sulfate Soils (2009).	M (testing and disposal requirements) SR (ASS management plan)	Detailed design	Moderate risk of ASS affecting construction works, with environmental impacts resulting in a regulatory breach.	High level of effectiveness if ASS testing is completed and any required management plan is implemented.	●	N/A
8G	Further testing of surface water quality would be undertaken to gather data to inform management of anticipated dewatering or discharges that may be required. Further groundwater monitoring would be undertaken on the main IMT site and would be used to inform the remedial approach for groundwater, if contamination is detected.	M	Detailed design	Moderate risk that areas of contaminated surface water and groundwater are not identified or remediated and complete site validation is not achieved.	High level of effectiveness if testing is completed and results are used to inform the design process.	●	N/A
8H	Further testing of residual sediments would be undertaken to gather data to inform the management of sediments likely to be disturbed/dewatered during construction.	M	Detailed design	Moderate risk that areas of contaminated soil are not identified or remediated and complete site validation is not achieved.	High level of effectiveness if testing is completed and results are used to inform the design process.	●	N/A

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						IMT site	Southern rail access connection
8I	Further testing of groundwater would be undertaken beneath the north-western area of the IMT site (adjacent to the ABB) to inform any additional control, management or remediation measures required.	M	Detailed design	Low to moderate risk of groundwater contamination affecting site end use or offsite receptors.	Medium to high level of effectiveness in confirming groundwater contamination status in areas identified as being potentially contaminated.	●	N/A
8J	Ground penetrating radar (GPR) or similar techniques would be used to locate and document all existing and underground tank infrastructure across the Project site.	M	Detailed design	Moderate risk that underground infrastructure is not identified or remediated and complete site validation is not achieved.	Medium level of effectiveness in identifying underground structures.	●	N/A
8K	A management tracking system for excavated materials would be developed to ensure the proper management of the material movements at the Project site, particularly during excavation works.	M	Detailed design	Regulatory requirement to monitor waste tracking and achieve site validation. Moderate to high risk to environment if soil/waste tracking is not undertaken.	High level of effectiveness.	●	●
8L	Contaminated soil/fill material present will be 'chased out' during the excavation works based on visual, olfactory and preliminary field test results.	M	Early works and construction	Moderate to high risk to construction activities and site validation if contaminated material is not identified.	High to medium effectiveness in confirming extent of identified contamination.	●	●
8M	Excavated soil would be temporarily stockpiled, sampled and analysed for waste classification processes. Following receipt of waste classification results, the material would be transported to a licensed offsite waste disposal facility as soon as practicable to minimise dust and odour issue through storage of materials on site.	M	Early works and construction	High risk of regulatory breach.	High level of effectiveness.	●	●
8N	Stockpiled soils would be stored on a sealed surface and the stockpiled areas would be securely bunded using silt fencing to prevent silt laden surface water from entering or leaving the stockpiles or the Project site.	M	Early works and construction	High risk of impact on environment and regulatory breach.	High level of effectiveness.	●	●
8O	All excavation works would be undertaken by licensed contractors, experienced in remediation projects and the handling of contaminated soils.	M	Early works and construction	High risk to human health if inexperienced contractors are used.	High level of effectiveness.	●	●
8P	All asbestos removal, transport and disposal would be performed in accordance with the Work Health and Safety Regulation 2011 (WHS Regulation).	M	Early works and construction	Moderate to high risk of regulatory breach, high risk to human health.	High level of effectiveness.	●	N/A
8Q	The removal works would be conducted in accordance with the National Occupational Health and Safety Commission Code of Practice for the Safe Removal of Asbestos, 2nd Edition [NOHSC 2002 (2005)] (NOHSC 2005a).	M	Early Works and construction	Moderate to high risk of regulatory breach, high risk to human health.	High level of effectiveness.	●	N/A
8R	An appropriate asbestos removal licence issued by WorkCover NSW would be required for the removal of asbestos contaminated soil.	M	Early Works and construction	Moderate to high risk of regulatory breach, high risk to human health.	High level of effectiveness.	●	N/A
8S	Environmental management and WHS procedures would be put in place for the asbestos removal during excavation to protect workers, surrounding residents and the environment.	M	Early Works and construction	Moderate to high risk of regulatory breach, high risk to human health.	High level of effectiveness.	●	N/A
8T	Temporary stockpiles of asbestos containing material (ACM) soils would be covered to minimise dust and potential asbestos release.	M	Early Works and construction	High risk to human health.	High level of effectiveness.	●	N/A
8U	An asbestos removal clearance certification would be prepared by an occupational hygienist at the completion of the removal work. This would follow the systematic removal of asbestos containing materials and any affected soils from the Project site, and validation of these areas (through visual inspection and laboratory analysis of selected soil samples).	M	Early Works and construction	Moderate to high risk of regulatory breach, high risk to human health.	High level of effectiveness.	●	N/A
8V	Asbestos fibre air monitoring would be undertaken during the removal of ACMs and in conjunction with the visual clearance inspection. The monitoring would be conducted in accordance with the National Occupational Health and Safety Commission Guidance Note on the Membrane Filter Method For the Estimating Airborne Asbestos Fibre, 2nd Edition [NOHSC 3003 (2005)] (NOHSC 2005b).	M	Early Works and construction	Moderate to high risk of regulatory breach, high risk to human health.	High level of effectiveness.	●	N/A

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						IMT site	Southern rail access connection
8W	All stockpiles would be maintained in an orderly and safe condition. Batters would be formed with sloped angles that are appropriate to prevent collapse or sliding of the stockpiled materials.	M	Early Works and construction	High risk to human health.	High level of effectiveness.	●	●
8X	Stockpiles would be placed at approved locations and would be strategically located to mitigate environmental impacts while facilitating material handling requirements. Contaminated or potentially contaminated materials would only be stockpiled in un-remediated areas of the Project site or at locations that did not pose any risk of environmental impairment of the stockpile area or surrounding areas (e.g. hardstand areas).	M	Early works and construction	High risk to environment.	High level of effectiveness.	●	●
8Y	Stockpiles would only be constructed in areas of the Project site that had been prepared in accordance with the requirements of the Project Preliminary RAP in Appendix F of Technical Paper 5 – *Environmental Site Assessment* (Phase 2), Volume 5A and 5B. All such preparatory works would be undertaken before material is placed in the stockpile. Stockpiles must be located on sealed surfaces such as sealed concrete, asphalt, high density polyethylene or a mixture of these, to appropriately mitigate potential cross contamination of underlying soil.	M	Early works and construction	Moderate risk to environment and further contamination of soil.	High level of effectiveness.	●	●
8Z	The stockpiles of contaminated material would be covered with a waterproof membrane (such as polyethylene sheeting) to prevent increased moisture from rainwater infiltration and to reduce wind-blown dust or odour emission.	M	Early works and construction	Moderate risk to the environment.	High level of effectiveness.	●	●
8AA	Before the reuse of any material on site, it would be validated so that the lateral and vertical extent of the contamination is defined.	M	Early Works and construction	Moderate risk of importing or reuse of contaminated soil.	High level of effectiveness.	●	●
8AB	Where required, contaminated materials and wastes generated from the Project remediation and construction works would be taken to suitable licensed offsite disposal facilities.	M	Early Works and construction	High risk to human health and environment if wastes are not disposed of appropriately.	High level of effectiveness.	●	●
Hydrology, groundwater and water quality							
9A	A soil and water management plan would be developed before work begins in the conservation area. This plan would include erosion and sediment control plans (ESCPs) and procedures to manage and minimise potential environmental impacts associated with developing this area.	M	Early Works	Moderate to high risk to the environment.	High level of effectiveness.	●	N/A
9B	Site compounds, stockpiling areas and storage areas for sensitive plant, equipment and hazardous materials would be located above an appropriate design flood level, which would be determined based on the duration of the construction works.	M	Early Works and construction	Moderate to high risk of flooding of sensitive areas containing sensitive plant, equipment and materials during a long construction period.	Selection of an appropriate flood level above which sensitive areas would be located, based on the duration of the construction period, would reduce this flood risk to low.	●	N/A
9C	A flood emergency response and evacuation plan would be implemented for the conservation area works, to allow work sites to be safely evacuated and secured in advance of any flooding on the site. This plan would also include recovery actions to be implemented following a flood and to allow the site works to resume as quickly as possible.	M	Early Works and construction	Moderate to high risk of flooding and associated damage of sensitive disturbed areas, and areas containing sensitive plant, equipment and materials. Moderate to high risk of injury to site operatives due to exposure to flood hazard over a long construction period.	Implementation of a comprehensive flood emergency response plan would reduce the risk of flooding of sensitive areas, and damage to plant and equipment to low. The flood emergency response plan should avoid exposure of site operatives to flood hazards entirely.	●	N/A
Regional flooding							
9D	Implement a flood emergency response and evacuation plan that allows work sites to be safely evacuated and secured in advance of flooding occurring at the Project site.	M	Construction	Moderate to high risk of flooding and associated damage.	High level of effectiveness.	●	●
9E	Implement a staged construction process for the building of the Georges River bridges that minimises temporary obstruction of flow in the main channel and floodplain.	SR	Construction	Moderate to high risk to the environment.	Moderate level of effectiveness.	N/A	●
9F	For the building of the Georges River bridges, design temporary works to resist forces and pressures that could occur during the design flood event	M	Construction	Moderate to high risk of collapse of temporary works if subjected to unforeseen or unallowed for flood loading	Allowing for additional flood loads during extreme events would reduce this risk to low. Note: it would not be possible to fully	N/A	●

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	adopted for the Project construction.			– e.g. working platforms for bridge construction, temporary protection/formwork for bridge piers and abutments.	design out this risk, as there would be a remote possibility of a very extreme event occurring during construction that is not practical or economic to design for.		
9G	For all site works, provide temporary diversion channels around temporary work obstructions to allow low and normal flows to safely bypass the work areas.	M	Construction	Moderate to high risk of flooding of parts of the site during a storm event if temporary diversions are not provided.	Provision of diversions to an appropriate standard of protection would reduce this risk to low (see also note in brackets above).	●	●
9H	The potential effects of various flood events on construction phase works would be further investigated during detailed design and preparation of the Stage 2 SSD approval(s).	M (investigation) SR (additional mitigation)	Detailed design	Moderate to high risk to the environment. Additional controls may be required to address moderate to high flood risks during construction.		●	●
9I	The design of the Georges River bridges would ensure structural stability under an appropriate upper limiting flood event, typically the 1 in 2000 year AEP event or other event of similar magnitude.	M	Detailed design	Moderate to high risk of structural damage to bridge due to flood loading if an appropriate design standard is not adopted.	Reduction of this risk to low or within acceptable limits as defined by structural design codes and standards.	N/A	●
9J	A detailed scour assessment of the structure would be undertaken and a scour protection scheme for the bridge abutments and piers would be designed to ensure structural stability and to avoid erosion of the channel and floodplain bed local to the structure.	M	Detailed design	Moderate to high risk of structural damage to bridge due to flood scour if an appropriate design standard is not adopted.	Reduction of this risk to low or within acceptable limits as defined by structural and scour design codes and standards.	N/A	●
9K	Further design optimisation of the bridge would consider reducing the afflux impacts as far as possible. The bridge piers would be designed to minimise obstruction to flow and associated afflux under potential blockage and/or debris build-up scenarios.	SR	Detailed design	Low to moderate risk of unacceptable afflux impacts due to the new bridge.	Further reduction of this risk to low following design optimisation (see also note in brackets above for item 9D).	N/A	●
9L	Further hydraulic modelling would be undertaken to quantify the impact of climate change on afflux caused by the bridge and on hydraulic loading on the bridge structure.	M	Detailed design	Low to moderate risk of unacceptable afflux impacts due to the new bridge. Unacceptable structural stability risks to bridge under extreme flood event loading with climate change.	Further reduction of this risk to low following design checks to assess climate change impacts (see also note in brackets above for item 9D).	N/A	●
Onsite stormwater and surface water quality							
9N	The following staging process is proposed to be implemented when constructing surface water drainage infrastructure: • Biofiltration and detention basins that form part of the proposed stormwater management strategy would be excavated at the outset of Phase A, with the intention that the excavated basins would be used as temporary construction phase sedimentation basins. Once these construction phases become operational, these temporary construction phase sedimentation basins could be developed into the permanent biofiltration and detention basins. • During Phase A, all major stormwater pipes and culverts (600 mm diameter and larger) and main channels and outlets would be installed. Minor drainage and upstream systems would then be progressively connected to the major drainage elements during each phase of construction as required.	M	Construction	Moderate to high risk of areas of the site flooding and consequent erosion of disturbed areas and sedimentation of local watercourses.	Early construction of basins and main channels and pipes in the recommended sequence will reduce erosion and sedimentation risks to low.	●	N/A
9O	A soil and water management plan would be developed before land was disturbed that would include erosion and sediment control plans (ESCPs) and procedures to manage and minimise potential environmental impacts associated with construction of the Project. The ESCP(s) for the Project would be prepared in accordance with Volume 1 of Managing Urban Stormwater: Soils and Construction ('the Blue Book') (Landcom 2004), Managing Urban Stormwater: Soils and Construction – Installation of Services, Volume 2A (OEH 2008) and Managing Urban Stormwater: Soils and Construction – Main Road Construction, Volume 2D (OEH 2008). The ESCP(s) would be established	M	Construction	Major risk of erosion of disturbed areas and contamination of local drainage systems and watercourses with sediment and other disturbed site contaminants if a soil and water management plan is not implemented for the Project.	Implementation of these measures would eliminate this risk under extreme events, up to a reasonable limit as accepted in the guidelines, and would reduce this risk to low under very extreme scenarios that cannot be designed for.	●	●

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						IMT site	Southern rail access connection
	before the start of each construction phase and would be updated as relevant to the changing construction activities. Strategies proposed as part of the plan include: • clean runoff from upstream undisturbed areas would be diverted around the Project site to minimise overland flow through the disturbed areas; • stabilised surfaces would be reinstated as quickly as practicable after construction; • all stockpiled materials would be stored in bunded areas and away from waterways to avoid sediment-laden runoff entering the waterways; • sediment would be prevented from moving offsite and sediment-laden water prevented from entering any watercourse, drainage line or drainage inlet; • erosion and sediment control measures would be regularly inspected (particularly following rainfall events) to monitor their effectiveness and stability; • erosion and sediment control measures would be left in place until the works are complete or areas are stabilised; • temporary erosion control and energy dissipation measures would be installed to protect receiving environments from erosion; and • vehicle movements would be managed during rainfall (or while the ground remains sodden) to minimise disturbance to the topsoil.						
9P	Procedures to maintain acceptable water quality and to manage chemicals and hazardous materials (including spill management procedures, use of spill kits and procedures for refuelling and maintaining construction vehicles/equipment) would be implemented during construction.	M	Construction	Major risk of contamination of watercourses if hazardous materials are not protected using industry standard spill management procedures.	This risk can be eliminated using appropriate handling and storage procedures and guidelines.	●	●
9Q	Vehicles and machinery would be properly maintained to minimise the risk of fuel/oil leaks.	M	Construction	Moderate to high risk of contamination of watercourses if fuel/oil leaks are not contained using industry standard management procedures.	This risk can be eliminated using appropriate maintenance and spill containment procedures and guidelines.	●	●
9R	Routine inspections of all construction vehicles and equipment would be undertaken for evidence of fuel/oil leaks.	M	Construction	Refer to 9Q above.	Refer to 9Q above.	●	●
9S	All fuels, chemicals and hazardous liquids would be stored within an impervious bunded area in accordance with AS and EPA guidelines.	M	Construction	Refer to 9Q above.	Refer to 9Q above.	●	●
9T	Emergency spill kits would be kept onsite at all times. All staff would be made aware of the location of the spill kits and trained in their use.	M	Construction	Refer to 9Q above.	Refer to 9Q above.	●	●
9U	Construction plant, vehicles and equipment would be refuelled offsite, or in designated re-fuelling areas located at least 50 metres from drainage lines or waterways.	M	Construction	Refer to 9Q above.	Refer to 9Q above.	●	●
9V	If landfill cells at the Glenfield Landfill are to be affected, then site-specific erosion and sediment control measures would be developed and implemented to ensure pollutants do not enter the Georges River.	SR	Detailed design	High risk to the environment if adequate controls are not put in place.	Risk can be managed to a low level if mitigation is appropriate.	N/A	●
9W	A stormwater management plan would be developed in accordance with the detailed design. This includes the requirement to control the rate of stormwater runoff so that it does not exceed the pre-developed rate of runoff.	M	Detailed design	Moderate to high risk of areas of the site and/or neighbouring land and property being subject to worse than existing case flooding.	Implementation of a stormwater management plan will eliminate this risk.	●	●
9X	The stormwater system would be designed such that flow from low order events (up to and including the 10% AEP event from the main part of the site, and up to and including the 2% AEP event for the rail access	M	Detailed design	Major risk of uncontrolled flooding exposing site users to unacceptable flood hazards and risks if these standard	Designing to these standards will ensure flooding can be managed and will occur in a controlled way in line with current design	●	N/A

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						IMT site	Southern rail access connection
	connection corridor) would be conveyed within the formal drainage systems. Flows from rarer events (up to the 1% AEP event) would be conveyed in controlled overland flow paths.			design guidelines are not adopted.	guidelines.		
9Y	The onsite detention system proposed would detain flow and control discharge rates to the Georges River equal to pre-development discharge rates.	M	Detailed design	Refer to 9R above.	Refer to 9W above.	●	N/A
9Z	A stormwater treatment system would be implemented, incorporating sedimentation and bio-filtration basins upstream of the stormwater detention basins.	M	Detailed design, construction, operation	Major risk of contamination of downstream drainage systems and watercourses if standard Water Sensitive Urban Design (WSUD) measures are not adopted to treat stormwater runoff from the site.	Adopting industry standard and good practice WSUD measures will eliminate this risk.	●	N/A
9AA	Use of onsite infiltration would be incorporated into the design through the distribution of swale drains and rain gardens across the Project site.	M	Detailed design	Refer to 9Z above.	Refer to 9Z above.	●	N/A
9AB	A number of other stormwater management opportunities would be considered during development of the detailed design in accordance with Liverpool City Council (LCC)'s Development Control Plan Part 2.4 Development in Moorebank Defence Lands and other relevant policies, including: • polishing water runoff using dry creek gravel beds with macrophyte plants; • using drainage swales to slow down stormwater runoff and increase onsite infiltration; • collecting roof rainwater for re-use onsite; • installing gross pollutant traps (GPTs) at the outlets of the pipe system before discharge into the sedimentation basins; and • incorporating impervious surfaces and vegetated areas into the design to increase sub-surface water flow during rain events and to reduce the discharge of stormwater pollutants.	SR	Detailed design	No major implication if not adopted.	These can be considered 'value added' measures to further improve the management of stormwater across the site above and beyond industry standards.	●	N/A
Groundwater							
9AC	Concrete structures and other subsurface infrastructure in areas that may potentially interact with local groundwater would be constructed from sulfate resistant cement and materials.	M	Detailed design and construction	High to major risk of structural damage or failure of sub-surface structures and contamination of local groundwater system.	Adopting the recommended design would eliminate this risk or reduce it to low and within acceptable levels.	●	N/A
9AD	Where required, water access entitlements such as groundwater licences would be obtained for dewatering activities, in accordance with the requirements of NSW Office of Water's proposed Aquifer Interference Policy.	M	Pre-construction	Major risk of non-compliant project and construction being halted if the required licences are not in place.	Risk would be eliminated by obtaining the required licences before construction.	●	N/A
9AE	Groundwater quality would be tested to determine salinity levels and inform potential design measures to ensure the design life of any infrastructure is achieved.	M	Detailed design	Refer to 9AC above.	Refer to 9AC above.	●	N/A
9AF	Suitable groundwater monitoring would be established and undertaken before construction, during construction and during the operational life of the Project.	M	Pre-construction, construction and operation	Moderate to high risk of non-compliance with groundwater licencing and removal of construction/operation licence if monitoring data is not collected to demonstrate compliance.	This risk would be eliminated by establishing a monitoring program.	●	N/A
9AG	To prevent the contamination of groundwater during Project construction and operation, suitable water treatment, water retention, water proofing and ground treatments would be investigated and implemented where required.	SR	Detailed design, construction and operation	Low to moderate risk of contamination of groundwater system if required management measures are not adopted.	This risk would be eliminated through adoption of appropriate industry standard management measures.	●	N/A

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9AH	Potential impacts on two existing groundwater bores in the vicinity of the proposal would be further investigated during detailed design. Mitigation measures to minimise these impacts would also be developed as required.	SR	Detailed design	Low to moderate risk of groundwater drawdown due to the Project reducing the yield of the existing bores.	The risk may be possible to reduce further or eliminate through appropriate design and staging of construction to minimise dewatering requirements during operation and construction phases.	●	N/A
9AI	The following groundwater assessments would be carried out: • an overall assessment of pre-construction groundwater quality and levels; • characterisation of local and regional groundwater flow systems, including the groundwater contours and flow conditions; • consideration of potential groundwater supply options, if required; • assessment of impacts on groundwater levels and quality during construction and ongoing operation; • confirmation of management and mitigation solutions for potential groundwater impacts; and • assessment of the potential salinity impacts that may result from the Project.	M	Detailed design	Moderate to high risk of unacceptable groundwater impacts occurring if these assessments are not undertaken.	Reduction of risk to low or elimination of some risks is possible if these assessments are undertaken to improve the understanding of the vulnerability of the groundwater environment.	●	N/A
Air quality – Construction							
10A	A Dust Management Plan (DMP) would be prepared as part of the CEMP.	M	Early Works and construction	Moderate risk that air quality emissions from the Project would not be managed effectively.	Medium level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
10B	Dust minimisation measures would be developed and implemented before commencement of construction. The NSW Coal Mining Benchmarking Study: Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining (OEH 2011) would be referenced for best practice measures for dust management.	M	Early Works and construction	Moderate risk that air quality emissions from the Project would not be managed effectively.	Medium level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
10C	Methods for management of emissions would be incorporated into Project inductions, training and pre-start talks.	M	Early Works and construction	Moderate risk that air quality emissions from the Project would not be managed effectively.	Medium level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
10D	Activities with the potential to cause significant emissions, such as material delivery and load out and bulk earthworks, would be identified in the CEMP. Work practices that minimise emissions during these activities would be investigated and applied where reasonable and feasible.	M	Early Works and construction	Moderate risk that air quality emissions from the Project would not be managed effectively.	Medium level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
10E	A mechanism for raising and responding to complaints would be put in place for the duration of the construction phase.	M	Early Works and construction	High risk that community impacts would not be effectively mitigated.	Medium level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
10F	Vehicle movements would be limited to designated entries and exits, haulage routes and parking areas. Project site exits would be fitted with hardstand material, rumble grids or other appropriate measures to limit the amount of material transported offsite (where required).	M	Early Works and construction	Moderate risk that air quality emissions from the Project would not be managed effectively.	Medium level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
10G	Work site compounds and exposed areas would be screened to assist in capturing airborne particles and reduce potential entrainment of particles from areas susceptible to wind erosion.	M	Early Works and construction	Moderate risk that air quality emissions from the Project would not be managed effectively.	Medium level of effectiveness in mitigating risk (proven measure on similar projects). Emission reduction of 30% applied.	●	●
10H	Dust would be visually monitored during construction and the following measures would be implemented: Apply water (or alternative measures) to exposed surfaces that are causing dust generation. Surfaces may include any stockpiles, hardstand areas and other exposed surfaces (for example recently graded areas). Regular watering would ensure that the soil is moist to achieve 50%	M	Early Works and construction	Moderate risk that air quality emissions from the Project would not be managed effectively.	Medium level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●

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	control of dust emissions from scrapers, graders and dozers. Appropriately cover loads on trucks transporting material to and from the construction site. Securely fix tailgates of road transport trucks before loading and immediately after unloading. Prevent, where possible, or remove, mud and dirt being tracked onto sealed road. Apply water at a rate of >2 litres (L) per square metre per hour (L/m2/hr) to internal unsealed access roadways and work areas. Application rates would be related to atmospheric conditions (e.g. prolonged dry periods) and the intensity of construction operations. Paved roads should be regularly swept and watered when necessary.						
10I	Dust generating activities (particularly clearing and excavating) would be avoided or minimised during dry and windy conditions.	M	Early Works and construction	High risk that air quality emissions from the Project would not be managed effectively.	High level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
10J	Project site speed limits of 20 km/h would be imposed on all construction vehicles at the Project site.	M	Early Works and construction	Moderate risk that air quality emissions from the Project would not be managed effectively.	Medium level of effectiveness in mitigating risk (proven measure on similar projects). Emission reduction associated with reduced travel speed.	●	●
10K	Graders would be limited to a speed of 8 km/h to reduce potential dust emissions.	M	Early Works and construction	Moderate risk that air quality emissions from the Project would not be managed effectively.	Medium level of effectiveness in mitigating risk (proven measure on similar projects). Emission reduction associated with reduced travel speed.	●	●
10L	Material stockpiles would not exceed an area of 1 ha and would be regularly watered to achieve 50% control of potential dust emissions.	M	Early Works and construction	Moderate risk that air quality emissions from the Project would not be managed effectively.	High level of effectiveness in mitigating risk (proven measure on similar projects). Emission reduction of 50% applied.	●	●
10M	Exposed areas and stockpiles would be limited in area and duration. For example, vegetation stripping or grading would be staged where possible, unconsolidated stockpiles would be covered, or hydro mulch or other revegetation applicant applied to stockpiles or surfaces left standing for extended periods.	M	Early Works and construction	High risk that air quality emissions from the Project would not be managed effectively.	High level of effectiveness in mitigating risk (proven measure on similar projects). Emissions estimated based on size of exposed areas.	●	●
10N	Revegetation or rehabilitation activities would proceed once construction activities were completed within a disturbed area.	M	Early Works and construction	High risk that air quality emissions from the Project would not be managed effectively.	High level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
10O	Construction plant and equipment would be well maintained and regularly serviced so that vehicular emissions remain within relevant air quality guidelines and standards.	M	Early Works and construction	Moderate risk that air quality emissions from the Project would not be managed effectively.	High level of effectiveness in mitigating risk (proven measure on similar projects). Emissions based on maintaining engine standards.	●	●
10P	Excavation works in potentially contaminated soils should be managed to ensure that they are completed during optimal dispersive conditions to minimise odorous emissions.	M	Early Works and construction	Low risk that air quality emissions from the Project would not be managed effectively.	Medium level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
10Q	Emissions from trucks would be regulated in accordance with the requirements prescribed in the National Environmental Protection Measure (NEPM) (Diesel Vehicle Emissions) (NEPC 2001).	M	Early Works and construction	Moderate risk that air quality emissions from the Project would not be managed effectively.	High level of effectiveness in mitigating risk (proven measure on similar projects). Emissions based on maintaining engine standards.	●	●
10R	All construction vehicles would be tuned to avoid releasing excessive smoke from the exhaust and would be compliant with OEH Smokey Vehicles Program under the Protection of the Environment and Operations Act 1997 (NSW)(POEO Act) and POEO Regulations (NSW) (2010).	M	Early Works and construction	Moderate risk that air quality emissions from the Project would not be managed effectively.	Medium level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●

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						IMT site	Southern rail access connection
10S	All on-road trucks are to comply with the Euro V emission standards.	M	Early Works and construction	Moderate risk that air quality emissions from the Project would not be managed effectively.	High level of effectiveness in mitigating risk (proven measure on similar projects). Emissions based on maintaining engine standards.	●	●
10T	All new off-road construction equipment would be required to meet, at minimum, the US Environmental Protection Agency (EPA) Tier 3 emission standards for non-road diesel engines.	M	Early Works and construction	Moderate risk that air quality emissions from the Project would not be managed effectively.	High level of effectiveness in mitigating risk (proven measure on similar projects). Emissions based on maintaining engine standards.	●	●
10U	Establishment of Action Response Levels (ARLs) for use with real-time dust management. These aid in the assessment of impact potential, and establish an early warning system during adverse trends, reducing complaint potential and non-compliance issues. An ARL trigger would be a defined measurement of elevated dust levels for a prolonged period.	M	Early Works and construction	Moderate risk that air quality emissions from the Project would not be managed effectively.	High level of effectiveness in mitigating risk (proven measure on similar projects). Emissions based on maintaining engine standards.	●	●
Air Quality – Operation							
10V	An air quality management plan (AQMP) would be prepared for the operation of the Project.	M	Pre-operation	Moderate risk that air quality emissions from the Project would not be managed effectively.	Medium level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/ appropriate to quantify.	●	●
10W	Manage Project site traffic to ensure trucks do not queue along public roads adjacent to the Project site. This can be achieved through the implementation and enforcement of an idling limit for trucks on site and at a designated troubled truck parking area (e.g.1 hour).	M	Operation	Moderate risk that air quality emissions from the Project would not be managed effectively.	Medium level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/ appropriate to quantify.	●	N/A
10X	Investigate the possibility of reducing locomotives' idling times on site.	SR	Pre-operation	Low risk that air quality emissions from the Project would not be managed effectively.	Potential for emission reductions from locomotives should reduce idling time be applied. Not possible/appropriate to quantify.	●	N/A
10Y	Optimise the use of trucks capable of transporting multiple TEU containers simultaneously to achieve maximum efficiency onsite and reduce air emissions.	M	Operation	Moderate risk that air quality emissions from the Project would not be managed effectively.	High level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	N/A
10Z	Emissions from any exhaust stacks would be regulated in accordance with the provisions of the NSW Protection of the Environment and Operations Act 1997 (POEO Act).	M	Operation	Statutory requirement. High risk that regulatory requirements would not be met.	High level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	N/A
10AA	Periodic stack monitoring would be undertaken to demonstrate compliance with in-stack limits.	M	Operation	Statutory requirement. High risk that regulatory requirements would not be met.	High level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	N/A
10AB	Vehicles would be tuned to not release excessive levels of smoke from the exhaust and to be compliant with OEH's Smokey Vehicles Program under the POEO Act and POEO Regulations.	M	Operation	Moderate risk that air quality emissions from the Project would not be managed effectively.	Medium level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	N/A
10AC	A documented testing program by relevant enforcement agencies would be implemented at regular intervals.	M	Operation	High risk that regulatory requirements would not be met.	High level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	N/A
10AD	A regular and documented maintenance and inspection program would be implemented for all equipment that enters the Project site.	M	Operation	High risk that regulatory requirements would not be met.	High level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	N/A
10AE	On site good housekeeping and raw material handling practices would be controlled through agreed protocols.	M	Operation	Moderate risk that air quality emissions from the Project would not be managed effectively.	Medium level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	N/A

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						IMT site	Southern rail access connection
10AF	Emissions from trucks would be regulated by the NEPM (Diesel Vehicle Emissions) (NEPC 2001).	M	Operation	High risk that regulatory requirements would not be met.	High level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	N/A
10AG	Emissions from locomotives would follow international standards, such as those provided for under United States legislation 'Final Rule: Control of Emissions of Air Pollution from Locomotives and Marine Compression-Ignition Engines Less Than 30 Litres per Cylinder' (US EPA 2012) and should meet the Tier 2+ or above emission standard for all new locomotives entering the Project site. (No emission standards are available under the NSW or Federal legislative framework for locomotives.)	SR	Operation	Moderate risk that air quality emissions from the Project would not be managed effectively.	High level of effectiveness in mitigating risk (proven measure on similar projects). Emissions based on maintaining engine standards.	●	●
10AH	Emissions from shunting engines would follow international standards, such as those provided for under United States legislation 'Final Rule: Control of Emissions of Air Pollution from Locomotives and Marine Compression-Ignition Engines Less Than 30 Litres per Cylinder' (US EPA 2012) and should meet the Tier 2+ or above emission standard. Older locomotives should upgraded to meet Tier 1 or Tier 2+ emission standards where reasonable and feasible. (No emission standards are available under the NSW or Federal legislative framework for shunting engines).	SR	Operation	Moderate risk that air quality emissions from the Project would not be managed effectively.	High level of effectiveness in mitigating risk (proven measure on similar projects). Emissions based on maintaining engine standards.	●	●
Cleaner fuel technology							
10AI	During detailed design the following measures would be further investigated: • electrically powered refrigerated on site containers; • use of hybrid only cars (electric/liquefied natural gas (LNG)/compressed natural gas (CNG), liquefied petroleum gas (LPG)) onsite; • requirement that older diesel trucks be installed with the latest emission reduction technology (e.g. retrofitting of particle filters, installation of catalytic convertors or replacement with newer, less polluting diesel engines to ensure emissions requirements conform to the Australian Design Rule ADR80/03); • requiring all on-road trucks to comply with the Euro V emission standards; • all new off-road construction equipment to meet, at minimum, the US EPA Tier 3 emission standards for non-road diesel engines (US EPA Tier 4 emission standard equipment should be adopted where available); • use of hybrid locomotives or cleaner fuels for locomotives (e.g. locomotives powered by batteries with a small diesel engine for recharging the batteries and for additional power (as currently used on the Burlington Northern Santa Fe railway, California, USA)); and • use of fuel cells, LNG and electric powered locomotives.	SR	Detailed design	Moderate risk that additional improvements to the reduction of air quality emissions would not be achieved.	Effectiveness would depend on the type of measures implemented. Not possible/appropriate to quantify.	●	●
Strategic planning and management							
10AJ	The following proposals would be considered as part of an effective and integrated strategic management plan: • investigation of the feasibility of increasing the proportion of container traffic that moves by rail; • implementation of terminal appointment systems and appropriate time slots for Project site access for truck and rail deliveries to avoid unnecessary onsite air emissions during peak periods;	SR	Detailed design	Moderate risk that air quality emissions from the Project would not be managed effectively.	Effectiveness will depend on the type of measures implemented. Not possible/appropriate to quantify.	●	●

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<tr><td></td><td>• minimisation of the potential for fluctuating demand forecasts for equipment among carriers, railways and the terminal through effective communication;
• utilisation of the latest information technologies such as Intelligent Transportation Systems (ITS) applied to transportation operations which can result in improved transportation efficiency and a reduced environmental impact; and
• use of a virtual container yard to assist with incorporating onsite operational efficiencies to ensure air emissions are minimised.</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="8">Miscellaneous emissions</td></tr>
<tr><td>10AK</td><td>The following measures would be further investigated at detailed design stage:
• All chemicals and fuels would be stored in sealed containers as per appropriate regulations and guidelines.
• The onsite storage of fuel would be kept to a minimum to minimise vapour emission levels.
• Unloading of fuels (diesel or liquefied natural gas) would be vented via return hoses that recirculate vapours from delivery to receiver.
• Tanks would be fitted with a conservation vent (to prevent air inflow and vapour escape until a pre-set vacuum or pressure develops).
• Strategies would be put in place to reduce the usage of chemical and fuels in addition to using alternative fuel technologies as recommended in the NSW Action for Air (DECCW 2009). Particular focus would be on those products with the potential to release high levels of air toxics.</td><td>SR</td><td>Detailed design</td><td>Low risk that emissions from the Project would not be managed effectively.</td><td>High level of effectiveness in mitigating risk (proven measure on similar projects).
Not possible/appropriate to quantify.</td><td>●</td><td>N/A</td></tr>
<tr><td colspan="8">Odour</td></tr>
<tr><td>10AL</td><td>Odour emissions would be controlled through the implementation of best management practice (BMP). The following mitigation measures and safeguards are recommended for the operational works:
• providing covering for inlet works;
• extraction of inlet works foul air gases to a soil bed filter for treatment; and
• contingencies in place for potential loss of aeration (backup generator for power supply and storage of lime for dosing to the process units in the event that anaerobic conditions occur).</td><td>M (implementation of BMP)
SR (measures and safeguards)</td><td>Detailed design and operation</td><td>Moderate risk that emissions from the Project would not be managed effectively.</td><td>Effectiveness will depend on the type of measures implemented.
Not possible/appropriate to quantify.</td><td>●</td><td>●</td></tr>
<tr><td colspan="8">Future monitoring</td></tr>
<tr><td>10AM</td><td>It is also proposed that ambient air quality monitoring be undertaken as part of the Project's construction phase right through to operation. This would include:
• onsite monthly dust deposition monitoring during construction to measure dust fallout from the Project at boundary points and selected sensitive receiver locations. This would include comparison of concentrations with the air quality criteria;
• continuation of the existing Project monitoring (that records continuous measurements of NOx, PM_{10} and weather data) after operations commence to ensure that the ambient air quality criteria are met. The existing station may need relocation based on site construction works and regulator recommendations; and
• review of the existing onsite meteorological monitoring station location to ensure compliance with relevant Australian Standard</td><td>M</td><td>Construction and operation</td><td>High risk that community and regulatory expectations would not be managed effectively.</td><td>High level of effectiveness in mitigating risk (proven measure on similar projects).
Not possible/appropriate to quantify.</td><td>●</td><td>●</td></tr>
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						IMT site	Southern rail access connection
	documentation.						
Greenhouse gases (GHG)							
11A	Where possible, establish and maintain areas of native flora and vegetation either within the Project site or at alternative suitable locations to generate significant carbon sequestration benefits.	M	Early Works, construction and operation	High risk of GHG emissions not being effectively managed	High level of effectiveness in mitigating risk. Not possible/appropriate to quantify.	●	N/A
11B	Where possible, implement the use of biofuels (e.g. biodiesel, ethanol, or blends such as E10 and B880) to reduce GHG emissions from plant and equipment.	SR	Early Works, construction and operation	High risk of an increase in GHG emissions.	High level of effectiveness in mitigating risk. Not possible/appropriate to quantify.	●	N/A
11C	Consider the use of vehicles with minimum GHG emissions ratings of 7.5 for passenger vehicles and 6 for light commercial vehicles, as described in the Green Vehicle Guide (http://www.greenvehicleguide.gov.au/GVGPublicUI/home.aspx).	SR	Early Works, construction and operation	As per measure 11A.	High level of effectiveness in mitigating risk. Not possible/appropriate to quantify.	●	N/A
11D	Energy-efficient guidelines for operational work, such as minimal idling time for machinery or complete shut off, would be considered and implemented where appropriate.	SR	Operation	High risk of GHG emissions not being effectively managed.	High level of effectiveness in mitigating risk. Not possible/appropriate to quantify.	●	N/A
11E	Establish an Environmental Management System (EMS) that involves regular monitoring, auditing and reporting on energy, resource use and GHG emissions from all relevant activities; include energy audits with a view to progressively improving energy efficiency and investigation of renewable energy sources (e.g. onsite solar generation), where feasible.	M	Operation	As per measure 11A.	High level of effectiveness in mitigating risk. Not possible/appropriate to quantify.	●	●
11F	Investigate methods to reduce losses from industrial processes (refrigerants and SF6).	M	Operation	As per measure 11A.	High level of effectiveness in mitigating risk. Not possible/appropriate to quantify.	●	N/A
11G	Investigate and, where possible, implement key performance indicators (KPIs) for plant efficiency and GHG intensity.	M	Operation	As per measure 11A.	High level of effectiveness in mitigating risk. Not possible/appropriate to quantify.	●	N/A
11H	Consider and implement, where possible, the mitigation options for further reducing energy and GHG emissions detailed in Table 9.4 in Chapter 9 – *Project sustainability.*	SR	Detailed design, construction and operation	As per measure 11A.	High level of effectiveness in mitigating risk. Not possible/appropriate to quantify.	●	●
Aboriginal heritage							
12A	Where practicable, options would be explored to conserve moderate to high significance sites in situ.	SR	Detailed design and Early Works	High risk that the Project would destroy parts or all of moderate to high significance sites.	High level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
12B	An Aboriginal heritage interpretation strategy for the Project would be developed in close consultation with the registered Aboriginal parties. The strategy may consider combining both European and Aboriginal interpretation within the Project site.	M	Detailed design and Early Works	High risk that the Project would impact area of intangible values.	Moderate level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
12E	For the rail access, a combined geotechnical and archaeological assessment should be undertaken to assess the nature of any deposit and the need for further archaeological investigation and/or salvage.	M	Detailed design	Moderate risk that the Project would impact unknown sites.	High level of effectiveness in mitigating risk (proven measure on similar projects).	N/A	●
12F	Options for managing impacts at sites MA6 and MA7 would be explored during the detailed design phase in consultation with registered Aboriginal parties (RAP). If the scars are considered to be of Aboriginal origin, possible management options include: • Conservation of the tree(s) in situ. This would involve designing the project to ensure that the tree(s) would not be impacted. • Salvage and conservation of the tree(s), or the scarred portion of the tree's trunk, at a location outside the project area.	SR	Detailed design and Early Works	Critical risk that the Project would destroy parts of or all of these sites	Avoidance has a high level of effectiveness in mitigating risk (proven measure on similar projects). Further investigations would have a moderate level of effectiveness of mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	N/A

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	In the event there is not a consensus of views among all of the RAPs, it is recommended that a precautionary approach be taken. This would involve acting upon statements of the tree(s) holding cultural value, even if only a minority of RAPs view either or both trees as holding cultural value.						
12G	An archaeological salvage excavation program would be implemented to preserve archaeological deposits of moderate to high archaeological/scientific significance located within the construction footprint (items recorded at MA5 and MA9). Consideration would be given to conserving both sites in situ, within open space reserves, or as an extension of the proposed conservation zone.	M (salvage program) SR (details of conservation)	Detailed design and Early Works	Critical risk that the Project would destroy parts or all of these sites.	The salvage program would have a moderate level of effectiveness in mitigating risk (proven measure on similar projects). Conservation will have a high level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	N/A
12H	A surface salvage program would be carried out to conserve surface artefacts located within the construction footprint (items recorded at MA1, MA2, MA3 and MA4). Salvage of surface artefacts would be undertaken before any impacts in these areas.	M	Detailed design and Early Works	Critical risk that the Project would destroy parts or all of these sites.	The salvage program will have a moderate level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	N/A
12I	The Unanticipated Discoveries Protocol described in Appendix 10 of Technical Paper 10 – *Aboriginal Heritage Impact Assessment* in Volume 7 of the EIS, would be followed in the event that historical items or relics or suspected burials are encountered during construction works.	M	Construction	Moderate risk that the Project would affect unknown sites.	Moderate level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
12J	Consultation would be ongoing with the registered Aboriginal parties throughout the life of the Project and would include: • consultation on the future care and management of recovered Aboriginal objects; • methodologies for any future investigations; and • finalisation of management and mitigation strategies subject to detailed design.	M	Construction and operation	High risk that the Project would not comply with consultation guidelines and that the views and wishes of RAPs would not to be taken into consideration in future stages.	High level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
European heritage							
13A	Road names within the School of Military Engineering (SME) would be retained through their transfer to roads created at the new SME complex.	SR	Detailed design	High risk that the Project would affect areas of intangible values.	Moderate level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	N/A
13B	Continued commemoration of significant events and individuals would be considered through the naming of buildings, streets and the rail bridge proposed for construction as part of the Project.	SR	Detailed design	High risk that the Project would affect areas of intangible values.	Moderate level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
13C	Where practicable options exist for avoiding impacts on one or more identified heritage items, preference would be given to conserving items of Commonwealth or State significance.	M	Detailed design	High risk that the Project would destroy parts of or all items of Commonwealth or State significance.	High level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
13D	Where avoidance of impacts on a heritage item is not practicable, mitigation works inclusive of archival recordings, salvage of archaeological deposits, relocation of significant elements of the built environment and/or adaptive reuse would be undertaken.	M	Early Works	Critical risk that the Project would destroy parts or all of these sites.	Moderate level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
13E	A European heritage interpretation strategy would be developed in close consultation with local historical societies, former and current staff and military personnel. Consider combining the European heritage interpretation strategy could consider combining both European and Aboriginal interpretation within the Project site.	M	Early Works	High risk that the Project would affect areas of intangible values.	Moderate level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●

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13G	No impacts would occur within the potential archaeological deposits (PAD) boundaries of Moorebank Historical Potential Archaeological Deposit (MHPAD) 1 and MHPAD2 without prior archaeological salvage, as these sites contain archaeological deposits, inclusive of in-situ building remains, that are assessed to be of local significance in the context of the history of military housing and training at Moorebank.	M	Early Works	Critical risk that the Project would destroy parts or all of these sites.	Moderate level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	N/A
13H	In addition to archival recording of the Transport Compound Workshop (B99), consideration would be given during the detailed design stage to the in-situ conservation or adaptive reuse of this structure within the Project site. This would assist with mitigation of heritage impacts on the structure itself and the Moorebank Cultural Landscape as a whole.	SR	Early Works	Critical risk that the Project would destroy parts or all of these sites.	Conservation will have a High level of effectiveness in mitigating risk (proven measure on similar projects). Adaptive reuse will have a moderate level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	N/A
13I	In addition to archival recording, the Dog Cemetery (MH1) would be repositioned and the individual graves reinterred. This would be carried out in accordance with the wishes of the SME's Explosive Detection Dogs unit and respecting the social value of the site.	SR	Early Works	Critical risk that the Project would destroy parts or all of these sites.	Moderate level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	N/A
13J	In addition to archival recording, consideration would be given during detailed design to the in-situ conservation of the Commemorative Garden (MH6). If in situ conservation is not possible, the plaques and planting should be relocated to an alternative location on public display within the Project.	SR	Early Works	Critical risk that the Project would destroy parts or all of these sites.	Conservation will have a high level of effectiveness in mitigating risk (proven measure on similar projects). Relocation will have a moderate level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	N/A
13L	For the southern rail access, heritage item Railway viaduct, Main Southern Railway Line (Item 12) should be noted on all plans and maps during construction and all care taken to avoid this item.	SR	Detailed design and construction	Critical risk that the Project would destroy parts or all of these sites.	Highly effective in mitigating risk.	N/A	●
13M	The Unanticipated Discoveries Protocol (detailed in Appendix 7 of Technical Paper 11 – *European Heritage Impact Assessment* in Volume 8) would be followed in the event that historical items or relics or suspected burials are encountered during excavation works.	M	Early Works and construction	Moderate risk that the Project would affect unknown sites.	Moderate level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
13N	The Unanticipated Discoveries Protocol (detailed in Appendix 7 of Technical Paper 11 – *European Heritage Impact Assessment* in Volume 8) would be followed in the event that historical maritime items or relics are encountered during bridge works within the Georges River.	M	Early Works and construction	Moderate risk that the Project would affect unknown sites.	Moderate level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	N/A	●
13O	Further consideration would be given to options for the retention and/or relocation and adaptive reuse of the CUST Hut and the RAAF STRARCH Hangar to mitigate impacts on heritage values associated with these structures and to broaden their cultural landscape. Options considered for mitigation in order of preference are: • Relocation (either offsite or onsite) and conserve/adaptive reuse – this would be investigated further as part of the detailed design and Project approval process. • Interpretive commemoration utilising materials/elements from the building – this may be required but would be determined by the findings from investigations in option 1 above. • Demolition may be required but would be determined by the findings from investigations in option 1 above. • The first preference would be to retain and adaptively re-use these items on the redeveloped Project site (within the precinct but outside the secure area, as part of the administrative facilities or similar). If	SR	Detailed design and Early Works	Critical risk that the Project would destroy pats or whole of these sites.	Moderate level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	N/A

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<tr><td></td><td>this is not feasible or practicable, the second preference would be for relocation to another appropriate location, potentially with adaptive reuse.</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="8">Visual and urban design</td></tr>
<tr><td>14A</td><td>Visual mitigation measures to be considered during the detailed design of the Project include:
• avoiding clearing of the conservation area which currently obscures and filers views into the Project site;
• enhancing existing native vegetation adjoining the Georges River;
• enhancing existing native trees with extended and consolidated planting; and
• conserve the natural character and streetscape along Moorebank Avenue and allow for effective landscaping.</td><td>SR</td><td>Detailed design</td><td>High risk that visual amenity would be severely affected surrounding the Project site.</td><td>High level of effectiveness.</td><td>●</td><td>●</td></tr>
<tr><td>14B</td><td>The following additional visual mitigation measures would be considered during detailed design:
• Consider the siting of development to minimise vegetation clearing.
• Consider options for permeable tree planting adjoining the buildings and rail lines to reduce visual impacts and to cast shadows.
• Enhance vegetation adjoining water bodies.
• Maximise integration of the terminal facilities and the associated warehousing precinct by providing vegetation screening, way-finding throughout the Project site, breakout space for the public and staff, and visual relief.
• Provide additional native trees to the car park areas to maximise the opportunity for shade and to provide a landscape frontage that is scaled to complement the new buildings.
• Provide landscaping along Moorebank Avenue, including extensive tree and shrub planting on road frontages that provides visual relief from the industrial appearance of the warehousing, with a layered approach along the streetscape.
• Consider localised earth mounding and native canopy tree planting to internal landscape areas on the western side of the new buildings to mitigate visual impacts on residential areas.
• Choose finishes and materials that limit contrast with the surrounding landscape, with the preferred use of muted colours.
• Take opportunities to start early rehabilitation and supplementary planting of endemic species to the conservation area on the western boundary.
• Place higher buildings fronting Moorebank Avenue and Anzac Road to provide a visual buffer from the IMT operations beyond, while also ensuring they make a positive visual contribution to the streetscape.
• Consider options for tree planting adjacent to buildings and rail lines, to reduce visual impacts (while also considering any required security constraints and rail line fell distances).
• Consider the building design further during the detailed design process and be consistent with controls outlined in the Liverpool Development Control Plan 2008, Part 7 Development in Industrial Areas (LCC 2008c), including facade treatment, materials, building design and lighting.</td><td>SR</td><td>Detailed design</td><td>High risk that visual amenity would be severely affected from locations around and within the site, especially along Moorebank Avenue.</td><td>High level of effectiveness if implemented at the detailed design stage. Good urban design principles will assist in reducing visual impact.</td><td>●</td><td>●</td></tr>
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14C	Consider detailed design of the Georges River bridge crossing to reduce visual impact and maintain the amenity value of the Georges River Casula Parklands by allowing free access underneath the bridge (to avoid bisecting the park).	SR	Detailed design	High risk that visual amenity would be severely impacted at Georges River Casula Parklands.	Low to moderate level of effectiveness (the visual impact of the rail access cannot be completely mitigated).	N/A	N/A
Light spill measures							
14D	Lighting required during construction of the Project would be designed and located to minimise the effects of light spill on surrounding sensitive receivers, including residential areas and the proposed conservation area.	M	Construction	High level of risk that some sensitive receivers would be impacted unnecessarily.	High level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
14E	Design lighting to minimise impacts on surrounding existing and future residents and the proposed conservation zone.	M	Detailed design	High level of risk that some sensitive receivers would be affected.	High level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	N/A
14F	Consider use of shields on luminaire lighting to minimise brightness effects.	SR	Detailed design	Providing item 14G is achieved the risk to some sensitive receivers would be moderate. If item 14G is not achieved the risk would be major.	Providing item 14G is achieved there is a high level of effectiveness in mitigating risk (proven measure on similar projects). If item 14G is not achieved there is a low level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	●
14G	Select asymmetric light distribution-type floodlights as part of the proposed lighting design (which means the light is directed specifically to the task with minimal direct light spill to the surrounding area).	M	Detailed design	Major risk that sensitive receivers and the environment would be affected.	High level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	N/A
14H	Consider low reflection pavement surfaces to reduce brightness.	SR	Detailed design	High level of risk that sensitive receivers, particularly residents in Casula, would be affected.	High level of effectiveness in mitigating risk (proven measure on similar projects). Not possible/appropriate to quantify.	●	N/A
14I	Minimise the quantity of light and energy consumption in parts of the Project site that are not active, while retaining safe operation.	M	Detailed design	High level of risk that there would be unnecessary energy usage and higher light spill impacts.	High level of effectiveness in mitigating risk (proven measure on similar projects). Energy consumption could be reduced by up to one-third for inactive areas of the site.	●	N/A
14J	Monitoring of light spill during the operation of the Project.	M	Operation	High level of risk that some sensitive receivers would be impacted unnecessarily.	High level of effectiveness in mitigating risk (proven measure on similar projects).	●	●
Property and infrastructure							
15A	Undertake further investigations into the location of existing utilities and the likely impact on these utilities. This would include consultation with asset owners to determine the appropriate measures for relocation.	M (undertake consultation and investigation) SR (details of measures)	Detailed design	High level of risk that relevant asset owners will not be consulted.	High level of effectiveness in mitigating risk. Not possible/appropriate to quantify.	●	●
15B	Continue consultation with the ARTC regarding the design of the rail access to the SSFL to confirm design, construction and operational measures to avoid or minimise impacts on operation of the SSFL.	M (undertake consultation) SR (details of measures)	Detailed design	High level of risk that the operation of the SSFL will be affected by construction works.	High level of effectiveness in mitigating risk. Not possible/appropriate to quantify.	N/A	●
15C	Consider impacts on recreational and other uses of the Georges River during detailed design of the Georges River bridge crossing.	M	Detailed design	Moderate impacts on recreational users of Georges River and other uses.	Moderate level of effectiveness in mitigating risk. Not possible/appropriate to quantify.	N/A	●
15D	Maintain access to the ABB site and other adjoining sites such as the Defence National Storage Distribution Centre (DSNDC) and the Moorebank Business Park. This would be addressed during detailed design and as part of traffic management plans to be prepared for the	M	Early Works	High level of risk that local residents in Casula and Glenfield and workers at the ABB site and Moorebank Business Park cannot access areas near the Project site	High level of effectiveness in mitigating risk. Not possible/appropriate to quantify.	●	N/A

No.	Mitigation measure	Mandatory (M)/ subject to review (SR)	Implementation phase	Predicted risk/outcome if measure not implemented (i.e. reason for proposed measure)	Predicted effectiveness of measure(s) or outcome relative to unmitigated condition	Applicability	
						IMT site	Southern rail access connection
	Early Works development phase.						
15E	Implement 'dial before you dig' protocols for all potential utilities affected by the Project.	M	Early Works and construction	High level of risk that not all affected utilities are identified.	High level of effectiveness in mitigating risk. Not possible/appropriate to quantify	●	N/A
15F	Maintain access to the ABB site and other adjoining sites such as DNSDC, the Moorebank Business Park and local residences in Casula and Glenfield. This would be addressed during detailed design and as part of construction and operational traffic management plans to be prepared for each development stage.	M	Construction	High level of risk that local residents in Casula and Glenfield and workers at the ABB site and Moorebank Business Park cannot access areas near the Project site.	High level of effectiveness in mitigating risk. Not possible/appropriate to quantify.	●	N/A
Social and economic impacts							
16A	A Project contact phone number and website would be maintained during construction and operation to enable the community, including local business owners and/or operators, to access information on the Project and receive responses to any concerns.	M	Early Works and construction and operation	Moderate level of risk that affected residents and business owners are not consulted during key stages of the Project.	High level of effectiveness in mitigating risk.	●	●
16B	An ongoing community consultation program would be developed before the start of construction, to establish and maintain good relationships with local residents and business owners.	M	Detailed design, Early Works, construction and operation	Refer to 16A above.	High level of effectiveness in mitigating risk.	●	●
16C	A complaints line and resolution process would be set up and maintained.	M	Early Works, construction and operation	High level of risk that complaints are not dealt with and resolved quickly and effectively.	High level of effectiveness in mitigating risk.	●	●
16D	A citizens' jury has been established to develop a public benefits package.	M	Early Works, construction and operation	High level of risk that community does not see any benefit in the Project and therefore is not supportive.	Medium level of effectiveness in mitigation risk.	●	N/A
Human health risks and impacts							
17A	As part of wider ongoing monitoring and evaluation processes, monitoring data for air quality, noise and traffic would be regularly reviewed against the guidelines developed in the specialist studies supporting this EIS, as they are based on protecting the health of the community. Should exceedances be identified in these key indicators as a result of the Project, then a further and more targeted monitoring and management program would be developed as required.	M	Construction and operation	Potential for moderate impacts if elevated exposures to air emission, noise and traffic if not adequately monitored and managed. May result in adverse health effects and/or increased levels of stress in the local community.	Medium to high effectiveness based on range of mitigation measures proposed.	●	●
Waste management – Construction							
18A	A construction waste management plan would be prepared as part of the overall CEMP. This would implement key principles of relevant waste guidelines, and the waste management hierarchy of reduction, reuse, recycling and recovery.	M	Early Works and construction	High level of risk that waste guidelines are not implemented effectively.	High level of effectiveness in mitigating risk.	●	●
18B	The waste hierarchy would be investigated and implemented where possible with avoidance of waste, re-use and recycling incorporated into construction methodologies.	SR	Early Works and construction	High risk that waste is not avoided, reduced or minimised throughout construction.	High level of effectiveness in mitigating risk.	●	●
18C	Consideration would be given to the selection of materials for use in construction to minimise waste generated throughout their lifecycle.	SR	Early Works and construction	Moderate level of risk that best practice recycling methods with a high sustainability rating are not used.	High level of effectiveness in mitigating risk.	●	●
18D	Where practicable, construction materials that contain minimal embodied energy would be preferred.	SR	Early Works and construction	Moderate risk of using construction materials made from high energy intensive methods.	High level of effectiveness in mitigating risk.	●	●
18E	Opportunities would be explored where practicable to recycle or re-use materials arising from demolition works, with a preference for onsite re-use where possible (or recycling through an appropriate recycling contractor).	SR	Early Works and construction	High risk that waste is not avoided, reduced or minimised throughout construction.	High level of effectiveness in mitigating risk.	●	●
18F	Where possible, site disturbance and unnecessary excavation would be minimised.	SR	Early Works and construction	High risk of ground disturbance.	High level of effectiveness in mitigating risk.	●	●

No.	Mitigation measure	Mandatory (M)/ subject to review (SR)	Implementation phase	Predicted risk/outcome if measure not implemented (i.e. reason for proposed measure)	Predicted effectiveness of measure(s) or outcome relative to unmitigated condition	Applicability	
						IMT site	Southern rail access connection
18G	Formwork would be re-used where possible.	SR	Early Works and construction	High risk that materials from the construction phase are not recycled or disposed appropriately.	High level of effectiveness in mitigating risk.	●	●
18H	Sewage waste would be disposed of by a licensed waste contractor in accordance with Sydney Water and OEH requirements.	M	Early Works and construction	High level of risk that waste is not disposed of correctly.	High level of effectiveness in mitigating risk.	●	●
Waste management – operational waste							
18I	A waste management plan would be prepared and implemented to govern the overall use of materials, categorisation of wastes, and re-use and recycling process.	M	Operation	High level of risk that waste guidelines are not implemented effectively.	High level of effectiveness in mitigating risk.	●	●
18J	The waste hierarchy would be investigated and implemented where possible with avoidance of waste, re-use and recycling incorporated into the design, purchasing and procurement.	SR	Operation	High risk that waste is not avoided, reduced or minimised throughout operation.	High level of effectiveness in mitigating risk.	●	N/A
18K	Consideration would be given to the selection of materials for use in operation to minimise waste generated throughout their lifecycle.	SR	Operation	Moderate level of risk that best practice recycling methods with a high sustainability rating are not used.	High level of effectiveness in mitigating risk.	●	N/A
18L	Materials used onsite would be recycled where possible, including steel, batteries, electronics and paper.	SR	Operation	High risk that waste is not avoided, reduced or minimised throughout operation.	High level of effectiveness in mitigating risk.	●	N/A
18M	Future recovery of waste would be encouraged through site design, including provision for storage areas and appropriate paths for waste containers.	SR	Operation	High risk that waste is not avoided, reduced or minimised throughout operation.	High level of effectiveness in mitigating risk.	●	N/A
18N	Dedicated recycling storage areas and recycling bins would be located throughout the Project site, with clear signage and convenient access for waste recycling service providers. This would include bins for paper, plastics, glass, metals and compost.	SR	Operation	High risk of contamination if waste is not effectively managed.	High level of effectiveness in mitigating risk.	●	N/A
18O	A separate bunded storage area would be established for liquid wastes (e.g. oils), along with drainage to grease trap if required.	SR	Operation	High risk of contamination if liquid wastes are not appropriately stored.	High level of effectiveness in mitigating risk.	●	N/A
18P	A waste management system would be developed to include calculations of anticipated waste volumes from the office, landscaped areas, refuelling facilities and warehousing and distribution activities for ongoing comparison and monitoring.	SR	Operation			●	N/A
18Q	Onsite waste management infrastructure would, as a minimum, cater for the following three waste streams: • recovered waste (for re-use or recycling); • residual waste (for disposal or alternative waste technology); and • hazardous waste (wastes that are toxic, corrosive, flammable, explosive or reactive).	SR	Operation	High risk of contamination if waste streams are not effectively managed.	High level of effectiveness in mitigating risk	●	N/A
18R	Water efficient fixtures and fittings would be installed wherever possible, including in all basins, wash down areas and offices and general amenities areas.	SR	Operation	Moderate risk of water wastage.	High level of effectiveness in mitigating risk.	●	N/A
18S	Where possible, rainwater harvesting and surface water runoff management would be utilised for watering of gardens and landscaping.	SR	Operation	Moderate risk of water wastage.	High level of effectiveness in mitigating risk.	●	N/A
18T	The use of grey water and black water recycling would be investigated. Recycling water would most likely be used for toilet flushing and/or landscape irrigation.	SR	Operation	Moderate risk of water wastage.	High level of effectiveness in mitigating risk.	●	N/A
18U	Where possible, fire test water from the Project site would be collected for re-use. Washdown water from vehicle and train washdown facilities (if required) would also be collected for re-use.	SR	Operation	Moderate risk of water wastage.	High level of effectiveness in mitigating risk.	●	N/A

No.	Mitigation measure	Mandatory (M)/ subject to review (SR)	Implementation phase	Predicted risk/outcome if measure not implemented (i.e. reason for proposed measure)	Predicted effectiveness of measure(s) or outcome relative to unmitigated condition	Applicability	
						IMT site	Southern rail access connection
18V	Where practicable, water meters would be installed on all major water uses (air conditioning cooling towers, irrigation, domestic hot water, amenities, washdown, rainwater collection and recycled water system).	SR	Operation	Moderate risk of water wastage.	High level of effectiveness in mitigating risk.	●	N/A
18W	Water reduction targets would be established for office areas, in line with the National Australian Built Environment Rating System (NABERS) Water protocol for office buildings (assume 4.5 stars) (refer discussion in Chapter 9 – *Project sustainability*).	SR	Operation	Moderate risk of water wastage.	High level of effectiveness in mitigating risk.	●	N/A
Use of resources – construction							
18X	All opportunities to utilise recycled building materials in the overall structure of the Project would be explored. Development of the design would seek to use construction materials that have been made with a post-consumer recycled content of 50% or greater. Table 9.4 in Chapter 9 – *Project sustainability* identifies other initiatives to minimise the use of materials and, where possible, use recycled materials.	SR	Detailed design and operation	Moderate to high risk of resource waste.	High level of effectiveness in mitigating risk.	●	●
18Y	Measures to minimise the use of energy and fuel would be investigated and implemented where appropriate. These may include using non-renewable sources such as petroleum, diesel, natural gas and liquefied natural gas.	SR	Early Works, detailed design and construction	Moderate to high risk of resource waste.	High level of effectiveness in mitigating risk.	●	●
18Z	Where practicable, water would be re-used onsite, including water stored in sediment basins.	SR	Early Works, detailed design and construction	Moderate to high risk of water waste.	High level of effectiveness in mitigating risk.	●	●
Use of resources – operation							
18AA	Initiatives in Table 9.4 in Chapter 9 – *Project sustainability* would be considered and implemented where practicable to minimise the use of energy and fuel during the operation of the Project.	SR	Detailed design and operation	Moderate to high risk of resource use.	High level of effectiveness in mitigating risk.	●	●
Cumulative traffic impacts							
19A	The intersection treatments and delivery timing for all cumulative scenarios are presented in Table 7.37; a number of these treatments would be required for a Moorebank project only scenario by 2030. The SIMTA project would introduce a number of additional road upgrades on Moorebank Avenue, south of Anzac Road (as presented in Figure 7.15). These upgrades are essential requirements for any precent wide development. Responsibility for delivery of these upgrades would be determined as part of the subsequent development approval stages.	SR (subject to approval and confirmed details of SIMTA development)	Detailed design and operation	High risk of significant traffic congestion (deterioration of LoS of key intersections)	Moderate to high level of effectiveness in mitigating risk	●	N/A
Cumulative air and noise							
19B	The management and mitigation of potential air quality and noise impacts relating to the Project and the SIMTA warehousing development during operation would be the separate responsibility of the Project developers and operators of these respective sites, in accordance with the air and noise criteria established as part of regulatory approvals and licensing. However, a combined approach may be taken where appropriate. The design and implementation of air quality and noise mitigation would need to be determined for the final staged operations during the detailed design phase and, as required, be included in the environmental assessment for the Stage 2 SSD approval(s). Dependent on the progress of the proposed SIMTA development, the Project may require additional mitigation to comply with air quality and noise criteria. Any additional mitigation would be considered further through the development of the detailed design.	SR (subject to approval and confirmed details of SIMTA development)	Detailed design and operation	High risk of air and noise emissions not being effectively managed.	High level of effectiveness in mitigating risk.	●	N/A

No.	Mitigation measure	Mandatory (M)/ subject to review (SR)	Implementation phase	Predicted risk/outcome if measure not implemented (i.e. reason for proposed measure)	Predicted effectiveness of measure(s) or outcome relative to unmitigated condition	Applicability	
						IMT site	Southern rail access connection
	Regular meetings between the operators of the Project and the SIMTA development would need to be established to manage complaints or issues relating to air quality. Where necessary, a review of simultaneous operations would be considered, potentially resulting in the coordinated management of potential issues.						
Cumulative construction impacts							
19C	Should both the Project receive approval and both the Project and the SIMTA development proceed to detailed design and subsequent approvals under the EP&A Act, consideration would be given to the potential combined coordination of construction management plans where appropriate and relevant. Opportunities to reduce environmental impacts throughout the construction and operation of the two projects would be explored, potentially including construction noise sharing agreements, traffic and air quality goals as well as integration of environmental management plans.	SR (subject to approval and confirmed details of SIMTA development)	Detailed design	High risk of cumulative impacts of both the Project and the SIMTA warehousing development not being effectively assessed.	High level of effectiveness in mitigating risk.	●	N/A
Cumulative heritage impacts							
19D	Measures to mitigate the cumulative Aboriginal and European heritage impacts would include those already proposed as part of the Project in combination with investigating, archiving, salvage and relocation (where feasible) of items on the SIMTA site. These measures would be investigated and determined once the final design for each project is determined.	SR (subject to approval and confirmed details of SIMTA development)	Detailed design and Early Works	Moderate risk that the cumulative scenarios would impact on Aboriginal and European heritage and would affect unknown sites.	Moderate level of effectiveness in mitigating risk (proven measure on similar projects).	●	N/A

Chapter 10
Conclusion

10. Conclusion

The Environmental Impact Statement (EIS) for the Moorebank Intermodal Terminal (IMT) (the Project) provides details of the Project and presents the findings of the comprehensive impact assessments (i.e. traffic, noise, air etc.), which predict the potential impacts of the Project on the environment. The EIS document identifies a range of management and mitigation measures to be implemented during the detailed design or pre-construction, Early Works, construction and operational phases of the Project to avoid and minimise the impacts of the Project.

The EIS was placed on public exhibition between 8 October and 8 December 2014. During the exhibition period government agencies, interest groups, business/industry organisations and the community were invited to make a written submission. A comprehensive engagement program was undertaken during the exhibition period to encourage feedback on the proposal. This included advisements, letter drops, community information sessions (three sessions), emails, briefings and letters. Members of the community were able to view the EIS on Moorebank Intermodal Company's (MIC) Project website, on NSW Department of Planning and Environment (DP&E's) website. Hard copies of the document were also available for viewing at a number of locations within Liverpool, Campbelltown, Newtown and in NSW DP&E offices in Sydney central business district.

10.1 Submissions reporting

A total of 1,793 submissions were received, of which 1,779 were from community members and 14 were from government agencies and local councils. Liverpool City Council (LCC) completed a letter drop to 183,000 residents in 78 suburbs across south-west Sydney, which included a completed submission form that the community was encouraged to sign and send to the Minister for Planning. A total of 1,538 submissions were received through this process. Submissions received from government agencies included Liverpool City Council (LCC), Campbelltown City Council (CCC), Fairfield City Council (FCC), Hurstville City Council (HCC), Bankstown City Council (BCC), Transport for NSW (TfNSW), NSW Office of Environment and Heritage (OEH), NSW Environment Protection Authority, Fire and Rescue NSW, NSW Rural Fire Service, Sydney Catchment Authority, NSW Department of Primary Industries (including comments from NSW Office of Water and Fisheries NSW), NSW Health and NSW Ports.

The content of each community submission was reviewed and categorised according to key issues (e.g. traffic, noise, air quality) and sub-issues (e.g. traffic impacts on the M5 Motorway). Due to the number and diversity of issues raised in community submissions, these matters raised in the submissions were grouped based on their assigned key issue and sub-issue categories. This means that while the exact wording of the submission may not be captured in this Report, the intent and the issues raised has been identified.

A large number of community submissions raised concerns related to Project alternatives, with many submissions expressing the view that alternative sites should be considered for the IMT; including expansion of existing facilities (Chullora, Enfield and other smaller sites) or greenfield site development (Badgerys Creek). In addition, many submissions questioned the suitability of the Moorebank site for an IMT and made suggestions for alternatives uses of the School of Military Engineering (SME) site.

Other issues that were of most concern to the community included: traffic, transport and access; strategic context and need for the Project; noise and vibration impacts; local and regional air quality impacts; and human health impacts.

10.1.1 Project site alternative considerations and justification

The Project site was selected for its good access to existing major freight and rail corridors (SSFL, M5 Motorway, near the M7 Motorway and Hume Highway) and its central location relative to major freight markets in the west and south west of Sydney. The size of the site was also a significant factor in its selection, with the requirement to accommodate interstate trains (which can be up to 1,800 m long) and the need for the site to be large enough to handle the number of containers expected (a total throughput capacity of 1.55 million TEU a year, including up to 1.05 million TEU a year of IMEX). The site also has space for onsite warehousing, which increases the efficiency of the freight service offered and therefore increases the attractiveness of the terminal and its potential to get more freight onto the rail network.

A number of submissions suggested the demand could be accommodated within Sydney's existing IMT facilities; however, IMTs serve a defined geographic catchment and there is clear demand for Moorebank from a catchment area that is different to that served by existing IMTs. Also, Sydney's estimated total future IMEX intermodal capacity at existing terminals is not sufficient to meet government rail freight targets or expected rail freight demand at Port Botany. This includes the potential future capacity provided by the Yennora, MIST (Minto) and Villawood terminals approved capacity at the Enfield IMT and the recently announced new IMEX capacity at Chullora.

No other known site in Sydney has the same unique characteristics to efficiently accommodate the type of activities being proposed. The availability of the site for development represents a once-in-a-generation opportunity for a transformational freight infrastructure project. Alternative IMTs would be significantly less economically efficient than the Moorebank IMT and not practically achievable in the timeframes required. In particular:

- There is no land set aside for an IMT at Eastern Creek and a new freight rail line to the area would be needed with substantial investment implications.
- Land would also be required for an IMT at Badgerys Creek as the new airport site is unlikely to have spare space for this purpose. A new freight rail line would also need to be constructed in addition to the planned passenger line. It would not be practical for freight trains to share the planned passenger line to the new airport since passenger trains receive priority on the passenger network, which would undermine the efficiency and reliability of a rail freight service via Badgerys Creek.
- Even if land was available at Eastern Creek or Badgerys Creek, the planning and environmental approval process to assess the sites' suitability from an environment, social and economic perspective can take years. Given the demand for intermodal facilities in western Sydney the Moorebank IMT site is considered the most appropriate to service the current demand.

Given the clear suitability of the Project site for an IMT and the lack of economically efficient alternatives, it would be inappropriate and mostly inefficient to use the site for an alternative purpose (e.g. residential or commercial), as these land uses would have greater impacts on the local environment and community. For example, during peak hours:

- residential development would generate up to 25 times more traffic than an IMT; and
- a business park would generate up to three times more traffic than an IMT.

The comprehensive site assessment undertaken in the EIS conclusively demonstrated the suitability of the proposed site for the proposed intermodal activities - the essential requirement for decision making.

10.1.2 Response to Project specific impacts

Many community submissions raised concerns relating to human health impacts (specifically noise, sleep disturbance, wheel squeal, air quality impacts and diesel fumes/emissions) and traffic and transport (specifically impacts on the local roads and major arterials and the associated social, environmental and economic impacts).

The EIS demonstrates that the IMT will have some impacts on the local community and environment. These impacts will be addressed through a raft of mitigation measures (e.g. local intersection upgrades, noise walls and locomotive standards to reduce noise and diesel emissions). The residual impact on the local community and environment – accounting for mitigation measures – will be small and manageable within established regulatory requirements and criteria. For example, the EIS and Response to Submissions Report demonstrate that:

- the concentration of air borne pollutants in the area will be well within air quality guidelines;
- there will be no measurable impact of the terminal on human health;
- the performance of local intersections will be maintained at the level that would be experienced in the future without the IMT; and
- noise from the IMT and its rail connection will be within government guidelines.

MIC has also been working with the NSW Government to assist its decision making on some major road upgrades that will be needed in the area, regardless of whether the IMT proceeds. These road upgrades are needed to handle growth in background traffic, but would also benefit the IMT. These possible road upgrades were identified in the 2014 NSW State Infrastructure Strategy and are currently being considered by the NSW Government for implementation.

MIC notes that the community and government agencies have a number of concerns about the Project, particularly related to the potential impacts. MIC is committed to avoiding and minimising impacts of the Project through the implementation of mitigation measures described in Chapter 28 – *Environmental Management Framework* of the EIS. Assuming approval of the Stage 1 SSD, further detailed environmental assessments would be undertaken as part of the Stage 2 SSD applications and additional mitigation would be identified (if required), the outcomes of which would be provided as part of the Stage 2 SSD application documentation. Further community and stakeholder consultation would also be undertaken at this time.

10.2 Proposed amendments to the proposal

Prior to the EIS exhibition, MIC developed the Moorebank IMT proposal as a stand-alone project. The Sydney Intermodal Terminal Alliance (SIMTA) proposal for an intermodal terminal on the site immediately east of the Project site was also being pursued separately, with its own planning and environmental approvals being sought. However, since the exhibition of the EIS, an agreement has been reached between MIC and SIMTA for an integrated precinct-wide intermodal facility and associated warehousing across both the MIC and SIMTA sites. This has resulted in a change in concept layout on the Moorebank intermodal site and the selection of the southern rail access option as the preferred rail connection from the SSFL to the site.

Under this agreement MIC will continue with its existing application for Stage 1 SSD concept approval (incorporating early works) for the Moorebank IMT site and SIMTA will be responsible for obtaining all other approvals required under the EP&A Act, to build all stages of the Project.

Rehabilitation Works involving the removal of asbestos containing buildings, removal of underground storage tanks, stabilisation of the 'dust bowl' and stabilising site fencing are now included in the Early Works, for which the Project is seeking full approval to commence these activities.

10.2.1 Elements of the Project layout and built form that have changed

Amendments to the Project layout and built form comprise:

- changes to the layout and operation of the IMT, including the location of the warehousing, working tracks and storage tracks, IMT freight village precinct, IMEX and interstate equipment storage and repair area and detention ponds;
- confirmation that the southern rail access into the site will be required (the EIS sought flexibility to build either a southern, central or northern rail access into the site from the SSFL);
- changes to access and circulation including heavy and light vehicle access to the facility via the Moorebank Avenue and Anzac Road intersection, along a dedicated road at the north and along the western boundary of the Project site;
- changes to the upgrade of Moorebank Avenue, which will be upgraded between Anzac Road and the M5 Motorway into a four-lane dual carriageway. No upgrades are proposed south of the Anzac Road intersection since traffic from the terminal will not use the southern section of Moorebank Avenue; and
- an increase in the size of the conservation area.

Figure 10.1 shows the components of the EIS and the proposed amendments to the development and illustrates how they have changed. The amendments are being proposed to facilitate the integration of the Moorebank and SIMTA site operations, should contractual arrangements be formalised for a single site.

KEY PROJECT COMPONENTS	EIS	REVISED PROJECT
IMEX FREIGHT TERMINAL	Designed to handle 1.05 million TEU per year of IMEX containerised freight. Located in the centre of the Project site.	Designed to handle 1.05 million TEU per year of IMEX containerised freight. Located in the southern section of the Project site, adjacent to Moorebank Avenue.
INTERSTATE TERMINAL	Designed to handle up to 500,000 TEU per year of interstate containerised freight. Located in the centre of the Project site.	Designed to handle up to 500,000 TEU per year of interstate containerised freight. Located along the eastern section of the Project site, adjacent to Moorebank Avenue.
WAREHOUSE FACILITIES	Capacity of up to 300,000 sq m. Located on the eastern boundary of the Project site, adjacent to Moorebank Avenue.	Capacity of up to 300,000 sq m. Located along the western boundary of the Project site, adjacent to a dedicated access road.
RAIL ACCESS AND LAYOUTS	Project connected to the Southern Sydney Freight Line (SSFL) via a new rail access. Three rail access options assessed in EIS (northern, central and southern rail access).	Project connected to the Southern Sydney Freight Line (SSFL) via a new southern access from the SSFL. Northern and central rail access options not considered further.
VEHICLE ACCESS	Vehicles to access the Project site from Moorebank Avenue via the M5 Motorway. Modification to the M5 Motorway intersection, widening and upgrade of Moorebank Avenue to East Hills Railway Line. Upgrade of Anzac Road and relocation and upgrade of Bapaume Road.	Vehicles to access the Project site from a new Moorebank Avenue/Anzac Road intersection via the M5 Motorway. Modification to the M5 Motorway intersection, widening and upgrade of Moorebank Avenue to the new intersection only.
INTERNAL ROAD LAYOUT	Vehicles to access IMEX, IMT terminals and warehouses via access points off the upgraded Moorebank Avenue.	Vehicles to access IMEX, IMT terminals and warehouses via a dedicated access road (open to the public), leading from the new Moorebank Avenue/Anzac Road intersection, located on the western boundary of the site adjacent to the conservation area.
CONSERVATION AREA	Located along Georges River on the western boundary of the Project site.	Located along Georges River on the western boundary of the Project site.
ON-SITE STORMWATER DETENTION BASIN	Multiple detention basins along western edge of development area. Detention basin locations differ for each rail access option.	Multiple detention basins along western edge of development area. Currently four detention basins proposed; two adjacent (western site) to dedicated access road, one in northern corner (adjacent to ABB land) and one in the southern end of the site. Final locations will be determined during detailed design.

Figure 10.1 Comparison of the key project components of the EIS and revised

10.2.2 Assessment of amendments

To determine the impacts associated with the changes to the concept design, a scoping exercise was conducted against the findings and conclusions of the impact assessment presented in the EIS. This qualitative exercise determined that the proposed amendments to the development only affected a small number of studies. A summary of the revised impact assessments are:

- Biodiversity impacts – Changes to the Project footprint, specifically the alignment and width of the southern rail access corridor, required a revised assessment of the Project's impacts on biodiversity and the biodiversity offset strategy. The revised assessment also included some minor changes in the quantification of credits generated from the credit calculator which changed the requirement for securing offsite offsets for some species. MIC is committed to undertaking all reasonable steps to secure the matching ecosystem credits and provide an offset package that meets the quantum of the offset requirement. The Project is being assessed under the NSW Government Framework for Biodiversity Assessment calculator.
- Visual – The greatest visual impact of the Project will be on the public parks (Leacock and Carroll Parks in Casula) and associated residential properties that are situated on the elevated topography sloping west from the Georges River. These will have clear views over the site and the taller project elements such as lighting towers and rail mounted gantry cranes. Overall, when compared to the EIS layout, the visual impacts are consistent, recognising that the southern rail access option is the favourable option from a visual impact perspective.
- Traffic – The changed site layout changes the traffic impacts on the surrounding road network. The changes in Project development phasing have also resulted in amendments to the 'ramp up' of traffic generation associated with the revised conversion factors between site uses/activities and trip generation. Adopting the truck generation rates used by SIMTA in its traffic studies (undertaken for its EIS) has resulted in modifications to some of the underlying assumptions about the rates of traffic generation, generally resulting in lower traffic generation rates. Traffic impacts associated with the amendments include the following:
  - A requirement to upgrade Moorebank Avenue north of Anzac Road, and the upgrading of the Anzac Road intersection to a major signalised intersection. This location would be the site entry point for all vehicles, with separation of light and heavy vehicles occurring within the site.
  - For the key intersections, while the traffic impacts at in 2030 are slightly worse relative to the predictions made in the EIS, the analysis continues to show that by 2030, all intersections will have experienced a reduced level of service as a result of background traffic growth. A number of intersections will have deteriorated to an unacceptable level of service (Level D or below) without mitigation, due to background traffic alone.
  - Mitigation measures in the form of intersection treatments are proposed to ensure the intersections' performance is returned to 'base level' at any point in time i.e. the performance of an intersection remains no worse than under background (without Moorebank) conditions. Table 10.1 below identifies the treatments that would be required, and by what date, for affected intersections. Mitigation treatments would only be applied if an intersection is operating at level of Service (LoS) E or worse as a result of the Project. Treatments would not be recommended where the resulting LoS of D or above is achieved, even where performance has deteriorated as a result of the Project.
  - Indicative timing of these upgrades is provided in Table 10.1, based on current projections for background traffic growth and anticipated increases in container throughput (or 'ramp up') over time. However, in recognition of the uncertainties in actual throughput increases (due to factors such as future economic growth rates), any funding contribution of the IMT towards these upgrades would be based on the following circumstances:

- That certain throughput levels at the terminal had been achieved. These throughputs are outlined in column 1 of Table 10.1.
- That it can be further demonstrated (as part of any subsequent planning approval stage) that the intersection performance would have deteriorated to a level of service E or worse (where previously operating at a LoS D or above) were it not for the implementation of the upgrades outlined in Table 10.1.

Table 10.1 Summary of key intersection upgrade requirements as a result of the Project

Throughputs triggering IMT contributions to upgrades	Upgrade description	Intersections	Indicative upgrade year
Construction of Phase A (no operational throughput)	Signal timing changes, change bus lane on Heathcote Road to general traffic lane (combined left and right turn lane) and second lane to right turn lane.	I-07 – Heathcote Road/ Moorebank Avenue	2016
	Ban right turn on Church Road	I-09 – Moorebank Avenue/ Church Road	
	Signal timing changes	I-12 – Newbridge Road/ Governor Macquarie Drive	
Operation of 250,000 TEU	Signal timing changes	I-08 – Moorebank Avenue/ Industrial Access	2019
Operation of 750,000 TEU	Signal timing changes	I-01 – Hume Highway/ Orange Grove Road I-06 – Newbridge Road/ Moorebank Avenue I-11 – Newbridge Road/Nuwarra Road	2023
	Signal timing changes, extend short right turn lane on M5 East to 230 m in length.	I-14 – Hume Highway/M5 Motorway	
Operation of 1 million TEU	Signal timing changes, changed layout on Governor Macquarie Drive to include a combined through and right turn lane, and dedicated right turn lane of 200 m lengths.	I-12 – Newbridge Road/ Governor Macquarie Drive	2025
	Provide a left, through and right lane and dedicated right turn lane on Canterbury Road.	I-15 – Cambridge Avenue/ Canterbury Road	
Operation of 1.3 million TEU	Signal timing changes.	I-13 – Moorebank Avenue/ M5 Motorway	2028
Operation of 1.55 million TEU	Signal timing changes, 60 m approach and 60 m departure lanes on Hume Highway in the northbound direction.	I-01 – Hume Highway/ Orange Grove Road	2030
	Signal timing changes, additional 60 m right turn lane on the Hume Highway in the northbound direction.	I-03 – Hume Highway/Memorial Avenue	
	Signal timing changes.	I-04 – Hume Highway/ Hoxton Park Road	

> The impact of traffic from the project site represents less than 3.3% of the total traffic already on the M5 Motorway during peak periods. The Project would therefore not have a substantial impact on the motorway operation.

> The mid-block capacity analysis (examining the flow of traffic along the roads between intersections) shows that ratios for all mid-block road sections would continue to perform at similar levels to the base condition with the addition of Moorebank IMT traffic.

- Construction noise impacts are similar to those identified in the EIS. The deletion of the northern rail option removes some of the most severe noise impacts (at Casula). During peak construction (2016), when piling, excavation and compaction works are undertaken adjacent to the nearest residential receptors the predicted worst case noise levels trigger the requirement for construction noise mitigation to reduce potential levels by up to 12 dBA $L_{Aeq(15minute)}$. For concreting works, predicted noise levels trigger the daytime criteria by 3 dBA $L_{Aeq(15minute)}$ at the nearest receptors in Wattle Grove. Potential noise levels from heavy vehicles operating within the onsite haul roads are within the daytime criteria and would not require specific noise mitigation to reduce the predicted noise levels.

- Operational noise impacts associated with the amendments include:

> The container handling area at the IMEX terminal will be automated and so will not require audible alarms or beepers. Measured noise levels provided by the manufacturer of the rail mounted gantries (RMGs) are 10 dBA less when operated without the audible warning alarms. This has resulted in some improvements in noise impact relative to the EIS predictions.

> In the revised Project the need for a rail loop to manage the entry and departure of trains within the site has been removed, which will reduce the likelihood of wheel squeal noise from trains.

> During operation (Full Build), predicted noise levels comply with the daytime and evening noise criteria at all assessed receptors. Noise levels in the night-time are predicted to comply with the noise criteria at the majority of receptors. Exceedances of up to 4 dB are predicted at the northern extent of Casula and of 2 dB at the western extent of Anzac Road.

> During adverse weather conditions, predicted noise levels comply with the daytime and evening noise criteria at all assessed receptors in Casula, Glenfield and Wattle Grove with the exception of the western extent of Anzac Road, where noise levels are up to 2 to 3 dB above the daytime and evening noise criteria.

> Adopting the proposed noise mitigation measures would reduce predicted noise levels by at least 5 dB and would achieve compliance at all assessed receptors.

- Air quality – Predicted local air quality impacts show minor variances in modelled results compared to impacts predicted in the EIS. The predictive dispersion modelling demonstrates that concentrations of pollutants (TSP, PM_{10}, NO_x, CO, SO_2, benzene, toluene, xylene, 1,3-butadiene, acetaldehyde and polycyclic aromatic hydrocarbons) emitted would be below acceptable ambient air quality criteria and would not adversely affect the receiving environment. An exceedance of the annual average $PM_{2.5}$ advisory reporting goal at R33 was predicted to occur due to cumulative concentrations during Full Build activities. While this receptor was relocated in 2014, it has been retained in the assessment for completeness. The likely future land use at R33 would be associated with the SIMTA project. The elevated ambient background is the key contributor to these exceedances.

- Human health – Predicted impacts on human health of the local community show very minor variation from impacts predicted in the EIS. In addition, the recommendations presented in the EIS in relation to mitigating impacts or enhancing health benefits remain unchanged. Some additional noise mitigation measures have been outlined and these should be considered in conjunction with other mitigation measures outlined in the relevant assessments.

Revised environmental management measures have been proposed to address the impacts associated with the project amendments. These measures will be implemented to reduce the identified environmental impacts associated with the construction and operation of the Project.

There are no additional impacts associated with the Rehabilitation Works included in the Early Works phase of the Project.

10.2.3 Cumulative impact assessments

Based on the agreement with SIMTA for an integrated IMT across both the SIMTA and Moorebank sites, a revised approach to the cumulative assessment of the entire Moorebank precinct has been undertaken. In summary the cumulative impact scenarios are as follows:

- Continue to recognise there is a maximum of 1.55 million TEU (IMEX plus interstate freight) for the entire Moorebank precinct.

- Continue to consider alternate scenarios whereby all IMEX capacity is built on the SIMTA site or the Moorebank site but not both.

- Introduce a new cumulative scenario (C1) reflecting a potential Stage 1 development that matches the current SIMTA Stage 1 DA (250,000 TEU) in conjunction with a likely first stage of development of the Moorebank site (500,000 TEU).

- Introduce a new cumulative scenario (C2) reflecting a Full Build (2030) with 500,000 TEU on the SIMTA site (reflecting the cap placed on SIMTA's concept approval) and with the remaining 1.05 million TEU capacity (consisting of 550,000 TEU IMEX and 500,000 TEU interstate) on MIC's site.

The results of the cumulative impact assessment demonstrate that the key issues of concern of noise and traffic would be within acceptable levels, as described below:

Noise and vibration

For all scenarios assessed, the predicted cumulative noise levels during both neutral and adverse conditions comply with the daytime, evening and night-time amenity noise criteria at all assessed receptors in Glenfield and Liverpool. The predicted cumulative noise levels in Casula and Wattle Grove comply with the daytime and evening amenity noise criteria but exceed the night-time amenity noise criteria during neutral weather conditions by up to 3 dBA (with Scenario B representing the worst-case scenario). During adverse weather conditions, the predicted cumulative noise levels would be exceeded by up to 5 dBA (for scenario B) with exceedances at some receptors for all scenarios. The results are outlined in Table 10.2 below.

Cumulative traffic noise impacts are only marginally greater than the background levels (by 1 dBA), which is below the level at which specific mitigation measures are required.

Table 10.2 Predicted cumulative noise levels – all scenarios

Residential Receptor	**Predicted Noise Levels, L_{Aeq}, dBA**			
	Scenario A		**Scenario B**	
	Neutral weather	**Adverse weather**	**Neutral weather**	**Adverse weather**
Casula	27–**42**	29–**44**	27–**43**	29–**45**
Wattle Grove	35–40	39–**44**	38–**43**	40–**45**
Glenfield	29–32	29–33	31–34	31–34
Liverpool	32–34	38–40	33–33	38–38
Non-Residential Noise Sensitive Receptors	21–**43**	25–**44**	26–**43**	26–**44**
	Scenario C1		**Scenario C2**	
Casula	25–40	26–**42**	27–**41**	28–**43**
Wattle Grove	35–39	38–**42**	35–40	37–**42**
Glenfield	29–32	30–32	31–33	31–34
Liverpool	30–30	35–35	30–32	34–34
Non-Residential Noise Sensitive Receptors	22–40	24–**42**	24–41	26–**43**

Traffic, transport and access

By 2030 a number of intersections will be operating at an unacceptable LoS, under cumulative scenarios A, B and C as a result of background traffic growth (and planned upgrades by RMS) in conjunction with traffic generated by the Moorebank IMT and the SIMTA site. Table 10.3 identifies the treatments required, and by what date, for affected intersections under cumulative scenarios A, B and C. Mitigation treatments would only be applied if an intersection is operating at level of Service (LoS) E or worse as a result of the precinct (i.e. cumulative) traffic above the background growth and cumulative impacts by others. Treatments would not be recommended where a resulting LoS of D or above is achieved, even where performance has deteriorated as a result of the Project.

- Indicative timing of these upgrades is provided in Table 10.1, based on current projections for background traffic growth and anticipated increases in container throughput (or 'ramp up') over time for the IMT. However, in recognition of the uncertainties over actual throughput increases (due to factors such as future economic growth rates), any funding contribution of the IMT towards these upgrades would be based on the following circumstances:

  > That certain throughput levels at the terminal had been achieved. These throughputs are outlined in column 1 of Table 10.1.

  > That it can be further demonstrated (as part of any subsequent planning approval stage) that the intersection performance would have deteriorated to a level of service E or worse (where previously operating at a LoS D or above) were it not for the implementation of the upgrades outlined in Table 10.1.

The upgrades required as a result of background traffic growth combined with traffic generated by the Project and the SIMTA project are presented as potential road network solutions but are not nominated for delivery by the Project as they are based on a number of assumptions which will be proven or otherwise during operations in the period 2018–2030. The delivery funding and mechanisms for delivery network upgrades will be subject to further assessment in consultation with the NSW Government during future DA stages. Intersections I-0B and I-0C in Table 10.3 are intersections that would be constructed in the event that the SIMTA site is developed (i.e. they would not exist under an IMT-only scenario).

Table 10.3 Summary of key intersection upgrade requirements taking account of cumulative traffic

Throughputs triggering IMT contributions to upgrades	Cumulative scenario	Upgrade description	Intersections	Upgrade year
750,000 TEU	C1	Signal timing changes (brought forward from 2023 for IMT-only)	I-01 – Hume Highway/ Orange Grove Road I-06 – Newbridge Road/ Moorebank Avenue	2020
		Signal timing changes, extend short right turn lane on M5 east Motorway to 230 m (brought forward from 2023 for IMT-only).	I-14 – Hume Highway/ M5 Motorway	
1.55 million TEU	C2	Signal timing changes, additional 70 m right turn lane on Elizabeth Drive in the westbound direction.	I-02 – Hume Highway/ Elizabeth Drive	2030
	A, B and C2	Signal timing changes for an additional 75 m right turn lane on the Hume Highway in the southbound direction.	I-04 – Hume Highway/ Hoxton Park Road	
	A, B and C2	Signal timing changes, extend left turn lane on Newbridge Road to 150 m in the westbound direction.	I-06 – Newbridge Road/Moorebank Avenue	
	A, B and C2	Signal timing changes, short left turn lane of 100 m to Moorebank Avenue slip lane (dual signalised slip lane westbound).	I-13 – Moorebank Avenue/ M5 Motorway	
	A and C2	Signal timing changes; provide a dedicated left turn lane on Moorebank Avenue north.	I-0A – Moorebank Avenue/ Anzac Road	
	B	As for A and C2 plus additional right turn lane on Moorebank Avenue South.		
	B	Provide dual right-turn lanes on SIMTA central access.	I-0B – Moorebank Avenue/ new DNSDC access/ SIMTA northern access.	
	B	Provide dual right-turn lanes on SIMTA southern access.	I-0C – Moorebank Avenue/ SIMTA central access	

Local air quality

The following key points are taken from the cumulative modelling results generated for the operations at the Moorebank IMT site and SIMTA site:

- Cumulative incremental impacts (Moorebank IMT and SIMTA only) of all pollutants are below NSW EPA and National Environment Protection Measure (NEPM) advisory reporting goals at all surrounding receptor locations, for all assessed site configurations;
- Additional exceedance of the NSW EPA 24-hour average PM_{10} criterion and NEPM advisory reporting goal for 24-hour average $PM_{2.5}$ is predicted to occur at R33 (which is located on the SMITA site);
- Cumulative annual average (Moorebank IMT and SIMTA (only increment) plus background) $PM_{2.5}$ concentrations exceed the NEPM advisory reporting goal at receptor R33. The exceedance at R33 is attributable to the location of R33 directly among SIMTA site emission sources.
- No other cumulative (Moorebank IMT and SIMTA (only increment) plus background) pollutant exceedances are predicted for any scenario at any of the surrounding receptor locations.

Human health

In relation to the assessment of cumulative impacts from the operation of both the Moorebank and SIMTA sites, the predicted health impacts are generally considered to be low (not significant). The human health risk assessment has identified risks to commercial/industrial properties on Moorebank Avenue currently within the SIMTA site boundary. Mitigation measures are required to minimise exposure to particulates at those sites, however, as all the identified receptors would be relocated with the development of the SIMTA site, these receptors have been discounted from further consideration in the cumulative assessment.

10.3 Managing residual impacts

The Project as proposed incorporates a range of mitigation and management measures to ensure it operates within acceptable limits. Many of the impacts have already been reduced through the application of technology or design optimisation:

- The development of the Project layout to maintain a substantial conservation area along the banks of the Georges River, has substantial benefits in terms of biodiversity conservation and preservation of the amenity of the Georges River as well as creating a buffer between the site and residents of Casula.
- The Project layout places warehousing on the western area of the site to provide a buffer between Casula residents and rail operations on site.
- A range of noise mitigation measures, including a noise barrier at the western boundary of the site has been allowed for to protect residents of Casula. In addition, the use of automated cranes has eliminated the need for warning alarms, resulting in a significant reduction in noise levels.
- The on-site operations include the use of Liquefied Petroleum Gas (LPG) generated plant and equipment in place of diesel to minimise impacts on local air quality.

- The rail crossing from the SSFL into the site has been located at the south of the site to minimise noise and visual impacts on residential receivers and to minimise flood risk to surrounding land.
- Traffic access arrangements are designed to prevent truck traffic from entering or leaving the site from the south minimising traffic impacts on local communities.
- Water quality in the Georges River will be maintained or improved through the application of effective water quality management throughout construction and operation of the Project.

Even with these measures in place, a number of residual impacts remain that will require further mitigation and management. Key residual impacts are summarised in Chapter 7 – *Proposed amendments to development* of this report. Strategies to manage residual impacts include the following:

- Minimising native vegetation clearing through careful detailed design. For unavoidable impacts, MIC is currently working closely with NSW OEH and the Commonwealth Department of Environment (DoE) to establish a package of offsets that will ensure that biodiversity values for the affected vegetation communities and species are maintained.
- Other measures to reduce noise emissions (such as rail noise damping and quieter gantry cranes) will be explored with a view to further reducing at-source noise impacts. Once all reasonable and feasible at-source measures have been applied, boundary treatments (such as additional noise walls) would be applied to the satisfaction of the regulators.
- MIC and the future Project operator will continue to work with the NSW Government to evaluate the impacts of the Project on the surrounding road network and will contribute proportionally to upgrading the affected intersections to ensure that the road network functions at an acceptable level into the future.
- Landscaping and urban design treatments would be applied to minimise the visual impact and light spill from the Project.

A detailed schedule of mitigation and management measures to manage residual impacts is outlined in Chapter 9 – *Revised environmental management measures* of this report.

10.4 Next steps

This Response to Submissions Report has been provided NSW DP&E for consideration. The approval process under the EPBC Act (Commonwealth) and the EP&A Act (NSW) are to proceed in parallel, as follows:

- NSW approval process under the EP&A Act:
  - The Response to Submissions Report will be made publicly available for a minimum of 30 calendar days during which the community and stakeholders will be invited to make written submissions on the report to NSW DP&E.
  - MIC will review submissions received and prepare a Supplementary Response to Submissions Report which addresses issues raised relating to proposed amendments to the development. The Supplementary Response to Submissions Report will be provided to NSW DP&E for consideration.

> NSW DP&E will prepare an Assessment Report to assist the NSW Minister for Planning in making a determination on the staged SSD application for the Project. The Assessment Report will be made publicly available.

> The NSW Minister for Planning (or the Planning Assessment Commission by delegation) will decide whether to approve the staged SSD application and any conditions of the approval.

> The staged development consent (if received) would provide consent at a concept level for the development, for which detailed proposals for separate parts of the site would be the subject of subsequent DAs. The exception would be for the Early Works package, for which MIC is seeking development consent without the need for further applications.

- Commonwealth approval process under the EPBC Act:

> MIC will provide a formal request to the DoE to vary the EPBC referral (EPBC number 2011/6086) to reflect the proposed amendments to the development.

> MIC will provide final EIS documentation (incorporating the draft EIS, this Response to Submissions Report and the Supplementary Response to Submissions Report) to DoE to reflect changes to the Project since exhibition of the draft EIS.

> DoE will consider the final EIS documentation and the variation to the EPBC referral and will prepare an Assessment Report to assist the Commonwealth Minister (or delegate) in making a determination on the Project.

> The Assessment Report will be made publicly available for a minimum of 30 calendar days.

> The Commonwealth Minister for the Environment (or delegate) will decide whether to approve the Project and any conditions on such approval.

Consultation with key stakeholders and the community will continue during the next stages of the Project from detailed design, to construction and operation. If staged development consent is received, a Community Engagement Plan (CEP) will be prepared and implemented by the contractor selected for the construction and operation of the Project. This will outline the consultation and notification processes during the pre-construction, construction and operation phases of the Project. Further details of future consultation activities are provided in section 3.4 of this report.