Environmental Assessment

SIMTA

SYDNEY INTERMODAL TERMINAL ALLIANCE

Part 3A Concept Application

REVISED - March 2012

urbis

TABLE OF CONTENTS

TABLE OF CONTENTS

FIGURES:

PICTURES:

TABLES:

BLANK

Statement of Validity

Submission of Environment Assessment: prepared under Part 3A of the *Environmental Planning and Assessment Act 1979*.

Environmental Assessment prepared by:

Names:	Jennifer Cooper (Associate Director) Danielle Pinkerton (Senior Consultant)
Address:	Urbis Pty Ltd. Level 21, 321 Kent Street Sydney NSW 2000
In respect of:	Concept Plan - SIMTA Moorebank Intermodal Terminal Facility (Application MP 10_1093)

Applicant and Land Details

Applicant:	SIMTA (Sydney Intermodal Terminal Alliance)
Applicant Address:	c/- Urbis Pty Ltd
Land to be developed:	SIMTA site (former DNSDC Site) Moorebank Avenue, Moorebank Part of: Commonwealth lands between SIMTA site and East Hills Railway Line, RailCorp land east of the intersection between Moorebank Avenue and East Hills Railway Line School of Military Engineering, Moorebank Avenue Glenfield Waste Disposal Centre Southern Sydney Freight Line rail corridor
Lot and DP	Lot 1 DP 1048263 Part of Lots: Lot 3001 DP 1125930; Lot 1 DP 825352; Lots 5 & 6 DP 833516; Lot 51 DP 515696; Lot 52 DP 517310; Lots 101-104 DP 1143827; Lot 4 DP 1130937
Project Summary:	Concept Plan proposal for a new Intermodal Terminal Facility at Moorebank including a rail corridor to the Southern Sydney Freight Line (including an indicative rail link), intermodal terminal, warehouse and distribution facilities, freight village (ancillary site and operational services), stormwater, landscaping, servicing and associated works.

Environmental Assessment: an Environmental Assessment in the following sections.

Declaration: I certify that the contents of the Environmental Assessment, to the best of my knowledge, have been prepared as follows:

(a) In accordance with the requirements of the *Environmental Planning and Assessment Act 1979* and *Environmental Planning and Assessment Regulations 2000*; and

(b) The information contained in this report is true in all material particulars and is not misleading.

Signature	Signature
Name: Jennifer Cooper	Name: Danielle Pinkerton
Date: 14 March 2012	Date: 14 March 2012

Executive Summary

This report has been prepared on behalf of the Sydney Intermodal Terminal Alliance (SIMTA), a consortium of Stockland, Qube Logistics and QR National, and in respect of a Concept Plan application seeking approval for the development of an intermodal terminal facility at Moorebank Avenue, Moorebank.

The SIMTA site comprises 83 hectares of land which is currently occupied by the Defence National Storage and Distribution Centre (DNSDC). The Concept Plan also nominates a rail corridor to the south and south-west of the SIMTA site connecting to the Southern Sydney Freight Line, including an indicative rail link. The SIMTA site is surrounded by Commonwealth owned land, including the School of Military Engineering to the west and undeveloped land held by the Department of Finance to the east.

The Concept Plan application seeks approval for the redevelopment of the SIMTA site as an intermodal terminal facility with warehouse and distribution facilities. The proposal comprises the following key components:

- An Intermodal Terminal Facility, providing a port-shuttle freight rail service between Port Botany and the SIMTA site. The Intermodal Terminal Facility will provide capacity for up to approximately one million containers (twenty-foot equivalent units or TEU) throughput per annum, accommodating the forecast catchment demand for Western and South Western Sydney.

- **Rail Corridor** – the Concept Plan includes a nominated rail corridor which is proposed to accommodate a 30 metre wide rail link to connect the SIMTA site with the Southern Sydney Freight Line. Based on the findings of the environmental assessment of the key issues outlined in **Section 4**, an indicative rail alignment has been included in the Concept Plan Environmental Assessment. The detailed design of the rail link will be subject to a further Project Approval application and approval process.

- **Intermodal Terminal** – the terminal is proposed to include on-site freight rail sidings of up to 1,200 metres in length to accommodate local freight trains to Port Botany. Freight will arrive by rail and be transported to the warehouse and distribution facilities within the SIMTA site, or be directly loaded on to trucks for transport to warehouses and nearby logistics centres. Exports and empty freight containers will be transported to the facility by truck and then loaded onto rail for transport back to Port Botany. The terminal is expected to contain four rail sidings, with areas for container handling and storage.

- **Warehouse and Distribution Facilities** - approximately 300,000m^2 of warehouses with ancillary offices will be constructed to the east of the intermodal terminal. These buildings are proposed to be constructed in stages in response to site servicing availability and market demands. It is expected that warehouses will range in size, depending on tenant needs.

- **Freight Village** – approximately 8,000m^2 of support services will be provided on site. These may include site management and security offices, meeting rooms, driver facilities and convenience retail and business services.

The Concept Plan application for the redevelopment of the SIMTA site has been lodged to enable the timely and efficient delivery of an intermodal terminal facility at Moorebank. The Environmental Assessment for the SIMTA Intermodal Terminal Facility has been prepared in accordance with the Director-General's Environmental Assessment Requirements (DGRs) issued by the Department of Planning and Infrastructure on 24 December 2010. Key points arising from the Environmental Assessment are summarised below:

- There has been strong and consistent policy support at both State and Commonwealth level for the expansion of the rail freight network across NSW. In particular, the development of an intermodal terminal facility at Moorebank has been proposed since 2004. The Concept Plan application lodged by SIMTA will facilitate the timely development of this facility by the private sector in accordance with the recommendations of the Freight Infrastructure Advisory report '*Railing Port Botany's Containers: Proposals to Ease Pressure on Sydney's Road*' dated July 2005.

- The SIMTA proposal has been assessed based on the forecast demand for one million TEU, within Sydney's south and south-west subregions. Any future proposal by the Moorebank Project Office on the adjacent Commonwealth owned land will service the same catchment area, reducing the ability for the SIMTA site to achieve full operational capacity. The cumulative impact of the SIMTA proposal and a future Moorebank Project Office proposal will be substantially the same and accordingly, the cumulative impacts have been fully assessed within this proposal.

- The SIMTA proposal will not restrict the assessment options that are currently being investigated by the Moorebank Project Office. As such, there is no reason to further delay the redevelopment of the SIMTA site while the relocation of the School of Military Engineering and future development of the Commonwealth owned land is resolved by the Moorebank Project Office.

- The proposal is entirely consistent with strategic planning and transport policies, including the *NSW State Plan, Metropolitan Transport Plan, State Infrastructure Strategy, Sydney Metropolitan Plan 2036* and the *South West Subregional Strategy*. The proposal will make a significant contribution to the key freight objective of increasing the proportion of container freight being moved by rail from Port Botany to 40% by 2016.

- The proposed development is permitted with Ministerial consent under the provisions of Part 3A of the *Environmental Planning and Assessment Act 1979* (EPA Act 1979), *State Environmental Planning Policy (Infrastructure) 2007* and the *Liverpool Local Environmental Plan 2008*. It has been demonstrated that the proposal complies with each of the relevant state environmental planning instruments. While Section 75O(3) of the EPA Act 1979 provides that the Minister may (but is not required to) take into account the provisions of any environmental planning instruments (other than state environmental planning policies), it has been demonstrated that the proposal satisfactorily responds to the local controls.

- The key issues for all components of the project identified in the DGRs have been assessed in detail, with specialist reports underpinning the key findings and recommendations outlined in the Environmental Assessment. It has been demonstrated that each of the impacts identified in the assessment of the key issues will either be positive or can be appropriately mitigated as summarised below:

  - **Transport and Access** – the assessment has demonstrated that there is a clear benefit arising from the proposal with regard to its strategic contribution to the development of the intermodal network and the increased share of container freight being moved by rail. There are forecast capacity issues for the local and regional road network, however, it has been demonstrated that these are irrespective of whether or not the SIMTA proposal proceeds. A range of infrastructure and non-infrastructure related mitigation measures have been identified to reduce these impacts.

  - **Noise and Vibration** – it has been demonstrated that the SIMTA proposal will be able to meet the relevant noise and vibration criteria for surrounding land uses through the implementation of a number of mitigation measures during the construction phase to minimise its potential impacts.

  - **Biodiversity** – the SIMTA site has been determined to be of limited conservation significance and its redevelopment will have minimal ecological impacts. An indicative rail link has been provided based on the outcomes of this assessment. The exact location of the rail link within the proposed rail corridor will be determined as part of the future Project Approval application. It will be located to minimise the potential flora and fauna impacts identified within the Concept Plan assessment.

  - **Hazards and Risks** – the potential on-site and off-site hazards and risks have been identified, with a list of recommendations for further detailed assessment to be undertaken at the Project Approval application stage, once the final layout and operational issues have been further resolved.

  - **Contamination** – it has been demonstrated that the SIMTA site is suitable for the proposed use, subject to further site investigations, including confirmation of a Site Management Plan being undertaken. A preliminary environmental assessment has been undertaken for the rail corridor lands including the indicative rail link. Further investigations will be completed as part of the Project Approval application. A Contamination Management Plan is to be prepared as part of a

Construction Environmental Management Plan to address any expected or unexpected contaminated materials during the construction process.

- **Stormwater and Flooding** – the stormwater, flooding and erosion sediment impacts have been identified and mitigation measures have been incorporated into the proposal. These measures will facilitate the treatment of stormwater quantity and quality in the future construction and operational phases of the project in accordance with the relevant legislative requirements.

- **Air Quality** – the assessment concludes that the SIMTA proposal will not exceed air quality criteria during the construction or operational phases, subject to the implementation of a range of mitigation measures. Further, it has been demonstrated that the proposal will result in a net positive impact on air quality at the regional level, taking into account the increased use of rail based freight transport.

- **Heritage** – the assessment has concluded that there is no indigenous heritage significant potential on the SIMTA site, having regard to the extensive earthworks and development that has already been undertaken to accommodate the existing site activities. The potential impacts are likely to occur within the rail corridor and mitigation measures are provided to address these potential impacts. The non-indigenous heritage impact assessment has concluded that the principal impact of the proposal will be on the SIMTA site, particularly with regard to the World War II buildings. The report recommends that a Statement of Heritage Impacts should be produced once divestment negotiations have been completed and statutory obligations are known and submitted with the Project Approval application.

- **Visual and Urban Design** – a comprehensive assessment has been undertaken with regard to the potential visual impacts arising from the SIMTA proposal and it has been concluded that the impact is relatively low, having regard to the existing DNSDC industrial buildings and the mitigation measures to screen the intermodal terminal facility. The design analysis has demonstrated that the proposed built form controls will satisfactorily guide the siting and layout of the future staged development.

- **Utilities** – it has been demonstrated that all required utility services can be connected to the site and are capable of accommodating the proposed intermodal terminal facility, subject to the augmentation and upgrading of the existing facilities.

- Further to the issues listed within the DGRs, the proponent has identified a number of additional important issues that are assessed within the Environmental Assessment. It has been demonstrated that each of the impacts arising from these additional issues will also be positive or appropriately mitigated as summarised below:

  - **Health Impacts** – the potential health impacts associated with the proposal have been assessed and indicate that acute or chronic health impacts are unlikely to result from the emissions associated with the SIMTA proposal on an individual or cumulative impact basis.

  - **Economic Impacts** – the employment generating potential of the proposal has been assessed and it has been determined that the proposed intermodal facility will generate a significant number of direct and indirect jobs. It will also result in a number of other economic benefits, including net travel time and labour cost savings.

  - **Climate Change** – the possibility of severe weather events associated with climate change has been assessed with regard to the SIMTA proposal. Appropriate mitigation measures have been recommended for the construction and operational phases which will be incorporated into the future Project Approval applications.

  - **Ecologically Sustainable Development (ESD)** – a range of ESD initiatives have been proposed, including site management policies and strategies, materials selection and energy and water demand management and on-site renewable energy generation. These initiatives will contribute to the sustainable management of the proposal and minimising its ecological footprint. Further, there are considered to be regional ESD benefits arising from the shift towards rail based freight transport.

- **Waste Management** – a waste management strategy has been prepared to achieve best practice waste reduction, waste minimisation and waste management at the SIMTA Intermodal Terminal Facility and help reduce the amount of waste sent to landfill.

- An environmental risk analysis has been undertaken to identify the potential environmental impacts associated with the proposal. This analysis includes a risk ranking for each of the potential impacts, which is then reassessed taking into account the proposed mitigation measures to then identify the residual risk ranking. This analysis has concluded that the proposed mitigation measures to be implemented within the SIMTA proposal will result in no unacceptable environmental risks.

- Consultation was undertaken with a range of parties during the preparation of the Environmental Assessment, including Commonwealth, State and local government authorities, service and infrastructure providers, specialist interest groups and the local community. Each of the relevant issues raised during the consultation process has been addressed within the Environmental Assessment.

It has been demonstrated that the proposed redevelopment will result in a number of significant benefits, including:

- Reduction in congestion and heavy vehicle movements along the M5 Motorway between Port Botany and Moorebank by approximately 2,700 vehicles per day.

- Restoration and regeneration of degraded areas of vegetation to improve the overall biodiversity quality of the rail corridor land.

- Improvements to the water quality of surrounding riparian corridors, including the Anzac Creek and Georges River through the introduction of more rigorous on-site water management and water quality control measures.

- A net positive impact on regional air quality, having regard to the increased use of rail based freight transport.

- Creation of 850 direct and indirect jobs per annum over the six year construction period and 7,100 direct and indirect jobs once the facility is fully operational.

- Reduction in truck vehicle kilometres travelled of approximately 13 million kilometres per annum and net travel time savings of approximately 530,400 hours per annum, with associated labour cost savings of $18.6 million per annum (2011 figures).

The potential direct, indirect and cumulative impacts of the proposed intermodal terminal facility have been identified and thoroughly assessed. It is considered that the potential impacts can be satisfactorily mitigated through a range of measures that will be addressed as part of the future Project Approval applications and throughout the construction and operational phases of the project. A Draft Statement of Commitments has been prepared listing each of these mitigation measures.

Overall, the assessment concludes that the development proposed in the Concept Plan application is in the public interest and approval is recommended.

1 Introduction

1.1 BACKGROUND TO PROPOSAL

This Environmental Assessment (EA) has been prepared in association with a Part 3A Concept Plan Application for the SIMTA Intermodal Terminal Facility at Moorebank.

The proposal comprises the redevelopment of 83 hectares of industrial zoned land at Moorebank Avenue, Moorebank for use as an intermodal terminal facility (the site is currently occupied by Department of Defence). A rail corridor and indicative rail link is also proposed between the planned intermodal terminal facility and the Southern Sydney Freight Line (SSFL), which is currently under construction. The proposal forms a vital infrastructure component for Sydney's future economic and productivity growth. It will allow efficient rail freight transport from Port Botany to Sydney's west and south-west by utilising the freight capacity on the SSFL. It will also contribute in achieving an increase in rail-based freight transport within Sydney and NSW.

The significance of the SIMTA Intermodal Terminal Facility was recognised in its declaration as a 'Major Project' under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Minister for Planning issued correspondence on 9 November 2010 confirming that the proposal is a development of a kind described in Schedule 1, Group 8, Clause 23 of *State Environmental Planning Policy (Major Development) 2005* and a project to which Part 3A of the EP&A Act applies.

The Minister also issued separate correspondence dated 9 November 2010 authorising the submission of a Concept Plan for the proposed development. The Director-General's Environmental Assessment Requirements (DGRs) for the Concept Plan were subsequently issued by the Department of Planning on 24 December 2010. This EA has been prepared in accordance with Part 3A of the EP&A Act and the provisions of the DGRs.

1.2 PROJECT OBJECTIVES

The key objectives for the project are to deliver an intermodal terminal facility which:

- Is strategically located to utilise existing and future Metropolitan, State and National rail freight and road networks, including the Southern Sydney Freight Line and the M5 and WestLink M7 motorways.
- Will provide capacity for an annual throughput of up to one million TEU to meet the forecast demand for Western and South Western Sydney and make a significant contribution to achieving Federal and State land use, freight and logistics policies, including the State Plan target of 40% of container freight being transported by rail.
- Will assist with alleviating freight-related road congestion between Port Botany and Moorebank, particularly along the M5 Motorway.
- Will enable growth of the freight and logistics industry to better service the South West and Western Sydney catchments.
- Is appropriately designed and managed to provide operational efficiencies and to appropriately mitigate impacts on the local community.
- Realises the economic benefits of rail distribution, including reduction in truck vehicle kilometres and net travel time savings.
- Provides warehousing and distribution opportunities in an appropriate location, in turn providing employment opportunities and associated economic and social benefits.

The principal aim of the Concept Plan application is to establish clear parameters that will guide the future delivery of the intermodal facility in a staged manner. It proposes a range of built form controls to guide the siting and layout of the intermodal terminal facility, including both the rail infrastructure and the warehouse buildings. It also includes a range of controls that will provide for the appropriate management and/or mitigation of the potential environmental, social and/or economic impacts during both the construction and operational phases of the development.

This application seeks approval of the SIMTA Concept Plan. Following approval, a detailed design process will be undertaken and further Project Approval applications relating to the construction work will then be lodged on a staged basis. The Project Approval applications will include more detailed documentation of the proposed development and a comprehensive assessment of its compliance with the provisions outlined in the Concept Plan.

1.3 VALUE OF PROJECT

Capital investment value (CIV) is defined in the *Environmental Planning and Assessment Regulation 2000* as follows:

> ***capital investment value*** *of a development or project includes all costs necessary to establish and operate the project, including the design and construction of buildings, structures, associated infrastructure and fixed or mobile plant and equipment, other than the following costs:*
>
> *(a) amounts payable, or the cost of land dedicated or any other benefit provided, under a condition imposed under Division 6 or 6A of Part 4 of the Act or a planning agreement under that Division,*
>
> *(b) costs relating to any part of the development or project that is the subject of a separate development consent or project approval,*
>
> *(c) land costs (including any costs of marketing and selling land),*
>
> *(d) GST (within the meaning of A New Tax System (Goods and Services Tax) Act 1999 of the Commonwealth).*

The CIV of the proposed development is $490 million. A Quantity Surveyors Certificate of Cost report certifying CIV of the development is attached as **Appendix A**.

1.4 DIRECTOR-GENERAL'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

The following table provides a summary of the Director-General's Environmental Assessment Requirements issued by the Department of Planning on 24 December 2010. The table also identifies where each requirement has been addressed within the Environmental Assessment report. A copy of the DGRs is attached as **Appendix B**.

TABLE 1 – RESPONSE TO DIRECTOR-GENERAL'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

REQUIREMENT	REFERENCE
GENERAL REQUIREMENTS	
Environmental Assessment (EA) including:	
▪ Executive Summary	**Page 2**
▪ Detailed Description	**Section 2.4**
▪ Strategic and Project Justification	**Section 3**
▪ Assessment of Key Issues	**Section 4**
▪ Draft Statement of Commitments	**Section 8**
▪ Certification	**Page 1**
KEY ISSUES	
▪ Transport and Access	**Section 4.2**
▪ Noise and Vibration	**Section 4.3**
▪ Biodiversity	**Section 4.4**

REQUIREMENT	REFERENCE
▪ Hazards and Risks	**Section 4.5**
▪ Contamination	**Section 4.6**
▪ Stormwater and Flooding	**Section 4.7**
▪ Air Quality	**Section 4.8**
▪ Heritage	**Section 4.9**
▪ Visual and Urban Design	**Section 4.10**
▪ Utilities	**Section 4.11**
ENVIRONMENTAL RISK ANALYSIS	**Section 6**
CONSULTATION	**Section 7**

1.5 PROPONENT AND PROJECT TEAM

The Environmental Assessment has been prepared by Urbis with specialist reports prepared by a range of consultants and sub-consultants. The key disciplines and members of the project team are listed below:

- Access, Traffic and Parking – Hyder
- Air Quality – PAE Holmes
- Biodiversity (Aquatic Impact) – ALS Water Science Group
- Biodiversity (Flora and Fauna) – Hyder
- Climate Change – Hyder
- Community Consultation – Elton Consulting
- Contamination – Golder Associates
- Economic Impacts – PriceWaterhouseCoopers and Urbis
- Greenhouse Gas Impacts – Hyder
- Hazards and Risks – Hyder
- Health Risks – Toxikos Toxicology Consultants
- Indigenous Heritage – Archaeological & Heritage Management Solutions Pty Ltd
- Noise and Vibration – Hyder
- Non-Indigenous Heritage – Artefact Heritage Solutions
- Social Impacts – Urbis
- Stormwater and Flooding – Hyder
- Urban Design and Visual Impact – Reid Campbell
- Urban Planning – Urbis
- Utilities and Services – Hyder
- Waste Management – Hyder

2 Detailed Description

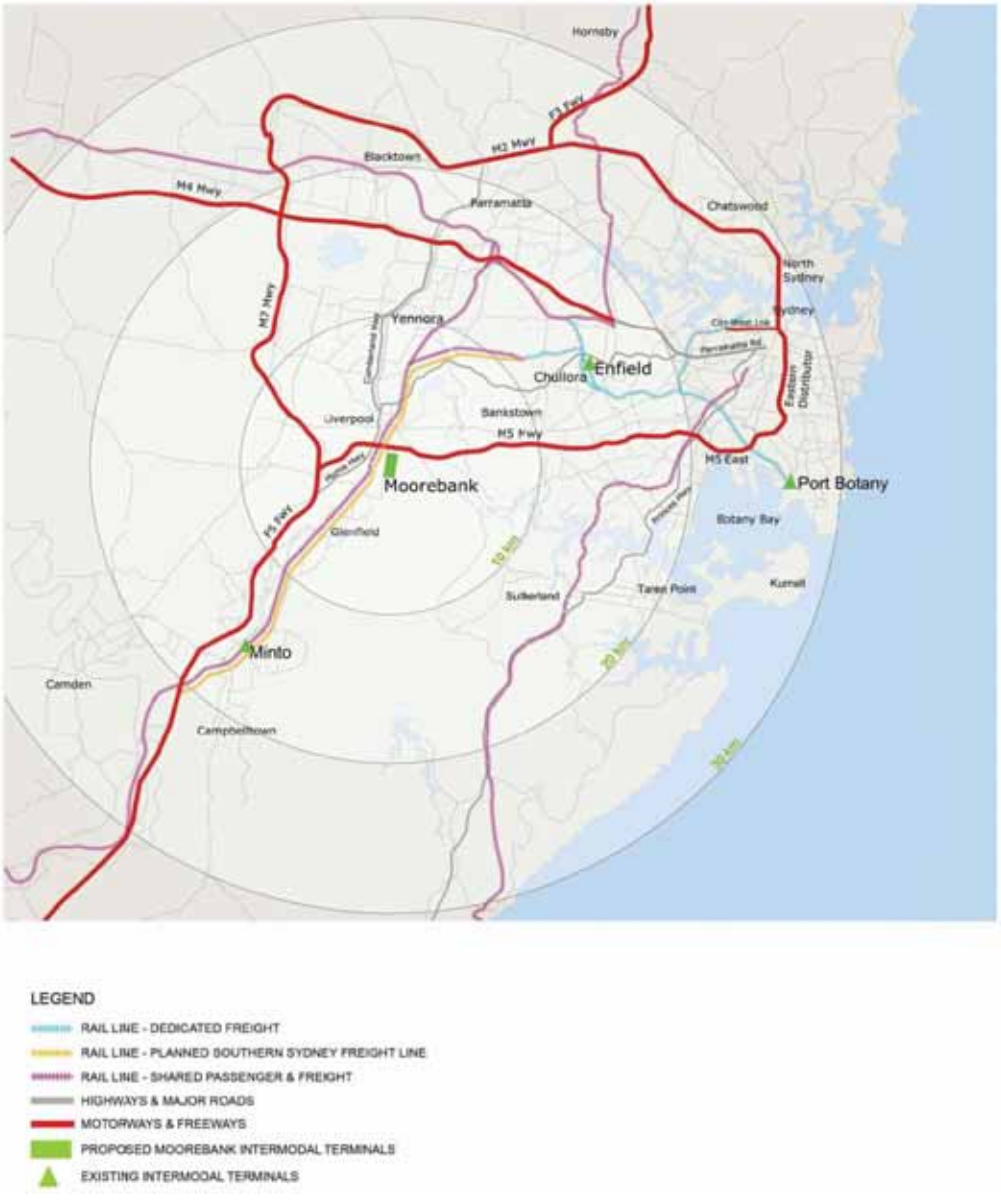
2.1 LOCATION

2.1.1 REGIONAL CONTEXT

The SIMTA site is located approximately 27 kilometres south-west of the Sydney Central Business District (CBD) and approximately 26 kilometres west of Port Botany. The site is situated within the Liverpool Local Government Area (LGA), in Sydney's South Western Subregion, approximately 2.5 kilometres from the Liverpool City Centre.

The site is located approximately 800 metres south of the intersection of Moorebank Avenue and the M5 Motorway. This intersection provides on- and off-ramps in an eastern and western direction, allowing vehicles to turn left and right at each of the four ramps, as well as to move north and south through the intersection. The M5 provides the principal road based link between the site, Sydney CBD and Port Botany. It also provides access to the key employment and industrial lands within the South Western Sydney Subregion. The M5 links with the WestLink M7 Motorway to the west, providing access to the broader metropolitan and State road network.

FIGURE 1 – REGIONAL CONTEXT PLAN (REID CAMPBELL 2011)



The Southern Sydney Freight Line (SSFL) is located one kilometre to the west of the proposed SIMTA site. The SSFL is a 36km dedicated freight line between Macarthur and Sefton and aims to improve the efficiency of rail freight services on the major rail corridor linking Melbourne, Sydney and Brisbane and Sydney commuter train services by operating as an independent freight line[1]. Leighton Contractors recently announced that they have been selected by Australian Rail Track Corporation (ARTC) to deliver the final stage of the SSFL, with construction expected to commence in October and completion in late 2012[2].

2.2 LOCAL CONTEXT

The SIMTA site is approximately 2.5 kilometres to the south of Liverpool City Centre. The site is also located near a number of significant industrial areas, including Moorebank (Yulong and Amiens) and Warwick Farm to the north, Chipping Norton to the north-east, Prestons to the west and Glenfield and Ingleburn to the south-west. The Moorebank Industrial Area comprises approximately 200 hectares of industrial development, the majority of which is located north of the M5 Motorway between Newbridge Road, the Georges River and Anzac Creek. This industrial area supports a range of industrial uses including freight and logistics, heavy and light manufacturing, office and business park developments.

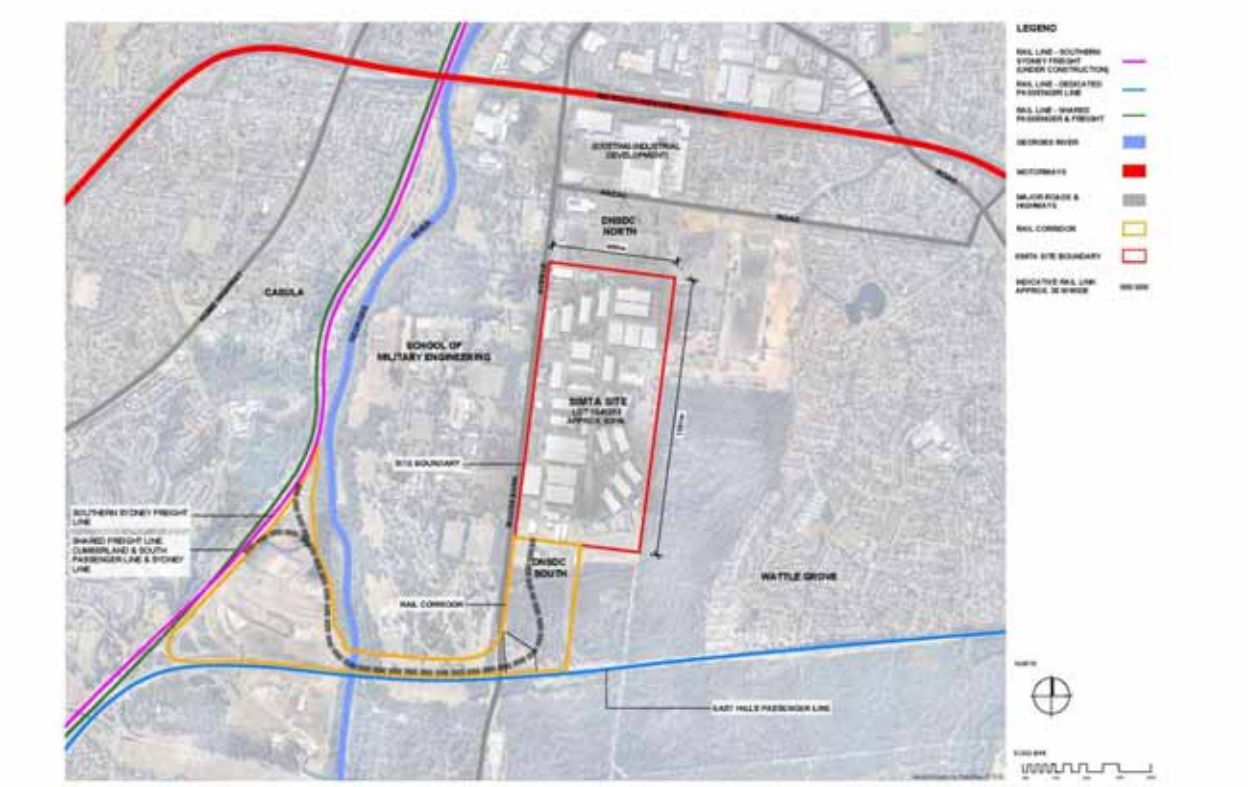
Other dominant surrounding land use includes the Department of Defence land, which comprises:

- The School of Military Engineering, on the western side of Moorebank Avenue directly adjacent to the SIMTA Site.
- The Holsworthy Military Reserve, to the south of the site on the southern side of the East Hills Passenger Railway Line.
- The Commonwealth Residual Land, to the east between the SIMTA site and the Wattle Grove residential area.

[1] Australian Rail Track Corporation Ltd, 14 September 2010, Media Release, *Southern Sydney Freight Line Back on Track*

[2] Leighton Contractors Pty Limited, 1 August 2011, Media Release, *Leighton Contractors and ARTC in Alliance to deliver Southern Sydney Freight Line*

FIGURE 2 – LOCAL CONTEXT PLAN (REID CAMPBELL 2011)



The Glenfield Waste Disposal facility is located to the west of the SIMTA site. This triangular portion of land is generally bound by the Georges River to the east, the East Hills railway line to the south and the South and Cumberland railway lines and future SSFL to the west.

Nearby residential areas include Wattle Grove, Moorebank, Holsworthy and Casula, which are located to the east and north east. Wattle Grove is within the closest proximity, located approximately 400 metres east of the SIMTA site, while the Casula residential areas is approximately 1 kilometre west of the SIMTA site and approximately 400 metres west of the proposed rail corridor land and indicative rail link. These residential areas are generally characterised by low-density detached dwellings varying in age, with Casula being an older subdivision occurring in the late 1950s, while the residential areas of Moorebank and Wattle Grove are newer subdivisions occurring in the late 1970s through to the early to mid-1990s.

Moorebank Avenue is located immediately west of the SIMTA site. It runs in a north-south direction and provides a direct connection between the Liverpool City Centre, M5 Motorway on/off ramps to the north, and the Glenfield/Macquarie Fields residential areas to the south. The closest passenger railway stations are Casula (approximately 1 kilometre to the west), Liverpool (approximately 2.5 kilometres to the north) and Holsworthy (approximately 3 kilometres to the south-east). While Casula is located in closest proximity of the site, the railway station is physically separated from the SIMTA site by the Georges River with no current connection to provide for direct pedestrian movements to/from the SIMTA site. Liverpool and Holsworthy railway stations are located further from the SIMTA site, however, the Route 901 bus service provides regular connections to/from Anzac Road, north of the SIMTA site. Liverpool is an interchange station that services the South, Cumberland, Bankstown and Inner West railway lines. Holsworthy is located on the East Hills line, which runs immediately south of the SIMTA site. The SIMTA site includes an existing rail spur from the East Hills railway line. This rail spur is no longer in use, noting that the East Hills line is a dedicated passenger line.

The Georges River runs along the western boundary of the School of Military Engineering. Anzac Creek runs to the south of the SIMTA site and along the eastern boundary of the Commonwealth Land, linking to Chipping Norton Lake and the Georges River to the north. Existing drainage channels through the SIMTA site drain towards the south-east and north-east corner of the site into Anzac Creek and along the western boundary to Georges River.

FIGURE 3 – LOCAL CONTEXT PHOTOGRAPHS (URBIS 2010)

PICTURE 1 – ADJOINING COMMONWEALTH LAND TO THE EAST OF SIMTA, LOOKING EAST FROM SIMTA

PICTURE 2 – ADJOINING COMMONWEALTH LAND TO THE EAST OF SIMTA, LOOKING WEST FROM WATTLE GROVE

PICTURE 3 – LOOKING EAST ACROSS THE SCHOOL OF MILITARY ENGINEERING FROM CASULA

PICTURE 4 – LOOKING EAST TO THE SCHOOL OF MILITARY ENGINEERING FROM THE CASULA POWERHOUSE

PICTURE 5 – LOOKING SOUTH ALONG THE EXISTING PASSENGER RAILWAY LINE FROM CASULA RAILWAY STATION

PICTURE 6 – LOOKING NORTH-EAST ALONG THE GEORGES RIVER FROM CASULA POWERHOUSE

2.3 SITE DESCRIPTION

2.3.1 SIMTA SITE

The SIMTA site is located on the eastern side of Moorebank Avenue in Moorebank. The legal description of the property is Lot 1 in Deposited Plan 1048263. The site has the following key features:

- Total site area of approximately 83 hectares.
- The allotment is regular in shape, with a length of 1,382 metres and a width of 600 metres.
- The site topography is relatively flat with a low hill on the eastern part of the site.
- The site has direct frontage to Moorebank Avenue, which is a publicly used private road.

An aerial photograph is provided in **Figure 4** below. A reduced sized copy of the deposited plan and photographs of the SIMTA site are provided in **Figure 5** on the following pages.

FIGURE 4 – AERIAL PHOTOGRAPH (URBIS 2010)

The SIMTA site has been associated with the military since the early 1900s, including its use as a training camp in 1907 and as a military storage facility from 1944[3]. The site was sold by the Commonwealth in 2003, however, the Department of Defence continues to lease the site, which is now commonly known as the Defence National Storage and Distribution Centre site (DNSDC site). The key features of the existing site operations are provided below:

- The existing improvements comprise approximately 66 low-rise buildings with a total floor area of approximately 238,000m^2, including warehouses and administrative offices.

[3] Artefact, *Non-Indigenous Heritage*, 25 August 2011

- The site has an internal road network and large hardstand areas, which are principally asphalt.
- A single access point services the site from Moorebank Avenue, however, there are a number of operational points along the Moorebank frontage which may be opened for specific tasks.

FIGURE 5 – SIMTA SITE - DEPOSITED PLAN (LOT 1)

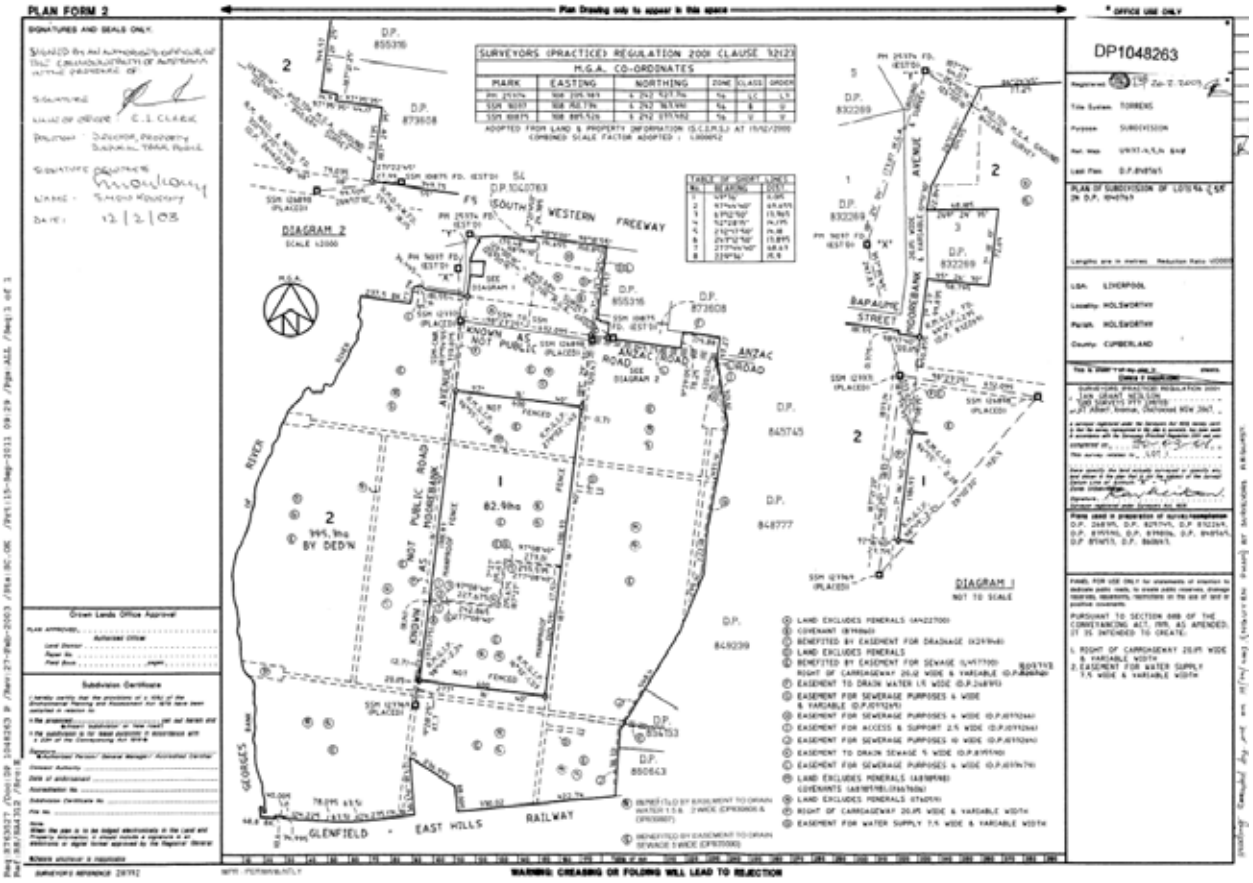


FIGURE 6 – SIMTA SITE PHOTOS (URBIS 2010)

PICTURE 7 – EXISTING WAREHOUSE BUILDINGS

PICTURE 8 – WAREHOUSE AND PARACHUTE DRYING TOWER

PICTURE 9 – UNDEVELOPED LAND PORTION TO SOUTH

PICTURE 10 – EXISTING DISUSED RAIL LINE

PICTURE 11 – EXISTING UNSCREENED CONTAINER STORAGE

PICTURE 12 – EXISTING VEHICLE ACCESS AND STORAGE AREAS

2.3.2 RAIL CORRIDOR LAND

The Concept Plan application includes a proposed rail corridor to the south and south-west of the SIMTA land which is proposed to accommodate a rail link between the SIMTA site and the Southern Sydney Freight Line (SSFL). The total land area within the rail corridor is approximately 65 hectares of land.

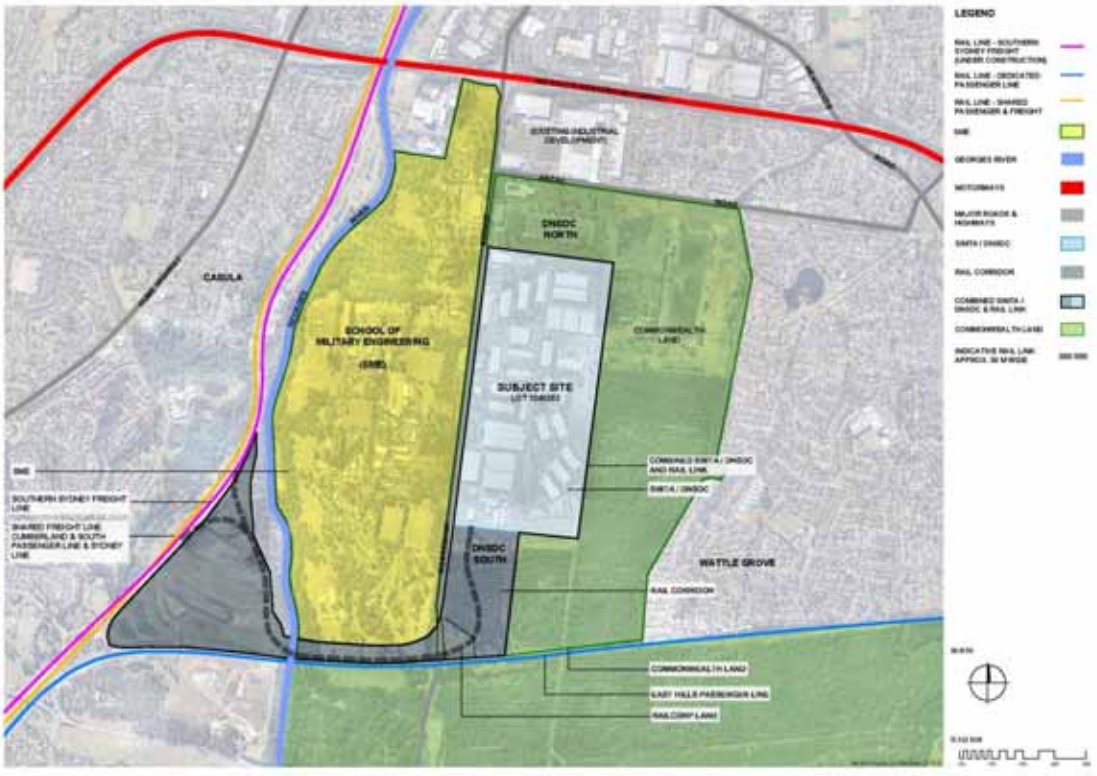
An indicative rail link is proposed within the rail corridor. The location of the indicative link is based on the outcomes of the environmental assessments undertaken in the preparation of the Concept Plan application. The rail link will be approximately 30 metres wide and is anticipated to run along the eastern boundary of the Glenfield Waste Disposal Centre, before crossing the Georges River. It will then run along the southern boundary of the School of Military Engineering before turning north and entering the SIMTA site. The final alignment of the rail link will be determined through further design development which will be undertaken prior to lodgement of a subsequent Project Application over the rail corridor land.

The land that is affected by the proposed rail corridor includes:

- The Commonwealth land between the SIMTA site and the East Hills Railway Line.
- An irregular shaped portion of land owned by RailCorp and located to the east of the intersection between Moorebank Avenue and the East Hills Railway Line.
- The School of Military Engineering on the western side of Moorebank Avenue.
- The Glenfield Waste Disposal Centre on the western side of the Georges River.
- The Southern Sydney Freight Line rail corridor on the western side of the Georges River.

The land affected by the proposed rail corridor is highlighted in grey and the indicative rail link is shown as a dotted line in the Land Use Drawing shown in **Figure 7**.

FIGURE 7 – RAIL CORRIDOR AND INDICATIVE RAIL LINK LAND (REID CAMPBELL 2011)



The key features of the rail corridor land, including the previous and current and uses, is provided below.

- **Commonwealth Land** - the majority of the Commonwealth land between the SIMTA site and the East Hills Railway Line is undeveloped, containing native vegetation including Castlereagh Scribbly Gum Woodland, Castlereagh Swamp Woodland, and River Flat Eucalypt Forest. Small pockets of land have been cleared for past rail-related activities. This land is traversed by Anzac Creek which drains into the Georges River and includes a disused railway spur which connects into the East Hills Railway Line.

- **RailCorp Land** - the RailCorp land located east of the intersection of Moorebank Avenue and the East Hills Railway Line is also undeveloped. This land has been predominantly cleared of vegetation.

- **School of Military Engineering** - the Commonwealth land to the west of Moorebank Avenue forms part of the School of Military Engineering lands. The portion which the rail corridor runs through is principally used for a golf course. The bank of the Georges River is vegetated, however, there is a cleared passage to accommodate the East Hills railway line bridged crossing. The site has also been associated with the military since the early 1900s, including use as a training facility from 1907, with more permanent training facilities, accommodation and amenities established in 1916. The School of Military Engineering was established in 1939, immediately after the declaration of war[4]. The Military Engineers Golf Course appears to have been built in the early 1970s[5].

- **Glenfield Waste Disposal Centre** - this triangular shaped site bound by the Georges River, Cambridge Avenue and the South and Cumberland Railway Lines is currently used for waste disposal and extractive activities. It is traversed by the East Hills Railway Line before it connects into the South and Cumberland Railway Line. A review of aerial photographs associated with the contamination assessment for the proposed rail corridor[6] indicated that the site was used for agricultural activities until the quarry first appeared in the early-mid 1970s.

Both the rail corridor and the indicative rail link shown in **Figure 7** have been assessed as part of the Concept Plan application. The specialist reports submitted with the Environmental Assessment have generally considered the potential impact of the rail link being located anywhere within the rail corridor land. However, the urban design and visual impact specialist assessments have considered the indicative rail link in detail to understand its potential impacts.

[4] Artefact, *Non-Indigenous Heritage*, 25 August 2011

[5] Golder Associates, *Phase 1 Environmental Site Assessment*, 27 September 2011

[6] Golder Associates, *Phase 1 Environmental Site Assessment*, 27 September 2011

2.4 PLANNING CONTEXT

The key environmental planning instruments applying to the site are listed below:

- *Environment Protection and Biodiversity Conservation Act 1999*
- *Environmental Planning and Assessment Act 1979*
- *State Environmental Planning Policy (Major Development) 2005*
- *State Environmental Planning Policy (Infrastructure) 2007*
- *State Environmental Planning Policy No 55 - Remediation of Land*
- *Greater Metropolitan Regional Environmental Plan No 2 - Georges River Catchment*
- *Liverpool Local Environmental Plan 2008*
- *Development Control Plans*

The key provisions that are relevant to the proposal are identified and briefly discussed in the following sub-sections.

2.5 ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) provides that actions which will have, or are likely to have a significant impact on a matter of national environmental significance require the approval from the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities (the Minister).

A referral for the SIMTA Intermodal Terminal Facility is required to address the following sections of the Act:

- Sections 15B and 15C – the DNSDC (SIMTA) site is listed on the Commonwealth Heritage list.
- Sections 18 and 18A – the land contains threatened flora (*grevillea parvifora subsp. parviflora, persoonia nutans, acacia pubescensi)* and fauna species (*pteropus poliocephalus*).
- Sections 26 and 27A – the proposed rail corridor traverses Commonwealth Land.

The EPBC Act referral will outline the proposed actions, likely impacts, measures to avoid and reduce impacts. It will be accompanied by the Environmental Assessment, including the specialist reports.

2.6 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

This report has been prepared in accordance with the provisions of Part 3A of the *Environmental Planning and Assessment Act 1979* (the Act) as outlined below:

- A declaration was obtained from the Minister for Planning confirming that the proposal is a project to which Part 3A of the Act applies, taking into account the provisions of Clause 6 and Schedule 1 of the Major Development SEPP and Section 75B of the Act.
- Authorisation was sought from the Minister for Planning for the preparation of an application for Concept Plan approval in accordance with Section 75M of the Act.
- The Director-General was requested to issue Environmental Assessment Requirements to inform the preparation of the Environmental Assessment in accordance with Section 75F of the Act.

Accordingly, the Minister has the ability to approve the proposed development, taking into account the Part 3A provisions outlined below:

- The proposed development on the SIMTA site is permitted under the provisions of *State Environmental Planning Policy (Infrastructure) 2007* (the Infrastructure SEPP) and *Liverpool Local Environmental Plan 2008* (refer to **Section 2.3.4** and **Section 2.3.7**).

- The proposed rail link on land zoned SP2 Infrastructure (Defence) is permitted in accordance with the provisions of the Infrastructure SEPP (refer to **Section 2.3.4**).

- The proposed works within the land zoned RE1 Recreation is permitted in accordance with the provisions of Section 75O(3) and Section 75R of the Act. These Part 3A provisions provide that the Minister may (but is not required to) take into account the provisions of any environmental planning instruments (other than state environmental planning policies) in determining a Concept Plan. The land is not considered to be an '*environmentally sensitive area of State significance*' having regard to the significant disturbance of the site during its use for extractive industry and landfill. The site is also not appropriately defined as a '*sensitive coastal location*'. Accordingly, the Minister may approve the proposed works, irrespective of the provisions of the Liverpool LEP.

The following additional provisions in Part 3A of the Act are relevant to the proposal:

- Section 75U provides that certain authorisations are not required for a Concept Plan (or Project) Application, including (but not limited to):

  - A permit under section 201, 205 or 219 of the *Fisheries Management Act 1994*.

  - An approval under Part 4, or an excavation permit under section 139, of the *Heritage Act 1977*.

  - A permit under section 87, or a consent under section 90, of the *National Parks and Wildlife Act 1974*.

  - An authorisation referred to in section 12 of the *Native Vegetation Act 2003* (or under any Act to be repealed by that Act) to clear native vegetation or State protected land.

  - A permit under Part 3A of the *Rivers and Foreshores Improvement Act 1948*.

  - A bushfire safety authority under section 100B of the *Rural Fires Act 1997*.

  Further, Division 8 of Part 6 of the *Heritage Act 1977* does not apply to prevent or interfere with the carrying out of an approved project.

- Section 75V states that certain authorisations cannot be refused if it is necessary for carrying out an approved project and is to be substantially consistent with the approval under this Part. These include (but are not limited to):

  - An aquaculture permit under section 144 of the *Fisheries Management Act 1994*.

  - An environment protection licence under Chapter 3 of the *Protection of the Environment Operations Act 1997* (for any of the purposes referred to in section 43 of that Act).

  - A consent under section 138 of the *Roads Act 1993*.

  - A licence under the *Pipelines Act 1967*.

- If the Minister approves the Concept Plan and delegates assessment of future stages to be under Part 4, the authorisations listed in Section 75U cannot be refused if it is necessary for carrying out the project or that stage of the project and substantially consistent with the development consent.

Despite the above provisions, SIMTA has consulted with the relevant agencies and will continue to liaise as required so that the objectives of these instruments are appropriately observed in the detailed design of the future Project Applications.

2.6.1 STATE ENVIRONMENTAL PLANNING POLICY (MAJOR DEVELOPMENT) 2005

Schedule 1 of *State Environmental Planning Policy (Major Development) 2005* lists the types and classes of development that may be considered Part 3A projects. The SIMTA Intermodal Facility is listed in '*Group 8 – Transport, communications, energy and water infrastructure*':

23 Rail and related transport facilities

(1) Development that has a capital investment value of more than $30 million for the purpose of:

(a) heavy railway lines associated with mining, extractive industries or other industry, or

(b) railway freight facilities or inter-modal terminals.

(2) Development within a railway corridor or associated with railway infrastructure that has a capital investment value of more than $30 million and that the Minister determines is of strategic State or regional planning significance, and is for the purpose of:

(a) commercial, residential or retail development, or

(b) container packing, storage or examination facility, or

(c) bus interchange development.

The total capital investment value of the proposed works is approximately $490 million. The Minister for Planning has confirmed that the proposed development is of a type described in the Major Development SEPP and is a project to which Part 3A of the Act applies.

2.6.2 STATE ENVIRONMENTAL PLANNING POLICY (INFRASTRUCTURE) 2007

Part 3 Division 15 of *State Environmental Planning Policy (Infrastructure)* (ISEPP) relates to railway infrastructure and development within rail corridors. Clause 81 permits rail freight intermodal facilities with development consent in 'prescribed zones', which include IN1 General Industrial, SP1 Special Activities, and SP2 Infrastructure zones.

The SIMTA site is zoned IN1 Industrial, while the rail corridor and indicative rail link is located within the SP2 Infrastructure and RE1 Recreation zones. The development within the IN1 and SP2 zones is permitted under the provisions of the ISEPP. The permissibility of the rail corridor within the RE1 zone is addressed separately in **Section 2.3.2**.

Clause 104 applies to projects listed in Schedule 3, being traffic generating development which is to be referred to the Roads and Traffic Authority. Schedule 3 lists 'freight intermodal facilities and freight terminals' of any size or capacity. Accordingly, while the RTA has been consulted with during the EA preparation process, the EA documentation will be referred to the RTA during the assessment process.

2.6.3 STATE ENVIRONMENTAL PLANNING POLICY NO 55 – REMEDIATION OF LAND

State Environmental Planning Policy No 55 – Remediation of Land (SEPP 55) provides for the remediation of contaminated land to minimise the risk of harm to human health and the environment. Clause 7 of SEPP 55 requires that a consent authority must consider whether land is contaminated prior to issuing development consent.

A detailed assessment has been undertaken of the potential for contamination within both the SIMTA site and the rail corridor land including the indicative rail link. Details of the assessment are provided within the assessment of key issues in **Section 9**.

2.6.4 GREATER METROPOLITAN REGIONAL ENVIRONMENTAL PLAN NO 2 – GEORGES RIVER CATCHMENT

Greater Metropolitan Regional Environmental Plan No 2 – Georges River Catchment (REP 2) became a deemed State Environmental Planning Policy (SEPP) under Division 2, Part 3 of the *Environmental Planning and Assessment Act 1979*) on 1 July 2009. As this Concept Plan is a project to which Part 3A of the Act applies, only Part 3 of the deemed SEPP applies to the proposal.

The future tenants of the SIMTA Intermodal Terminal Facility are not known at this early stage of the planning approvals process. However, assessment of the proposal has been undertaken in accordance with REP 2, having regard to the types of uses that would typically locate within an intermodal facility. The key matters are listed below:

- The future Project Applications for the construction of SIMTA Intermodal Terminal Facility will require assessment against the deemed SEPP and advertising of their approvals in accordance with Section 11(9).
- The proposed future stormwater management system or works will need to be assessed in accordance with the provisions of Section 11(20), including water quality and quantity impacts.
- Any development within 100 metres of a drainage line, creek, wetland or river foreshore area is required to address the provisions listed within Section 11(21). Each of the provisions has been addressed within **Sections 4 to 14** of the Environmental Assessment, as referenced in the following table:

TABLE 2 – GREATER METROPOLITAN REGIONAL ENVIRONMENTAL PLAN NO 2 – GEORGES RIVER CATCHMENT: PLANNING CONTROL 21 – DEVELOPMENT IN VEGETATION BUFFER AREAS

PLANNING CONTROL	ENVIRONMENTAL ASSESSMENT REFERENCE
Bushfire hazard reduction	**Section 8.3.3**
Whether it provides a buffer between the developed land and the environmentally sensitive area (including waterway)	**Section 7**
Consideration of the *Planning for Bushfire Protection* controls	**Section 8.3.3**
Consideration of the *NSW State Rivers and Estuaries Policy* and *NSW Wetlands Management Policy*	**Appendix P**
Runoff and water quality management from the development into the Georges River	**Section 10.3.2**
▪ Mitigation measures to minimise: o Loss of riparian vegetation o Riverbank and channel damage and erosion	**Section 7**
▪ Increase and maintain terrestrial and aquatic biological diversity	**Section 7**

2.6.5 LIVERPOOL LOCAL ENVIRONMENTAL PLAN 2008

The Liverpool Local Environmental Plan 2008 (LEP) is the primary local environmental planning instrument that would generally apply to the site under the provisions of Part 4 of the EP&A Act.

As noted in **Section 2.3.2** above, Section 75O(3) of the EPA Act 1979 provides that the Minister may (but is not required to) take into account the provisions of any environmental planning instruments (other than state environmental planning policies) in determining a Concept Plan. Regardless, the provisions of the LEP have been identified and assessed, having regard to the appropriateness of the proposed development with the existing and likely future development on the surrounding land.

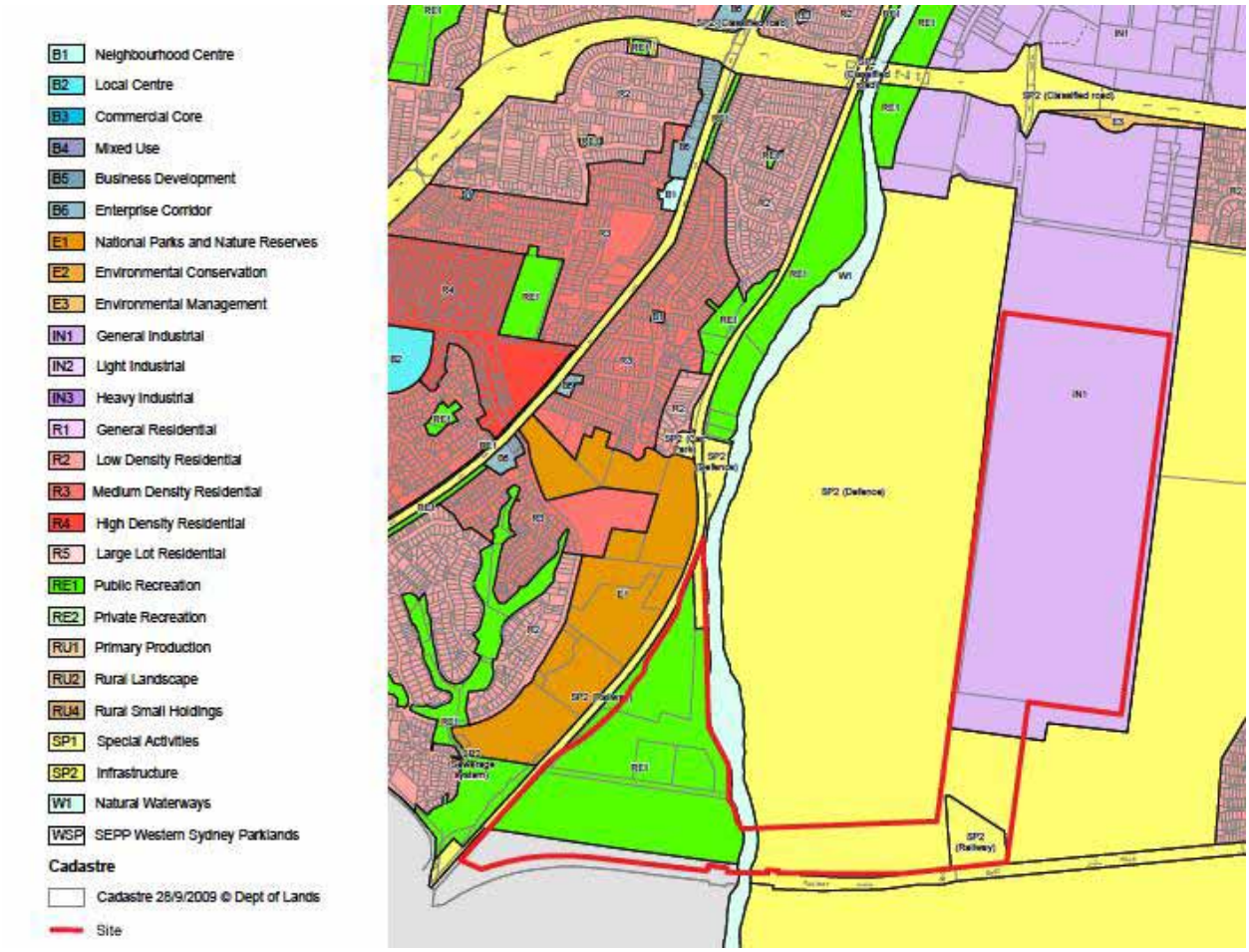
- **Zoning** – the LEP zones the whole of the SIMTA site as IN1 – General Industrial as shown in purple in the Land Use Zoning Plan extract on the following page. The proposed rail corridor and indicative rail link is zoned partly SP2 Infrastructure (Defence) and partly RE1 Recreation. The surrounding Commonwealth lands are zoned SP2 Infrastructure (Defence). The proposed development of the site to accommodate an intermodal terminal facility is considered compatible with the industrial zoning of the site and the industrial and defence zones applying to the surrounding land.

- **Permissibility** - the Land Use Table contained in Part 2 of the LEP provides the IN1 General Industrial zone objectives and permissible uses, which permits the following land uses with development consent:

  Boat sheds; Building identification signs; Business identification signs; Car parks; Cemeteries; Child care centres; Community facilities; Crematoria; Depots; Drainage; Earthworks; Environmental facilities; Environmental protection works; Flood mitigation works; Freight transport facilities; Helipads; Heliports; Hotel or motel accommodation; Industries (other than heavy industries); Industrial retail outlets; Information and education facilities; Kiosks; Light industries; Mortuaries; Neighbourhood shops; Passenger transport facilities; Public administration buildings; Recreation areas; Recreation facilities (indoor); Recreation facilities (outdoor); Restaurants; Roads; Sex services premises; Storage premises (other than offensive storage establishments or hazardous storage establishments); Swimming pools; Take away food and drink premises; Tank-based aquaculture; Transport depots; Warehouse or distribution centres. (emphasis added).

  Each of the proposed activities on the SIMTA site is captured within the permissible land uses defined in the LEP. It is also permitted by way of the provisions of the Infrastructure SEPP. The proposed rail corridor including the indicative rail link is permitted under the Part 3A provisions within the EP&A Act and ISEPP as previously discussed within **Section 2.3.2** and **Section 2.3.4**.

FIGURE 8 – LIVERPOOL LOCAL ENVIRONMENTAL PLAN 2008 LAND USE ZONING MAP EXTRACT



Source – Liverpool Local Environmental Plan 2008, Land Use Zoning Map, Sheet 13.

- **Height of Buildings** – the LEP prescribes a maximum height of 15 metres for the SIMTA site. The SIMTA proposal includes gantry to a height of approximately 32 metres from the track level, light poles that are approximately 40 metres high and warehouse buildings with a height of approximately 21 metres from the finished level of hardstand. Section 75O(3) of the EPA Act 1979 provides that the Minister may (but is not required to) take into account the provisions of any environmental planning instruments (other than state environmental planning policies, however, the potential amenity impacts arising from the proposal are required to be addressed in accordance with the provisions of the DGRs. A comprehensive Visual Analysis has been prepared by Reid Campbell which assesses the appropriateness of the proposal, including the potential impacts arising from the proposed buildings and equipment. This analysis is discussed in detail within **Section 4.10**.

- **Preservation of Trees or Vegetation** – the LEP provisions aim to preserve the amenity of the area, including biodiversity values, through the preservation of trees and other vegetation. Development consent is required to be obtained for various activities that may impact on trees and vegetation. A comprehensive biodiversity assessment has been undertaken by Hyder to determine the potential impacts arising from the SIMTA Intermodal Terminal Facility, including the rail corridor. The outcomes of this assessment are discussed in detail within **Section 13**.

- **Heritage Conservation** – the site commonly referred to as the School for Military Engineering and located on the opposite side of Moorebank Avenue is listed as an 'item of environmental heritage under the provisions of the LEP. The listing includes '*Australian Army Engineers Group, including RAE Memorial Chapel, RAE Monument, Major General Sir Clive Steele Memorial Gates, Cust Hut*'. The provisions of the LEP state that a heritage impact assessment is to be undertaken where a development is proposed within close proximity of a heritage item. An environmental assessment of the potential non-indigenous heritage impacts of the SIMTA Intermodal Terminal Facility has been undertaken and is discussed in detail within **Section 12.3.2**.

- **Environmentally Significant Lands** – the LEP includes additional local provisions that aim to protect environmentally significant lands. The SIMTA site is not considered to be environmentally significant however, parts of the rail corridor are affected. The objectives of the clause include the maintenance of bushland, wetlands and wildlife corridors of high conservation value and the protection of rare and threatened native flora and native fauna. A comprehensive assessment of biodiversity issues is provided within **Section 7** of this Environmental Assessment. This assessment has informed the location of the indicative rail link that will be further detailed in the future Project Application.

- **Flood Planning** – the additional local provisions require development consent to be obtained for earthworks, the erection of a building, the carrying out of a work and/or flood mitigation works (other than those carried out by a public authority). Development consent will not be granted unless it has been satisfactorily demonstrated that the proposal will meet the criteria listed within the LEP. A small part of the site along the southern boundary is nominated as being affected by flooding. A comprehensive assessment has been undertaken of stormwater and flooding issues within **Section 10** of this report which addresses each of the relevant matters listed in the LEP.

- **Development of Certain Land at Moorebank** – the LEP includes specific objectives for development within the Moorebank South Industrial Precinct (in which the SIMTA site is located) to be supportive of regional public transport measures to reduce demand for travel by private car. The Environmental Assessment includes a comprehensive assessment of these issues within the *Transport and Accessibility Impact Assessment* that is discussed within **Section 5** of this report.

Overall, it is considered that each of the relevant matters listed in the LEP has been adequately addressed within the Environmental Assessment. It is acknowledged that the proposed maximum height of buildings and structures for the SIMTA Intermodal Terminal Facility varies from the provisions of the LEP that would generally apply except for the provisions of Section 75O(3) of the EPA Act 1979. However, the proposal is considered to be entirely appropriate taking into account the visual impacts of the proposal.

2.6.6 DEVELOPMENT CONTROL PLANS

The Liverpool Development Control Plan 2008 (the DCP) provides the more detailed development controls that generally apply to the LGA. In addition to the general provisions within Parts 1.1 and 1.2, Part 2.4 includes a range of site-specific provisions that have been developed for the Moorebank Defence Lands, which includes the SIMTA site.

The provisions of the DCP have been reviewed and considered within the broader local context to assist with the assessment of the Concept Plan application. Overall, it is considered that the SIMTA Intermodal Terminal Facility generally satisfies the DCP objectives for the Moorebank Defence Lands because it would:

- Deliver an Intermodal Terminal Facility which will act as a keystone for attracting industrial and business development to the Moorebank Defence Lands, utilising advanced state-of-the-art intermodal gantry and terminal operations.
- Provide approximately 300,000m^2 of warehouse and distribution floorspace.
- Attract land uses which will complement, and not compete with, the employment role of the Liverpool CBD.
- Provide a concentrated freight and logistics employment hub, which will provide key employment opportunities for the surrounding residential community, and accordingly promote close to home work opportunities.
- Include travel demand measures to promote employee use of public transport and alternative travel modes such as bicycle or walking.
- Locate uses across the site in a manner that responds to the needs of surrounding land uses and accommodates mitigation measures such as landscaping.
- Commit to employing Ecologically Sustainable Development principles in the design and development of the site intermodal facilities which will be documented as part of the future Project Approval applications.

Detailed consideration of how the SIMTA Intermodal Terminal Facility has responded to the general and site-specific development controls is provided within the table attached as **Appendix C**.

2.7 PROJECT COMPONENTS, OPERATIONS AND DESIGN ELEMENTS

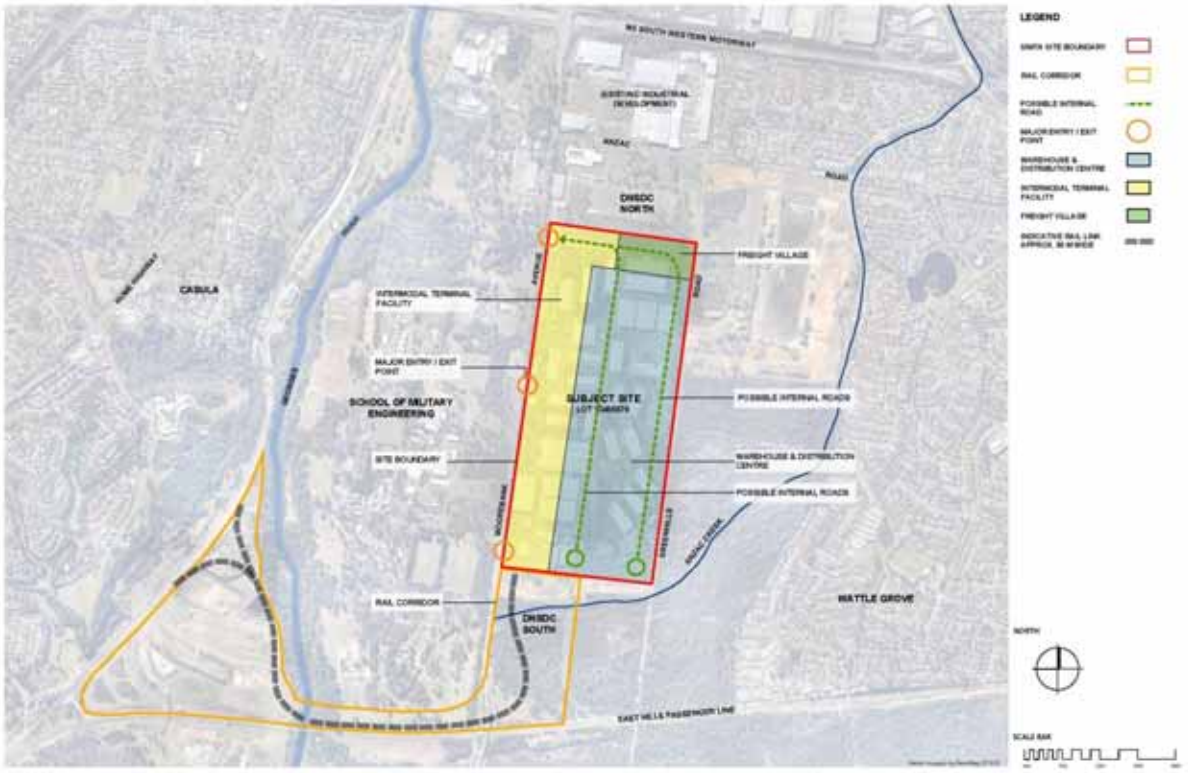
2.7.1 SITE LAYOUT AND LAND USES

The Concept Plan application comprises four key components:

- Rail Corridor
- Intermodal Terminal
- Warehouse and Distribution Facilities
- Ancillary Terminal Facilities

Each of these components is described in detail in the following sub-sections with these details forming part of the Concept Plan. A reduced sized copy of the Concept Plan that outlines the site boundaries and proposed land uses is provided below. A full size copy of this plan is held as **Appendix D**.

FIGURE 9 – CONCEPT PLAN – LAND USES (REID CAMPBELL 2011)



2.7.1.1 RAIL CORRIDOR

The Concept Plan application includes a proposed rail corridor, which is outlined in orange in the above figure. The rail corridor will ultimately accommodate a 30 metre wide rail alignment that provides a connection between the SIMTA Intermodal Terminal Facility and the Southern Sydney Freight Line (SSFL). The exact location and design of the rail spur connection will be resolved as part of the future Project Application, however, it is anticipated that the rail infrastructure will include:

- Bridging over Anzac Creek.
- A crossing under Moorebank Avenue in proximity to the existing grade-separated crossing which supports the existing East Hills Railway line.

- Bridging the Georges River.
- A maintenance access track.

An indicative rail link has been included within the Concept Plan application, based on the assessment of the rail corridor land.

2.7.1.2 INTERMODAL TERMINAL

The intermodal terminal is proposed to be located on the western part of the site, adjacent to Moorebank Avenue and away from the nearest residential properties. Key elements include:

- Four rail tracks of approximately 650 to 1,200 metres in length.
- Container hardstand of approximately 90,000m^2 located on both sides of the rail tracks to be used for container sorting and storage.
- Terminal administration offices and ancillary operational facilities of approximately 2,100m^2.

The intermodal terminal is proposed to operate 24 hours a day, 7 days a week to enable continuous receipt and dispatch of freight, accommodating a wide range of servicing demands. It will be serviced by world class and leading practice intermodal facilities including:

- Automatic gantry systems
- Modern container handling equipment
- Modern control tower and support facilities
- State-of-the-art rolling stock

The final selection of mobile and static equipment will be made at the Project Approval application stage for the rail terminal, taking into account compliance with the criteria established by way of the Concept Plan, including noise levels, visual impacts and the like.

2.7.1.3 WAREHOUSE AND DISTRIBUTION FACILITIES

Approximately 300,000m^2 of warehouses with ancillary offices are proposed to be constructed to the east of the intermodal terminal. The proposed warehouses are to be sited and designed to provide a physical barrier between the intermodal terminal and the nearest residential properties to assist with mitigating the potential acoustic and visual impacts of the rail activities. These warehouses include:

- **Intermodal Terminal Warehouse and Distribution Facilities (Terminal Warehouses)** – approximately 100,000m^2 of warehouse floorspace will be located immediately adjacent to the intermodal terminal. These buildings will be designed for cross-dock operations and are anticipated to be occupied by large logistics operators dispatching goods in short turn-around times and with limited freight break-down. The location of the Terminal Warehouses directly adjacent to the Intermodal Terminal will provide for:
  - Operators with high freight turn-over have direct access to automatic container handling.
  - The majority of freight movements within the site are moved across a minimal distance.
  - The majority of freight movements are setback from residential areas and other sensitive land uses.
  - Reduced risk of on-site container freight movements conflicting with on-site vehicle movement paths.
  - Limiting the visibility of the large scale built form from external vantage points, including Moorebank Avenue.

- **Large Format Warehouse and Distribution Facilities** - approximately 200,000m^2 of warehouse floorspace will be located on the eastern part of the SIMTA site, east of the Terminal Warehouse facilities. These buildings will have perimeter loading docks and are anticipated to be occupied by logistics operators who require larger areas for operations, hold stock for longer periods and/or undertake larger amounts of freight-breakdown before dispatching.

Each of the warehouses will be serviced by the central internal road system. The road system design and location of the car park to the east of the large format warehouse buildings are proposed to maximise the separation of staff and freight vehicle movements and minimise potential vehicle conflicts.

2.7.1.4 ANCILLARY TERMINAL FACILITIES

A range of ancillary support facilities are proposed within the SIMTA Intermodal Terminal Facility to meet the needs of employees and visitors to the site. The final composition of these facilities will be based on demand and will be privately operated by individual tenants, however, it is anticipated that a total floorspace of approximately 8,000m^2 will be provided and the uses are likely to include:

- Site management and security offices.
- Retail and business service centre, potentially including a convenience store, banking facilities, and post office.
- Meeting rooms/conference facilities available for hire by individual tenants.
- Sleeping facilities for drivers.
- A café/restaurant.

A centralised staff car parking area provided adjacent to the ancillary facilities will enable separation of heavy vehicle movements from private vehicle movements, particularly around the intermodal terminal warehouses.

2.7.2 BUILT FORM CONTROLS

The Concept Plan application does not seek approval for construction of the rail link, intermodal terminal or the individual warehouse buildings. Each of these matters will be subject to future Project Approval applications. However, it is acknowledged that built form controls are required to outline the general layout and design of the SIMTA Intermodal Terminal Facility to:

- Enable an assessment of the likely impacts of the intermodal facility to be undertaken as part of the Concept Plan application.
- Provide local stakeholders and the community with sufficient information to make an informed submission on the Concept Plan.
- Form the basis for the preparation of more detailed documentation that will be assessed at the Project Approval application stage.

Reid Campbell has prepared an *Urban Design and Landscaping Report* which is attached as **Appendix E**. This report provides a set of indicative design parameters to outline the objectives, performance benchmarks and minimum standards for the future development of the site.

The key built form controls proposed to control the siting, layout and design of the future warehouse buildings are summarised below:

- **Building Siting and Setbacks** – buildings will not be permitted within the following areas:
  - 18m of the front property boundary to Moorebank Avenue
  - 7.5m of the front property boundary to the Estate Road

- 6m of the front property boundary to Internal Road 1
- 6m of the front property boundary to Internal Road 2
- 2.5m of the side and rear boundaries for any building and hardstand area

- **Building Heights** – the following maximum height controls are proposed to apply to both buildings and static/mobile equipment:
  - Intermodal Terminal (i.e. materials handling equipment, such as container gantry systems, automated sortation devices and the like): maximum of 32 metres
  - Warehouse and Distribution Facilities: maximum of 21 metres
  - Ancillary Terminal Facilities (i.e. Freight Village): maximum of 15 metres
- **Building Design** – a range of objectives of principles are proposed to guide the future detailed design, including achieving best practice for intermodal terminal design and function, an attractive streetscape and satisfactory environmental performance.
- **Building Materials and Colours** – it is intended that an indicative colour palette, minimum performance and sustainability criteria be adopted following further consideration of the Concept Plan application. A set of objectives and design principles has been adopted to guide the preparation of this additional documentation.
- **Safety and Security** – a range of objectives and design principles are proposed to address the principles of Crime Prevention Through Environmental Design (CPTED), including natural/passive surveillance, territoriality and security.
- **Water Sensitive Urban Design (WSUD)** – a number of WSUD measures are proposed to achieve treatment targets, including rainwater tanks, buffer strips, gross pollutant traps, bio-retention systems/rain gardens (eco corridor) and bio-swales.

The *Urban Design and Landscape Report* includes indicative layouts for a typical Intermodal Terminal (or Cross Dock) Warehouse, a typical Large Format (or Distribution) Warehouse and the Ancillary Terminal Facilities (or Freight Village). Indicative perspectives are also provided from key locations both within and looking towards the SIMTA Intermodal Terminal Facility. The indicative layouts and perspectives illustrate the type of development that may be achieved in accordance with the proposed built form controls. A more detailed assessment of the proposed built form controls is provided within the Visual and Urban Design component of the Environmental Assessment (**Section 13**).

2.7.3 STAGING

The SIMTA Moorebank Intermodal Terminal Facility is proposed to be constructed in three stages. The anticipated scope of works and timing for each stage is described in **Table 3** below. An illustrative Indicative Staging Plan is provided as **Figure 10**. A full size copy of this plan is held as **Appendix D**.

TABLE 3 – INDICATIVE STAGING PLAN

STAGE	SCOPE	TIMING
Stage 1 – Construction of the Intermodal Terminal and Rail Connection	Construction of a 650 metre rail siding with four tracks and a rail connection between the SIMTA site and the SSFL, including: ▪ Construction of an approximately 30 metre wide rail alignment connecting the SIMTA site to the Southern Sydney Freight Line. ▪ Construction of the initial 650 metre stage of the intermodal terminal including:	Commencement in mid 2012 Completion in mid 2015

STAGE	SCOPE	TIMING
	▪ Four track rail siding. ▪ Container storage hardstand. ▪ Freight truck loading and circulating area. ▪ Installation of reach stackers and gantry. ▪ Construction of access driveways and internal circulation roads required to service the intermodal terminal. ▪ Landscaping along Moorebank Avenue. ▪ Provision/upgrade of stormwater infrastructure and utility services required to service the intermodal terminal. Stage 1 may include construction of some warehousing, however, the volume will be dependent upon market demand.	
Stage 2 – **Construction of Warehouse and Distribution Facilities**	Construction of the central portion of the Intermodal Terminal Warehousing and Distribution Facilities and the south-eastern portion of the Large Format Warehousing and Distribution Facilities, including: ▪ Circulation roads required to service the proposed warehouses. ▪ Staff and visitor car parking spaces required to service the proposed warehouses. ▪ Landscaping treatments within the development areas. ▪ Provision/upgrade of stormwater infrastructure and utility services required to service the Stage 2 warehouses.	Commencement subject to market demand Completion anticipated to be mid 2019
Stage 3 – **Extension of Intermodal Terminal and Completion of Warehouse and Distribution Facilities**	The final stage is anticipated to include: ▪ Extension of the intermodal terminal from 650 metres to 1,200 metres in length. ▪ Construction of the remaining warehouse and distribution facilities. ▪ Construction of the ancillary terminal facilities in the north-east corner of the site. ▪ Completion of the circulation roads. ▪ Staff and visitor car parking spaces required to service the additional warehouses. ▪ Completion of the landscaping treatments. ▪ Provision/upgrade of stormwater infrastructure and utility services required to service the additional warehouses.	Completion by mid 2022

FIGURE 10 – CONCEPT PLAN – INDICATIVE STAGING (REID CAMPBELL 2011)

3 Strategic and Project Justification

The Director-Generals Environmental Assessment Requirements for the SIMTA Concept Plan application include the following environmental assessment requirement relating to the strategic and project justification of the SIMTA Intermodal Terminal Facility at Moorebank:

> *a **strategic and project justification** describing the strategic need, justification and objectives for the project, including:*
>
> - *the suitability of the site taking into consideration the objects of the Environmental Planning and Assessment Act 1979;*
> - *alternatives considered to the preferred project (including site layouts) and impacts arising from the relocation of current uses;*
> - *the need for and the objectives of the project, taking into consideration container trade numbers (import and export) at the international, national and state levels; future trends in container origin/destination in Sydney; intermodal capacity and demand; and identification of the terminal's freight catchment area and freight split;*
> - *its relationship to and interaction with adjoining development, including the proposed intermodal on the Steele Barracks/School of Military Engineering site and the investigations being undertaken by the Moorebank Project Office; and*
> - *its consistency with the aims and objectives of relevant State policies and plans including the NSW State Plan, Metropolitan Transport Plan, State Infrastructure Strategy, Metropolitan Plan, Draft Subregional Strategy for the South West Subregion, Railing Port Botany's Containers, Action for Air, the Commonwealth's draft National Ports Strategy and National Freight Strategy, and project objectives.*

3.1 SUITABILITY OF THE SITE

The objects of the *Environmental Planning and Assessment Act 1979* (the EP&A Act) are contained in Section 5 of the Act. The SIMTA Concept Plan for an Intermodal Terminal Facility is consistent with the relevant objects of the EP&A Act as outlined in the following table:

TABLE 4 – OBJECTS OF THE *ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979*

OBJECT	COMMENT
(a) to encourage: *(i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*	The Environmental Assessment includes a thorough assessment of the potential environmental, social and economic impacts of the proposal. The assessment of the key issues in **Sections 4 to 14** and the Environmental Risk Analysis in **Section 16** demonstrate that the proposal is well considered and will result in a number of important benefits that will promote the social and economic welfare of the community and a better environment.
(ii) the promotion and co-ordination of the orderly and economic use and development of land,	The proposal will make a significant contribution to realising the significant investment made by the Commonwealth Government to the Southern Sydney Freight Line. It is anticipated that the SIMTA Intermodal Terminal Facility will contribute to achieving an increased share of freight transport by rail in accordance with State and Commonwealth policy as outlined in detail within **Section 3**. Further, the Economic

OBJECT	COMMENT
	Assessment undertaken by Urbis (and outlined in detail in **Section 15.3**) demonstrates that the proposal will have a number of positive economic impacts.
(iii) the protection, provision and co-ordination of communication and utility services,	The Environmental Assessment includes an assessment of the service demand and capacity of the existing utility services and identifies the required augmentation of the existing and proposed utilities and infrastructure to accommodate the proposed development. This is addressed in detail in **Section 4.14** of the Environmental Assessment.
(iv) the provision of land for public purposes,	Not applicable
(v) the provision and co-ordination of community services and facilities, and	The proposed development includes travel demand measures that may benefit the broader local community by way of improvements to existing public transport facilities, as outlined in **Section 5.3**. Further, a range of on-site ancillary services will be provided to service intermodal terminal facility staff, as outlined in **Section 5.3**
(vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and	The proposal includes mitigation measures to minimise the impacts of the proposal on the environment, including threatened species, populations and ecological communities, as outlined in the Hyder *Flora and Fauna Assessment* prepared in **Appendix F**.
(vii) ecologically sustainable development, and	The detailed design for each future stage will incorporate ecologically sustainable development principles as described in **Section 15.5**.
(viii) the provision and maintenance of affordable housing, and	Not applicable
(b) to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and	The Environmental Assessment is lodged with the Department of Planning and Infrastructure for assessment under the Part 3A provisions. However, it is acknowledged that a range of Commonwealth, State and local authorities and stakeholders will be provided with the opportunity to review the proposal and make submissions prior to the determination of the Concept Plan application.
(c) to provide increased opportunity for public involvement and participation in environmental planning and assessment.	The preparation of the Environmental Assessment has been undertaken in association with a comprehensive community consultation process, which commenced in July 2010. This consultation will continue through the Environmental Assessment process and at each Project Application stage as described in **Section 17**.

3.2 ALTERNATIVES TO THE PREFERRED PROJECT

There are various factors that limit the possibility of providing any viable or practical alternative site layout options for the project, especially when considering the nature of a highly specialised facility such as an intermodal facility. The factors considered and that have ultimately driven the preferred project include the following:

- The shape and dimensions of the site (as shown in **Figure 2** on page 10) and the length of the rail sidings required for an intermodal facility prevent the rail terminal from being provided in any other manner than a north-south alignment. This alignment drives the location of the rail sidings and the associated linear terminal and supporting infrastructure.

- The pattern of immediately surrounding land uses and location of the Southern Sydney Fright Line limits the feasibility and practical ability of providing a connecting rail spur to the site in any other location, other than from the south (i.e. via the Commonwealth land between the site and the East Hills railway line).

- The location of Wattle Grove residential land further west and also the vegetation pattern on the adjoining Commonwealth land adjoining the site to the south has been considered. In order to reduce noise impacts (associated with the intermodal facility) on the residential area, as well as environmental impacts caused through disturbance of the vegetated land to the south, the alignment of the rail corridor (and hence the intermodal facility) is best located on the western side of the site.

- The only available vehicular access to the site is Moorebank Avenue which drives internal road layout options. As described in **Section 2.4.1.3**, the terminal warehouses are required to be located immediately adjacent to the terminal facility to provide for operational efficiency given high-freight turnover. The location of these warehouses on the site allows easy and direct access to Moorebank Avenue and separates higher turnover areas (located on the western part of the site) from the lower turnover areas (associated with the larger format warehousing and distribution facilities on the eastern part of the site).

- Aside from providing greater operational and safety efficiencies as described above, the larger format warehousing and distribution facilities within the eastern portion of the site provides for an appropriate built form and acoustic attenuation between the intermodal facility and the Wattle Grove residential land.

The above points demonstrate that the optimal site layout is achieved in the format identified in this Concept Plan application. Alternative layouts would potentially introduce greater environmental impacts, operational inefficiencies, on-site vehicle conflicts and safety concerns, or would otherwise involve significant cost implications in seeking alternate rail linkage options to the SSFL.

In respect to any impacts arising from the relation of the current uses on the site, we note the following:

- The current uses on the site involve various warehousing and administrative offices used by the Department of Defence – commonly known as the Defence National Storage and Distribution Centre. The Department of Defence are a tenant that has remained on the site since its sale.

- Issues and impacts associated with the eventual vacation of the site by the Department of Defence was considered as part of the sale of the land as is conventional with the disposal of Government assets.

- The current site uses will be suitably relocated to other lands to meet the specific requirements of the Department of Defence.

- The vacation of the site allows its development for various uses identified within this Concept Plan – this will include the provision for various warehousing opportunities.

- Accordingly there is no impact on the loss of the existing warehousing space on the site. Rather, the proposal offers significant additional warehousing opportunities than currently available in a new and more efficient operating format.

3.3 NEED FOR AND THE OBJECTIVES OF THE PROJECT

3.3.1 INCREASING FREIGHT RAIL IN NSW

The NSW Government and Sydney Ports have a shared objective of achieving 40% of all freight movements being by rail by 2016. Together with Government, the key objectives for the project are to deliver an intermodal terminal facility which:

- Is strategically located to utilise existing and future Metropolitan, State and National rail freight and road networks, including the Southern Sydney Freight Line and the M5 and WestLink M7 Motorways.
- Will provide capacity for an annual throughput of up to one million TEU to meet the forecast demand for Western and South Western Sydney in 2025 to be serviced by the planned intermodal facility at Moorebank.
- Make a significant contribution to achieving Federal and State land use, freight and logistics policies, including the State Plan target of 40% of container freight being transported by rail.
- Specifically service Sydney's west and south-western catchment by providing capacity for an annual throughput of up to one million TEU.
- Will assist with alleviating freight-related road congestion between Port Botany and Moorebank, particularly along the M5 Motorway.
- Is appropriately designed and managed to provide operational efficiencies and to appropriately mitigate impacts on the local Community.
- Realising economic benefits through rail distribution – particularly to the western and south-western Sydney catchments.
- Provides warehousing and distribution opportunities in a strategically important appropriate location, in turn providing employment opportunities and associated economic and social benefits.

3.3.2 CATCHMENT DEMAND

The *Strategic Freight Demand* study undertaken by Hyder Consulting (as discussed in detail in **Section 5** and **Appendix K**) has identified the freight demand for the Western and South-Western Regions. The Moorebank Catchment Area has been identified for both 2015 and 2025 as shown in **Figure 11** and **Figure 12**.

The freight catchment demand analysis has confirmed that the planned intermodal facility at Moorebank will need to service one million TEU by 2025. The SIMTA proposal has been designed to service the freight catchment demand in its entirety, however, it is recognised that the SIMTA proposal may not be the sole facility provided within Moorebank. The Commonwealth Government is currently investigating the feasibility of developing an intermodal terminal facility on the School of Military Engineering site on the opposite side of Moorebank Avenue. If this proposal is proceeded with, the catchment demand would remain unchanged, however, the anticipated freight needs would be shared between the two facilities.

The environmental assessment of the SIMTA proposal assesses the total catchment demand and as such, has assessed the potential cumulative impact of the SIMTA proposal and any future intermodal proposal by the Moorebank Project Office for the School of Military Engineering.

FIGURE 11 – MOOREBANK FREIGHT CATCHMENT AREA – WITH SIMTA 2016

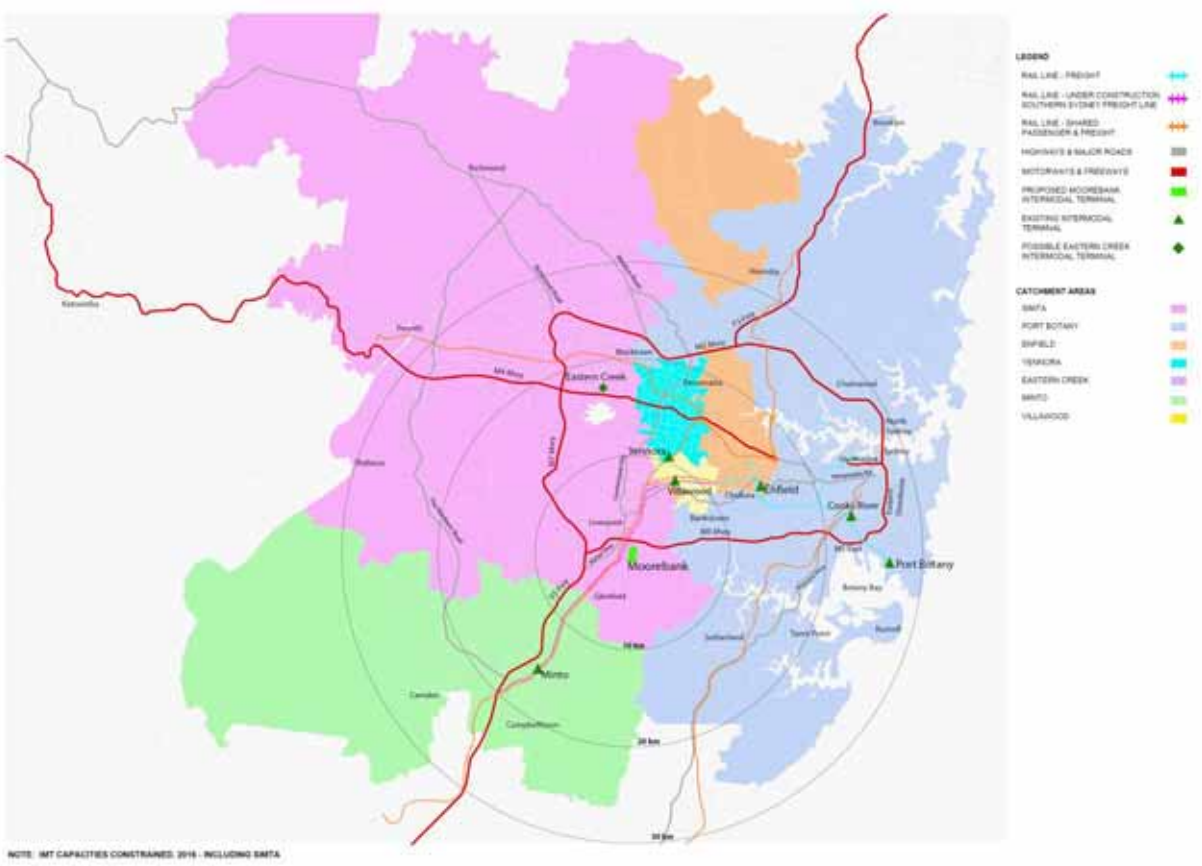
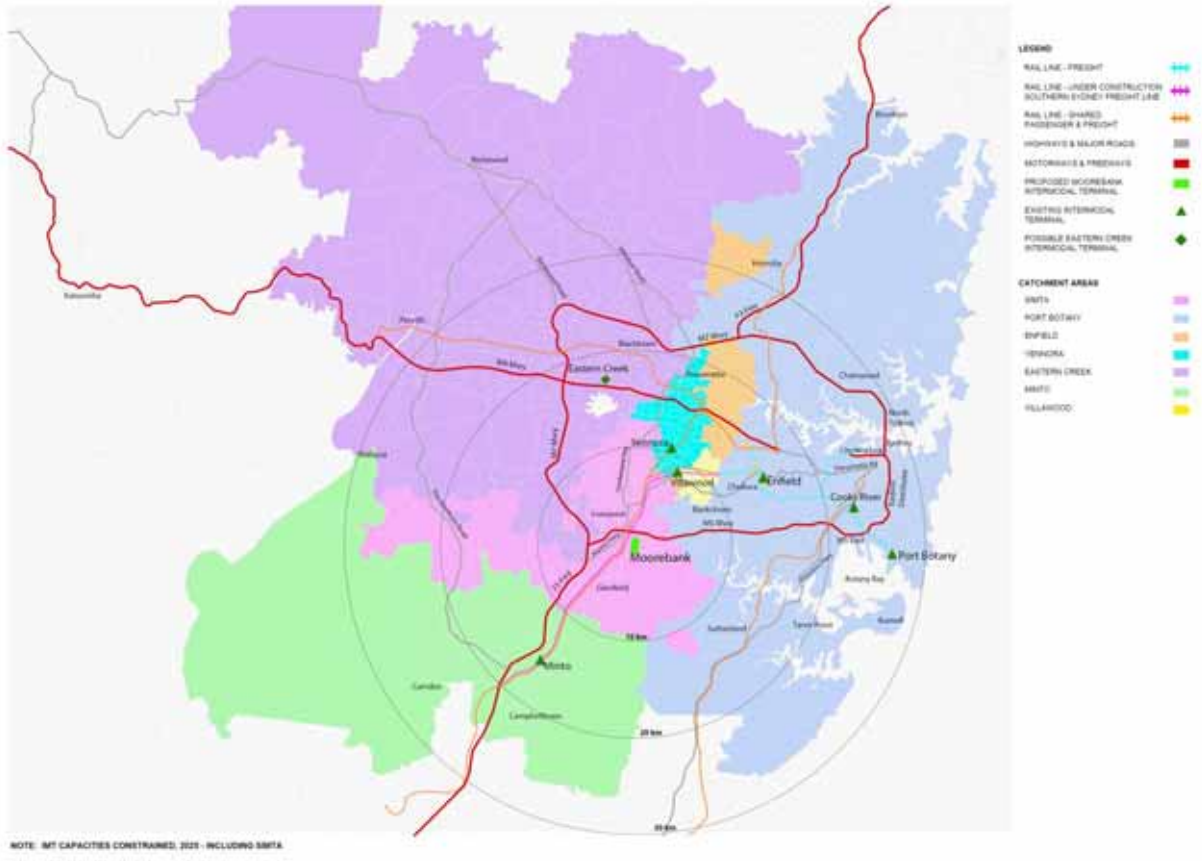


FIGURE 12 – MOOREBANK FREIGHT CATCHMENT AREA – WITH SIMTA 2025



3.3.3 CUMULATIVE IMPACTS

The SIMTA proposal has been assessed based on providing intermodal service requirements to cater for the Moorebank catchment demand outlined in **Section 3.3.2.** Accordingly, the cumulative impact of the SIMTA proposal and any other potential intermodal terminals within the Moorebank Catchment, including the potential proposal by the Moorebank Project Office on the adjacent School of Military Engineering land, will result in substantially the same environmental impacts.

The potential construction and operation impacts of the SIMTA proposal concept design have been assessed through specialist studies and assessments to inform this concept plan environmental assessment (EA). These assessments consider the direct and indirect potential impacts upon each environmental aspect of the construction and operation of the SIMTA proposal. An overall summary of the potential cumulative impacts of the SIMTA proposal are outlined in this section. The potential impacts arising from each of the key environmental issues are discussed in more detail in **Sections 5 to 14**.

3.3.3.1 DURING CONSTRUCTION

Any cumulative impacts across environmental aspects of the construction of the SIMTA proposal would be intermittent and short-term in nature. The proposed staging of the construction works will assist in minimising the overall impacts upon the surrounds by breaking up site work continuity and reducing the intensity of activities that have higher potential impacts such as noise generation or exposed soil surfaces. For unavoidable impacts associated with construction (eg clearing of vegetation and/or building demolition), a suite of targeted mitigation strategies have been identified to reduce the impacts. Mitigation strategies include offsetting in the case of vegetation removal and heritage preservation through site interpretation in design and consideration of the reuse potential of structures.

Potential cumulative impacts for the construction phase of the SIMTA proposal are primarily associated with either short-term and/or intermittent loss of amenity or physical quality of the receiving environment impacts. These include the combined impacts associated with construction traffic, construction noise, vegetation removal and surface soil exposure. Potential cumulative amenity impacts comprise a temporary reduction in accessibility through and around the locale of the SIMTA site, reduced visual aesthetics of a construction site and potential intermittent reduction in ambient noise and air quality. Potential cumulative physical quality impacts comprise a reduction in terrestrial and riparian habitat and water quality and intermittent reduction in air quality associated with surface disturbance activities on site that result in exposed soil surfaces and mobilised sediments off-site.

The mitigation measures proposed through this environmental assessment are intended to minimise impacts of each of the environmental aspects, both individually and cumulatively. For example, exposed soil surface areas can contribute to both sediment mobilisation and dust generation. The nominated controls that minimise exposed soil surface areas and minimise sediment mobilisation will assist in reducing impacts associated with dust generation and sediment deposition in riparian environments during construction.

3.3.3.2 DURING SITE OPERATIONS

The assessment of the proposal has concluded that the intermodal facility would improve levels of service upon Sydney's arterial road system by transferring freight road movements between Port Botany and Moorebank to a rail port shuttle service. There are direct and indirect consequential benefits associated with this strategy including a reduction in greenhouse gas emissions within the south western suburbs of Sydney and potential cost-efficiencies in supply and distribution of freight to and from Port Botany. .

While mitigation measures have been identified individually for the range of environmental aspects of the SIMTA proposal, many have the capability to reduce cumulative impacts during operations. Vegetation screening selected for perimeter visual screening will assist in the reduction of airborne particulates and noise attenuation and provides an opportunity for local biodiversity offsetting. The warehouse buildings will provide a physical barrier between the rail operations and residents. The inclusion of WSUD and stormwater controls will reduce flood risk impacts and minimise the risk of sediments or other operational contaminants entering riparian and stream environments.

3.3.3.3 SURROUNDING PROJECTS

A search of the Department of Planning and Infrastructure website identified two major projects occurring within the suburb of Moorebank.

- *Goodman Fielder* (Application Number: MP11_0057). Goodman Fielder has been issued with Director-General's Requirements for the demolition of an existing storage building and the construction of a new bakery facility at 14 Church Road and part of 90 Moorebank Avenue, Moorebank. This proposed development is located on the northern side of the South Western Motorway.

- *Moorebank Waste Facility* (Application Number: 05_0157). Moorebank Recyclers have been issued with Director-General's Requirements for the construction and operation of a recycling facility that would handle approximately 500,000 tonnes of construction waste per year. The facility is proposed to be located at Newbridge Road, Moorebank on the northern side of the South Western Motorway.

A search of the *Environmental Protection and Biodiversity Conservation Act* Public Notices website indicated that the Department of Finance and Deregulation (DFD) has submitted an EPBC Referral to the Department of Sustainability, Environment, Water, Population and Communities. The Referral comprises the development of approximately 220 hectares (ha) of Commonwealth owned land that is currently occupied by the Department of Defence. It seeks to construct and operate the Moorebank Intermodal Terminal (IMT) and associated commercial infrastructure including a rail spur connecting the site to the planned Southern Sydney Freight Line (SSFL) and one or more road entry point(s) from Moorebank Avenue.

A review of Liverpool City Council website indicated that there were 15 development applications recently approved by Council.

The developments approved by Council are of a small scale and would only be of fairly short duration. As such, they are considered unlikely to result in cumulative impacts in combination with the SIMTA proposal. The Goodman Fielder and Moorebank Waste Facility developments are on the northern side of the South Western Motorway and are likely to be constructed over a shorter timeframe. As such, it is considered that the cumulative impacts of these developments will be negligible.

As the SIMTA proposal has already been assessed on the total catchment demand, it is considered the potential cumulative impacts of the DFD proposal are relatively minor. The main potential impact would be with regard to the construction process, however, the SIMTA proposal is anticipated to commence in 2013. Construction of the DFD development is not proposed until 2018.

3.4 RELATIONSHIP TO ADJOINING LAND AND SCHOOL OF MILITARY ENGINEERING SITE

The land immediately adjoining the SIMTA site has been considered in detail, having regard to the potential impacts arising from the construction and operation of the SIMTA Intermodal Terminal Facility.

- **North** – the land between the northern boundary of the SIMTA site and Anzac Avenue is commonly referred to as 'DNSDC North'. This industrial zoned land currently accommodates low rise buildings on the corner of Moorebank Avenue and Anzac Road and an electricity substation on Anzac Road, near its intersection with Greenhills Avenue. The balance of the land is undeveloped. The assessment of the key issues in **Sections 4 to 14** has given appropriate consideration to the adjoining land to the north, taking into account the existing uses and its industrial zoning.

- **South** – the land immediately to the south of the SIMTA site is proposed to be utilised for the future rail link to the Southern Sydney Freight Line. The exact location of the rail link will need to be determined having regard to more detailed studies, including further assessment of the potential biodiversity impacts identified in the *Flora and Fauna Assessment* which is discussed in **Section 7**.

- **East** – the land immediately to the east comprises the Commonwealth Residual Land. It is understood that there are no current plans to develop this land. The land further to the east, approximately 400 metres from the SIMTA site, comprises the residential area of Wattle Grove. Detailed assessment has been undertaken with regard to the potential impact of the SIMTA

Intermodal Terminal Facility on these properties, having regard to their more sensitive land uses. The assessment of the key issues in **Sections 4 to 14** and the associated specialist reports provide a comprehensive assessment of the likely environmental impacts of the SIMTA proposal, having particular regard to the impacts on the residential properties.

- **West** – the School of Military Engineering (SME) is located on the western side of Moorebank Avenue, opposite the SIMTA land. The assessment of the key issues has given consideration to the potential impacts of the SIMTA proposal on the existing uses within the SME. Particular attention was given to the listed heritage items that are located on the site (refer to **Section 12**).

As noted in Section 3.3, the School of Military Engineering site is currently under investigation with $70.7 million in the 2010-11 Federal Budget allocated over two years to:

- Develop comprehensive business cases, designs, approvals and an implementation strategy for an intermodal transport hub at Moorebank. The Moorebank Project Office (MPO) within the Department has been established to facilitate this study.

- Relocate the School of Military Engineering to Holsworthy.

At the time of preparation of this Environmental Assessment, only limited detail has been made available regarding the potential redevelopment of the School of Military Engineering land. On 22 August 2011, the Commonwealth submitted a referral to the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) under the *Environment Protection and Biodiversity Conservation Act 1999* for a proposed action described as:

> *The proposed action involves the proposed development of approximately 220 hectares (ha) of Commonwealth owned land, currently occupied by the Department of Defence, for the construction and operation of the Moorebank Intermodal Terminal (IMT) and associated commercial infrastructure; a rail spur connecting the site to the planned Southern Sydney Freight Line (SSFL) currently under construction; and one or more road entry points from Moorebank Avenue. Sale or long term lease of Commonwealth land to a non-Commonwealth entity may be required subject to future Australian Government consideration on this particular issue.*

Regardless, the SIMTA Intermodal Terminal Facility has been designed to be independent from the MPO proposal and has been designed to service the needs of port related freight. As the SIMTA site is privately owned, it would assist the Commonwealth's planning to have some certainty of future use over the SIMTA site, as they can then plan more broadly with consideration to this land use. In terms of operational efficiencies, there are advantages to have the SIMTA proposal developed ahead of the Commonwealth proposal to assist with timing and operational efficiency. It would also be unreasonable to subject the community to a further extended period of uncertainty spanning several years when this important component of the Government's transport strategy can be achieved now.

Overall, it is considered that the Environmental Assessment has given detailed consideration to the adjoining development, including the proposed intermodal on the School of Military Engineering site. It is considered appropriate to advance the assessment of the SIMTA Intermodal Terminal Facility and facilitate the planned provision of intermodal terminal facilities at Moorebank.

3.5 CONSISTENCY WITH STATE AND COMMONWEALTH POLICIES

There has been strong and consistent policy support at State and Commonwealth level for the expansion of the freight rail network across NSW and the development of an Intermodal Terminal Facility at Moorebank since 2004.

This section of the report clearly demonstrates that the proposed SIMTA Intermodal Terminal Facility responds to the aims and objectives of each of the State and Commonwealth policies and plans, including the key objective of increasing the rail modal share of freight movements from Port Botany to 40% by 2016.

3.5.1 NSW STATE PLAN 2010

The revised *NSW State Plan* was released in early 2010. The State Plan includes seven priorities and targets, including *'Better Transport and Liveable Cities'*. This priority includes the key freight objective of increasing the proportion of container freight being moved by rail from Port Botany to 40% by 2016.

This objective is to be translated into a NSW Freight Strategy, which is currently being developed by the NSW Government. The State Plan recognises the importance of the construction of the Southern Sydney Freight Line (SSFL) to achieve this target, by allowing passenger and freight trains to operate independently without interrupting services. The Concept Plan for the SIMTA Intermodal Facility proposes a connection to the SSFL, west of the Georges River, which will utilise freight rail capacity designed into the SSFL for the identified 'Planned Moorebank Intermodal Terminal'.

The SIMTA Moorebank Intermodal Terminal Facility will contribute to achieving the key freight objective by accommodating the forecast catchment demand of up to one million TEU throughput at completion and enabling an increased proportion of freight movements to be made by rail. It will also contribute to achieving the broader land use and planning objectives, including:

- Generating additional employment opportunities to contribute to the 165,000 new jobs to be generated each year in NSW. These jobs will be situated within Western Sydney, which is the fastest growing subregion of Metropolitan Sydney, increasing the availability of jobs closer to home.
- Achieving the objectives of the *Metropolitan Transport Plan 2020* which identified Moorebank as an investigation area for a new Intermodal Terminal (discussed further in **Section 3.5.2** below).
- Reducing freight demand on the road network between Port Botany and Western Sydney, to improve the efficiency of this stretch of the M5 during peak times.

More detailed consideration is given to each of the above issues within the review of the other State and regional policies and plans (refer to **Sections 3.5.2 to 3.5.9** below).

3.5.2 METROPOLITAN TRANSPORT PLAN

The *Metropolitan Transport Plan* (Transport Plan) was prepared in February 2010 and includes a number of objectives to support freight, acknowledging the efficient management of freight movements as being *'vital to our economy'*.

The Transport Plan gives particular consideration to Western Sydney as the heartland and principal region of population growth, and accordingly freight demand growth. The Transport Plan proposes to deliver key freight infrastructure to meet the demands of the growing Sydney population and deliver the State Plan target of 40% of container freight being transported by rail.

The Transport Plan articulates the economic benefits of an efficient freight network and identifies the need for three new intermodal terminals across Sydney. These include Enfield (which is already being developed), Moorebank (which is nominated for investigation) and Eastern Creek. These intermodal facilities are strategically located, being in close proximity to the three largest growing employment areas with significant future capacity for warehouse and distribution facilities.

Other transport related infrastructure within the region is shown in the plan extract held as **Figure 13**. This includes an expanded passenger line to service the South-West Growth Centre including the anticipated 300,000 new residents within the subregion. It also provides for delivery of the Southern Sydney Freight Line to support the growing demand for freight due to the population growth in the subregion.

Overall, it is considered that the proposed SIMTA Intermodal Terminal Facility will contribute to achieving the freight objectives, including making a significant contribution to realising the State Plan target of 40% of container freight being transported by rail.

FIGURE 13 – SUBREGIONAL TRANSPORT RELATED INFRASTRUCTURE (EXTRACT, METROPOLITAN TRANSPORT PLAN 2036)

3.5.3 STATE INFRASTRUCTURE STRATEGY

The *State Infrastructure Strategy New South Wales* (SIS) was prepared to guide the planning and delivery of infrastructure in NSW between 2006–07 and 2015–16. This ten-year approach was intended to facilitate the linking of the strategic planning initiatives within the Sydney Metropolitan Strategy with the State budget so that infrastructure is appropriately planned and funded over the long term, including opportunities for private sector involvement.

The key drivers for infrastructure spending were identified as population growth and distribution, ageing and longevity, technological change, industrial and commercial developments, cost pressures, infrastructure renewal, and the environment. The infrastructure drivers that have particular relevance to the proposal (and its strategic justification) are outlined below:

- **Industrial and Commercial Developments** – the SIS recognises that Government infrastructure is required to support industry. Particular reference is made to transport links (such as the Westlink M7) having regard to their importance to the employment lands in Western Sydney, identified in the Sydney Metropolitan Strategy as a growing area for distribution and logistics businesses.

  The location of the SIMTA site near the intersection of the M5 Motorway and the WestLink M7 provides key road network links to major employment lands within Sydney's West. The South West Subregion has approximately 2,142 hectares of currently zoned employment lands, with approximately 60% developed and 40% currently vacant. These lands are identified as key employment growth areas for distribution and logistics businesses, which will attract freight movements and demand into the subregion. The SIMTA Intermodal Terminal Facility will provide a key node in the freight rail network needed to support the growth and development of key employment lands in the South West and West Subregions.

  The delivery of the SIMTA Intermodal Terminal will increase the rail modal share of freight movements between Port Botany and these key employment lands which are forecast to attract

significant employment growth in the next 25 years. Coupled with freight demand growth, the redistribution of freight movements from road to rail will improve efficiency and levels of service of road infrastructure, reducing the number of heavy vehicle movements required, and heavy vehicle kilometres travelled.

- **Environmental Issues** – the SIS acknowledges climate change and greenhouse gas emissions as major issues that will affect the way in which water and power is supplied, the frequency and intensity of weather events (including storms) and increased costs to the transport sector as a result of emissions trading.

  Consideration of the greenhouse gas emissions generated from the development at both the construction and operation phase have been considered by Hyder in the *Greenhouse Gas Emissions Report* attached at **Appendix G**. This report provides recommendations for a range of mitigation measures to minimise emissions arising from the SIMTA proposal. These have been adopted in the Draft Statement of Commitments and will be incorporated through all stages of the intermodal development, construction and operation phases.

The SIS recognises that the Ports Growth Plan is underway and includes the expansion of Port Botany and the delivery of intermodal logistics facilities to move more containers on rail and improve the distribution of goods throughout the Sydney Metropolitan area. The SIMTA Intermodal Terminal Facility will contribute to realising the Ports Growth Plan, with the opportunity for future link into a national freight rail network.

3.5.4 SYDNEY METROPOLITAN PLAN 2036

The *Sydney Metropolitan Plan 2036* (Metro Plan) was launched by the NSW Government in December 2010. The Metro Plan was prepared to incorporate the outcome of the five year review of the Sydney Metropolitan Strategy 2005. The Metro Plan contains the following policy statements which the proposed SIMTA intermodal facility will contribute towards achieving:

- Plan for 760,000 new jobs, with half planned for Western Sydney focusing on cities and centres.
- Support high growth and high value industries through clustering.
- Target development around existing and planned transport capacity.
- Enhance rail freight paths and intermodal terminals.
- Enhance capacity on Sydney's motorways at key locations.
- Identify long-term transport corridors for passengers and freight.

The Metro Plan includes a number of objectives and actions which the SIMTA Intermodal Terminal Facility will assist in achieving. Each of these is outlined below:

- **Employment** – of the 760,000 new jobs planned for the Sydney Metropolitan Area, half of these (380,000 jobs) are planned for Western Sydney. Of those, 141,000 new jobs are to be delivered within the South West subregion. The SIMTA Intermodal Terminal will deliver approximately 2,840 jobs during the operational stage when the terminal reaches a throughput capacity of one million TEU per annum. A further 4,260 jobs will be generated indirectly[7]. These 7,100 jobs will be a significant contribution to the target for the South West subregion (Action E1.2).

  One of the guiding principles is to generate employment opportunities within close proximity to the key centres of Sydney, North Sydney, Parramatta, Liverpool and Penrith. Liverpool is identified as the 'Regional City of the South West', with employment demand in transport and logistics. The SIMTA site is well-positioned to deliver freight and logistics infrastructure to serve the growing demands of the South West subregion. The site benefits from access to the M5 Motorway and the Westlink M7,

[7] PwC, *Employment Forecast for the SIMTA Moorebank Intermodal Terminal*, June 2010, referenced in PwC *Technical Note 2: Needs Assessment for Moorebank Intermodal Terminal Facility*, June 2011.

as well as the Southern Sydney Freight Line, providing the opportunity to benefit from both existing and planned transport infrastructure (Action B3.5; Action C3.1).

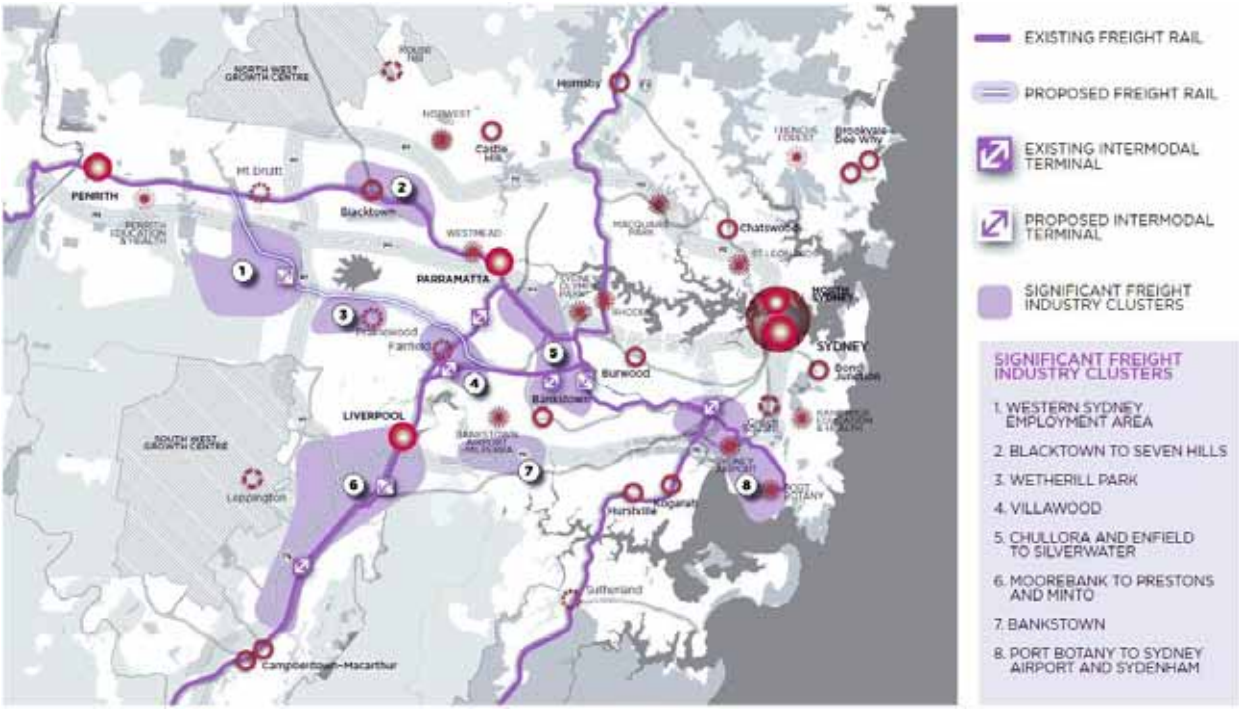
- **Freight Industry Clusters** – the Metro Plan recognises the freight logistics industry as a key contributor to Australia's gross domestic product (GDP) and the importance of land and infrastructure to this transport system. The Plan identifies clusters of freight industry activity that have developed in close proximity to key freight transport corridors, including '*Moorebank to Prestons and Minto*' as one of the most significant areas.

  The Plan recognises that State and local government will need to work together to review planning controls for these key sites to ensure adequate capacity for growth in freight handling, improve infrastructure coordination to these areas and minimise environmental impacts on surrounding neighbourhoods. The lodgement of the Concept Plan application for the SIMTA Intermodal Terminal Facility provides the opportunity for the proposal to be reviewed by all levels of government, providing for a thorough assessment of the proposed benefits and impacts of the proposal.

- **Transport Capacity** – the scale of the SIMTA site will enable it to accommodate a throughput of approximately one million TEU at full capacity, which will meet the forecast catchment demand and work towards delivering 40% of freight from Port Botany by rail (Action C3.1). Further, the strategic geographic location of the SIMTA site within the South West and its accessibility to existing and planned transport infrastructure will enable the site to service a key growth area of Sydney, which is forecast to accommodate 155,000 new dwellings between 2006 and 2036 (Action D1.2). The large growth in residential population within this region will be coupled with large growth in freight demand and consumption of goods within the sub-region, therefore having an enhanced freight and logistics hub as proposed on the SIMTA site would provide capacity for increased rail freight to one of Sydney's two key growth areas.

- **Freight Movement** – the SIMTA site will increase the intermodal capacity of South Western Sydney, in accordance with the objectives of the *Container Freight Improvement Strategy* (Acton C3.3). This will in turn improve Sydney's competitiveness in attracting investment and growth, particularly in the freight and logistics industries.

FIGURE 14 – EXISTING AND PLANNING FREIGHT CLUSTERS, INTERMODAL TERMINALS AND FREIGHT CORRIDORS (METROPOLITAN PLAN 2036)



Overall, it is considered that the proposed SIMTA Intermodal Terminal Facility will meet the aims and objectives of the Metro Plan. It provides for the delivery of land use activities that are aligned with transport infrastructure and will deliver a significant number of jobs within the transport and logistics industry.

3.5.5 SOUTH WEST SUBREGION DRAFT SUBREGIONAL STRATEGY

The *South West Subregion Draft Subregional Strategy* (Subregional Strategy) was prepared by the State Government in 2007. While it has not yet been formally adopted, it provides subregional actions to deliver the objectives of the Sydney Metropolitan Strategy.

The Subregional Strategy recognises the importance of improving the efficiency of freight transportation from Port Botany to increase port capacity (Action D5). The Subregional Strategy acknowledges the need for new major intermodal terminals to service south-west Sydney in order to meet the goal of moving 40% of containers from Port Botany by rail. It also identifies Moorebank as offering a strategically appropriate location for a new major terminal to deliver this goal, being serviced by the Southern Sydney Freight Line.

The Subregional Strategy identifies the need to provide sufficient land to deliver the intermodal terminals required to support the rail freight network. It recognises the Moorebank Defence Lands as being appropriate to accommodate an intermodal freight terminal with high accessibility to national transport infrastructure including the Southern Sydney Freight Line, M5 Motorway, M7 Motorway, and the major growth areas of Sydney, being the south-west and western regions.

The importance of delivering an Intermodal Freight Terminal within Moorebank that connects to the Southern Sydney Freight Line and meets the growing demands of freight movements in the west of Sydney is outlined in the Subregional Strategy:

> *The State Government regards the proposal for a transport terminal at Moorebank as a key component in meeting Sydney's intermodal capacity needs. The terminal will require the construction of a rail siding and rail bridge across the Georges River. Access to the M5 Motorway will be via Moorebank Avenue.* [p.30]

The Subregional Strategy also recognises the significance of the employment lands within Moorebank and their capability to accommodate additional industrial activities. Moorebank is identified as providing 200 hectares of Category 1 Employment Lands to service the subregion, being *'land to be retained for industrial purposes'* (p.28). The precinct is earmarked to provide a number of key industrial functions, including freight and logistics.

The proposed SIMTA Intermodal Terminal Facility provides the opportunity to deliver the planned intermodal terminal to support the freight industry. It is located within close proximity of the M5 Motorway, Westlink M7 and the Southern Sydney Freight Line, providing access to both road and rail networks. Further, the intermodal terminal facility will deliver 213 jobs during construction, 2,840 direct operational jobs and 4,260 indirectly supported jobs, contributing to the delivery of jobs within Western Sydney and the South West subregion, complying with the aims and objectives of the Draft Subregional Strategy.

3.5.6 RAILING PORT BOTANY'S CONTAINERS

'*Railing Port Botany's Containers: Proposals to Ease Pressure on Sydney's Roads*' was prepared by the Freight Infrastructure Advisory Board (FIAB) in July 2005 and presented to the Minister for Planning and Infrastructure for consideration.

The report included 23 recommendations to address the movement of import and export containers within the Sydney basin and the opportunities to increase the movement of freight by rail. The recommendations of the FIAB report were reviewed by the Infrastructure Implementation Group on behalf of the NSW Government, to determine priorities for implementation. Specific recommendations that have particular relevance to this proposal are extracted from the report in groups and discussed below.

- *Recommendation 1 – It is recommended that:*
  - *The 40 per cent rail share target must be met and if possible exceeded.*
- *Recommendation 2 – It is recommended that:*
  - *The NSW Government take all necessary steps to ensure that Sydney has sufficient additional intermodal terminal capacity to meet a rail freight share of 40 per cent.*
- *Recommendation 4 – It is recommended that the NSW Government:*
  - *Regard Moorebank as a key component in meeting Sydney's intermodal capacity needs.*
  - *Ensure that the Moorebank site is secured for intermodal terminal development by the private sector and be prepared if necessary, on a transitional basis, to use funds from the Freight Infrastructure Charge for this purpose.*
  - *Commence planning for the site's development by the private sector as an intermodal terminal with the capacity to handle at least 500,000 TEUs annually.*
  - *Develop a business model for the acquisition and development of the site in a way that allows the private sector to bring forward the terminal's development.*
  - *Ensure that access to the Moorebank site is delivered in a way that does not compromise the future expansion of the East Hills passenger line.*
  - *Ensure planning for Moorebank includes design buffers to reinforce the site's separation from residential development and provide public recreation facilities along both sides of the Georges River.*

The SIMTA Intermodal Terminal Facility at Moorebank is to be delivered in a staged process with a potential throughput capacity of up to one million TEU per annum meeting the catchment demand for the West and South-West Regions. It is anticipated to make significant contribution to increasing the rail share of freight movements in line with the key objectives.

- *Recommendation 11 – It is recommended that:*

  The development of the major, new terminals at Enfield, Moorebank and Eastern Creek include adequate provisions to allow common-user, open-access operations.
- *Recommendation 12 – For new terminals, the following general principles should be adopted:*
  - *Terminals be located adjacent to or close to key distribution and warehousing areas in metropolitan Sydney.*
  - *Terminals be located adjacent to, and with good access to, key arterial road corridors, particularly the M4, M5 and M7.*
  - *Terminal locations be adjacent to dedicated rail freight lines.*
  - *Terminals have the capacity to receive, load and unload 600m push-pull unit trains for the import/export trades.*
  - *Terminals be of sufficient capacity to load full trains either to or from a single stevedore.*
  - *Terminals be of sufficient size to accommodate on-site empty container parks and servicing, on site warehousing development, driver facilities including truck and trailer parking, rest facilities, and AQIS Inspection and Customs bonded areas.*

- *Terminals be available to operate 24 hours a day, seven days a week to maximise the return on investment in the sites and utilise the rail network to its maximum capacity.*

- *Terminals be adequately buffered from residential areas in order to minimise noise and light spill.*

The SIMTA Intermodal Terminal Facility is proposed to be delivered by the private sector through a joint venture comprising Stockland, Qube Logistics and QR National. The facility will be open to common-users, servicing freight and logistics operators within the South West subregion.

The proposed terminal facility is located within a key distribution and warehousing area, as previously discussed within the review of the Draft Subregional Strategy. It also has good access to key arterial road corridors (M5 Motorway and Westlink M7) and dedicated freight lines (Southern Sydney Freight Line). Stage 1 plans for a 650 metre rail siding, with the potential for the rail siding to be increased to 1,200 metres in Stage 3.

The terminal is proposed to operate 24 hours per day, seven days per week. A rigorous assessment has been undertaken of its potential environmental impacts, including noise and light spill. This is addressed in detail within **Sections 6 and 13** of the Environmental Assessment.

- *Recommendation 13 - It is further recommended that:*

  - *Community Consultative Committees be mandatory in respect of all terminals.*

  - *These Committees to ensure local residents are kept informed of terminal operations, and provide liaison with operators with a view to minimising the environmental impacts of terminal operations.*

  - *The Government adopt a 'zero tolerance' policy involving heavy penalties in respect of container road traffic travelling through designated residential precincts.*

  - *Before projects are approved, residential areas surrounding intermodal terminals be designated in order to give effect to this policy.*

SIMTA has undertaken pre-lodgement consultation with local stakeholders and residents. The key issues raised included air quality, traffic, cumulative impacts of the potential for two adjacent terminals, noise, light spill, proximity to residential areas, character of local area and environmental impacts. Further details regarding the consultation are provided in **Section 17** of the Environmental Assessment. It is anticipated that there will be ongoing liaison with the community, including informal and formal consultation associated with the Project Approval applications.

3.5.7 ACTION FOR AIR

'*Action for Air*' was prepared by the NSW Government in 1998 to provide a 25 year air quality management plan for the Greater Metropolitan Region, including Sydney, the Lower Hunter and the Illawarra.

The plan requires a public forum to be convened every three years to encourage public input on air quality trends and strategies and the production of an updated plan with relevant actions to address those issues. The Action for Air: 2009 Update specifically addresses the introduction of the NSW State Plan since the most recent update in 2006 and includes the following aims:

- *Reducing emissions so that we comply with the State Plan's cleaner air targets, that is, meeting the national air quality standards for six pollutants as identified in the Air NEPM, and*

- *Reducing the population's exposure to air pollution, and the associated health costs.*

The key issues listed in Action for Air have been addressed in the preparation of the Environmental Assessment and the associated specialist reports, including:

- **Climate Change -** a *Climate Risk Assessment* was prepared by Hyder. This report is discussed in detail in **Section 15.4** and is attached in **Appendix H**. The report includes a number of mitigation measures which have been adopted in the Draft Statement of Commitments for the SITMA proposal, and concludes that the implementation of these mitigation measures would reduce the climate change risks associated with the proposal.

- **Health Implications -** A *Screening Level Health Risk Assessment* was prepared by Toxikos to assess health impacts associated with airborne particulates. This report is discussed in detail in **Section 15.2** and is attached in **Appendix I**. The report indicates that particulates generated from the proposal will have a negligible impact on the surrounding area, and that there is a low likelihood for cumulative acute or chronic health effects to result from the proposal.

- **Local Exposure -** an *Air Quality Impact Assessment* was prepared by PAE Holmes. This report is discussed in detail in **Section 11** and is attached in **Appendix J**. The report concludes that under a 'worst case hour' of the SIMTA site operating, the SIMTA Intermodal Terminal Facility would not exceed accepted air quality criteria. Further, the on-going operation of the SIMTA proposal is expected to result in a net positive impact on regional air quality, as it will reduce the overall direct emission of vehicle exhausts through reduction of heavy vehicle movements, and vehicle kilometres travelled.

Overall, it is considered that the SIMTA Intermodal Terminal Facility will contribute to achieving a number of the current objectives/actions and future directions within the Action Plan, including:

- Reducing motor vehicle emissions by providing more jobs closer to home and implementing travel demand measures to encourage SIMTA site employees to travel by public transport.

- Making business even cleaner by increasing rail freight modal share between Port Botany and Moorebank and implementing mitigation measures for construction and operation of the site to minimise emissions.

- Attracting more freight to rail by utilising the Southern Sydney Rail Line link between Port Botany and Moorebank and providing an additional one million TEU throughput capacity.

3.5.8 DRAFT NATIONAL PORTS STRATEGY AND NATIONAL LAND FREIGHT STRATEGY DISCUSSION PAPER

The *National Land Freight Strategy Discussion Paper* (the Discussion Paper) was released by the Infrastructure Australia in 2011 to seek comments on establishing *'a national land freight network strategy, including on goals, objectives, strategic directions and priorities'* (p.2). The Discussion Paper includes an indicative list of projects requiring inclusion for long-term delivery through the National Land Freight Strategy, including an intermodal terminal facility at Moorebank.

The Discussion Paper acknowledges that one of the key methods of delivering freight infrastructure is through attracting private investment, enabling the freight network to expand more rapidly, in response to economic demands. The SIMTA Intermodal Terminal Facility will be delivered from a consortium of private investors, including Stockland, Qube Logistics and QR National. It will utilise the Southern Sydney Freight Line, taking advantage of the expanded national freight network, and is proposed to be fully delivered by 2026.

3.5.9 PORT FREIGHT LOGISTICS PLAN

The *Port Freight Logistics Plan* (Logistics Plan) was prepared by Sydney Ports Corporation in 2008 to guide the development of freight logistics infrastructure across Sydney. The Logistics Plan outlines initiatives to increase freight movements by rail and minimise freight truck movements in and around Port Botany.

The Logistics Plan identifies the need to expand the existing network of intermodal terminals within Sydney. The Logistics Plan supports the additional intermodal terminal network prepared by the Department of Planning and Infrastructure, which includes a new intermodal facility in Moorebank. The Plan also identifies a number of constraints on expansion of the intermodal network, principally the requirement for most freight movements to be on rail lines which are shared by passenger services, which limit access and have curfews associated with their operation.

The SIMTA Intermodal Terminal Facility meets the aims and objectives of the Port Freight Logistics Plan. It will facilitate the delivery of an intermodal terminal by the private sector, enabling the facility to be delivered in a timely manner and contribute to achieving increased rail freight movements from Port Botany to the South West subregion.

3.6 CONSISTENCY WITH PROJECT OBJECTIVES

The proposal is consistent with the project objectives identified within **Section 1.2** above when considering:

- The site is strategically located to enable utilisation of existing and future rail and road networks, including connection of the SIMTA site to the Southern Sydney Freight Line.

- The SIMTA Intermodal Terminal Facility at Moorebank will deliver an addition to the existing Sydney and NSW intermodal network. It will provide a freight shuttle between Port Botany and Moorebank, which will service South-western and Western Sydney. The proposal will deliver capacity for an additional one million TEUs annual throughput at full operation, which will increase the rail modal share of freight movements to assist in meeting the 40% target of State and Federal policy.

- The timing for delivery of the full SIMTA proposal will be responsive to market demand and take-up, however, it is anticipated that the SIMTA Intermodal Terminal Facility will have a throughput of 500,000 TEU by 2021 and be operating at its full one million TEU throughput capacity by 2031. Based on demand modelling undertaken by Hyder[8], the SIMTA Intermodal Terminal Facility will have a throughput in the order of 35% of freight containers moved by rail in Sydney by 2016 and 22% in 2026 as other new intermodal terminals are added to the network to accommodate increased freight demand across Sydney.

- Modelling of existing and approved intermodal terminal network capacity undertaken by PricewaterhouseCoopers[9] indicates that the current intermodal network capacity is 0.67 million TEU, being approximately 24% of container freight movement demands. The addition of the SIMTA capacity between now and 2031 will enable the rail share of freight movements to increase to 1.67 million TEU.

- While freight demand projections indicate that 40% of freight movements are to reach 1.67 million TEU by 2022, the expansion of the intermodal terminal network through the addition of SIMTA will enable the network capacity to increase the rail modal share. Hyder modelling assumes that by 2026 additional intermodal capacity is provided elsewhere in Western Sydney to enable the 40% target to be met. A full assessment of the future trends in container origins/destinations, intermodal capacity demand and freight catchments across Sydney has been undertaken by Hyder in the *Transport and Accessibility Impact Assessment* which is summarised in **Section 5** and attached in **Appendix K**.

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[8] Hyder, 2011, Technical Note 1: Strategic Freight Demand, in Hyder *Transport and Accessibility Impact Assessment Volume 2 Appendices*.

[9] PricewaterhouseCoopers (PWC), 2011, Technical Note 2: Needs Assessment for Moorebank Intermodal Terminal Facility, in Hyder *Transport and Accessibility Impact Assessment Volume 2 Appendices*.

- The *Transport and Accessibility Impact Assessment* has demonstrated that there is a clear benefit arising from the SIMTA Intermodal Terminal Facility, having regard to its strategic contribution to the development of Sydney intermodal network and its one million TEU annual capacity throughput at the ultimate stage of the development. In particular, with the SIMTA proposal the container model forecasts reductions in truck trips to and from Port Botany and Eastern Creek. The modelling analysis suggests that the operation of SIMTA at Moorebank would have the potential to reduce the volumes of heavy vehicles movements along the M5 corridor by in the order of 2,700 movements per day between Port Botany and Moorebank.

- The proposal will facilitate the desired growth of the freight and logistics industry within the Liverpool local government area and provide for increased services to the South West and Western Sydney catchments.

- A comprehensive environmental impact analysis has been undertaken to assess the potential impacts of the proposal. A range of mitigation measures have been included to facilitate the design, construction and operation of the intermodal terminal facility in a manner that avoids any significant detrimental impacts to the local community.

- The economic and social benefits of the proposal have been documented within the *Social Impact Commentary* attached in **Appendix M** (and as further discussed in **Section 17.3**), as well as the *Economic Assessment* attached in **Appendix N** (and as further discussed in **Section 15.3**).

Overall, it is concluded that the proposal will be able to meet the project objectives outlined within **Section 1.2**.

4 Assessment of Key Issues

The Director-General's Environmental Assessment Requirements (DGRs) require the Environmental Assessment to address a number of key issues of perceived high environmental, social, and economic value, sensitivity or impact.

> *an **assessment of the key issues** for all components of the project (including the rail link connection to the Southern Sydney Freight Line), with the following aspects addressed for each key issue (where relevant):*
>
> - *describe the existing environment;*
> - *assess the potential impacts of the proposal, in accordance with relevant policies and guidelines. Direct, indirect and cumulative impacts must be considered (including regard to other existing and proposed development and activities in the locality);*
> - *identify how relevant planning, land use and development matters (including relevant strategic and statutory matters) have been considered in the impact assessment and/or in developing management/mitigation measures;*
> - *document the types of activities that will require licensing and how licensing will be applied under relevant legislation; and*
> - *describe measures to be implemented to avoid, minimise, manage, mitigate, offset and/or monitor the impacts of the project and any residual impacts.*

The key issues listed in the DGRs include:

- Transport and Access
- Noise and Vibration
- Biodiversity
- Hazards and Risks
- Contamination
- Stormwater and Flooding
- Air Quality
- Heritage
- Visual and Urban Design
- Utilities

The following sub-sections of the report provide an assessment of the key issues identified within the DGRs. Each of these issues have been assessed in accordance with the five criteria listed in the DGR above, as outlined within each of the following sub-sections and the specialist reports submitted with the Concept Plan application.

The specialist reports have been prepared having regard to potential environmental impacts for both the SIMTA site and the rail corridor land. The assessment of the rail corridor land has enabled an indicative rail link to be determined, having regards to the environmental constraints identified through the Environmental Assessment, including the potential impacts and mitigation measures.

The location of the indicative rail link provides a potential rail alignment within the rail corridor land however a more detailed impact assessment will be undertaken as part of the Project Approval application.

5 Transport and Access

5.1 OVERVIEW

The Director-General's Environmental Assessment Requirements for the SIMTA Concept Plan application include the following environmental assessment requirement relating to traffic and assess:

Transport and Access *– including but not limited to:*

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

The *Transport and Accessibility Impact Assessment* and associated technical documentation (attached as **Appendix K**) should be reviewed to fully understand the methodology for undertaking the transport and traffic analysis, including the regional and local transport context, the existing road network performance, the future traffic predictions, the potential impacts of the SIMTA proposal and the proposed network improvements and mitigation measures. The following sections of the report demonstrate the way in which each of the matters identified in the DGRs has been responded to within the detailed documentation that forms part of the Concept Plan application.

5.2 ASSESSMENT METHODOLOGY

The transport and access assessment was undertaken having regard to the site context, potential impacts of the proposal, consideration of statutory requirements and identification of appropriate mitigation measures to be implemented to avoid any significant impacts. Each of these matters is outlined in detail within the *Transport and Accessibility Impact Assessment* and as summarised below:

- **Existing Environment** - the *Transport and Accessibility Impact Assessment* provides a comprehensive description of the existing environment with regards to transport and access.

  Key roads including the M5 South West Motorway (M5), Hume Highway and Moorebank Avenue carry a significant volume of regional and local traffic. In 2009, the M5 Motorway (over the Georges River) carried about 113,000 vehicles per day. Heavy vehicle proportion was recorded approximately 10 per cent. The highest morning and evening peak hour flows were observed between the Hume Highway and Moorebank Avenue in the order of 4,000 to 5,500 vehicles per hour in either east bound or westbound direction. There is a significant volume of traffic entering and leaving the M5 at Moorebank, Hume Highway and Heathcote Road interchanges. In 2010, Moorebank Avenue near SIMTA site carried about 17,500 vehicles per day. Heavy vehicle proportion at this location was recorded approximately 5 per cent. Traffic volume on Anzac Road is low, in the order of 9,500 vehicles per day.

  Analysis of ten intersection-related operational issues within the "core" area determined a level of service (LoS) between B and E for key intersections. Five intersections are operating close to or at capacity level with low LoS between D and F. Regular overflow queues are observed on Moorebank

Avenue (north of M5) and Newbridge Road. A weaving analysis was undertaken on the M5 West Motorway between the Hume Highway and Moorebank Avenue using Paramics. Based on the modelling analysis, there appears to be an existing weaving issue on the M5 Motorway for eastbound traffic.

- **Potential Impacts** - the proposal will have a number of potential traffic and transport impacts as outlined in detail within the *Transport and Accessibility Impact Assessment* and within Section 5.3.1 of this report. These include:

  - Truck traffic generation – the site would generate about 2,600 daily truck movements articulated trucks (B-doubles, semi-trailers) and rigid trucks at full development when the terminal is fully developed and reaches its potential one million TEU throughput capacity.

  - Employee Trip Generation – The site will generate about 3,600 daily car movements to the site across a 24 hour average week day.

  Hyder's traffic model analysis took into account the higher order road network changes proposed by the RTA as well as the proposed one million TEU intermodal terminal capacity identified for the entire Moorebank catchment. The model analysis forecasts the highest traffic impact on the Moorebank Avenue north of SIMTA site.

  - Without SIMTA: model forecasts peak hour average traffic growth on the Moorebank Avenue in the order of 1.6% to 1.8% per annum until 2031.

  - With SIMTA: the majority of vehicles entering and exiting the site will travel along Moorebank Avenue north of the SITMA Site. The SIMTA development is forecast to increase average traffic growth on Moorebank Avenue up to 3.1% per annum. The results show that outside the core area, there is no significant adverse impact on key roads following the introduction of the SIMTA proposal. The additional truck activity generated by the SIMTA proposal would be concentrated on key arterial roads such as M5 Motorway, Hume Highway and M7 Motorway. For modelling purpose, it was assumed that the site would be fully developed by 2031.

- **Management/Mitigation Measures** - management of traffic and access impacts of the SIMTA development are detailed in **Section 5.3.4**. These include the following road network improvements to be undertaken by 2031 when the SIMTA site is fully developed:

  - Widen Moorebank Avenue to four lanes between the M5 Motorway/Moorebank Avenue grade separated interchange and the Northern SIMTA site access. Some localised improvements will be required around central access and southern access points;

  - Concurrent with any four lane widening on Moorebank Avenue, the current Moorebank Avenue/Anzac Road traffic signals will require some form of widening at approach roads;

  - A new signalised intersection at the Northern SIMTA entry and egress with the Moorebank Avenue; and

  - Potential upgrade works at the M5 Motorway/Moorebank Avenue grade separated interchange to cater for both background and additional SIMTA traffic growth.

  - Travel Demand Management for Employees, including:

    - Designing and constructing the central spine road and other site roads to accommodate buses, bus infrastructure and cyclist use for employees;

    - Construction of a covered bus drop off/pick up facility within the site to encourage the use of buses for employees;

    - Review and rationalisation of the locations of Route 901 bus stops in the vicinity of the site to match the proposed northern terminal entry location and enhance accessibility;

- Providing peak period and SIMTA shift work responsive express buses to/from the site and Liverpool Station via Moorebank Avenue and Newbridge Roads with frequency dependant on the development of the site;

- Providing peak period express buses to/from the site and Holsworthy rail station via Anzac Road, Wattle Grove Drive and Heathcote Road with frequency dependant on the development of the site;

- Extending Route 901 bus through the site via the light vehicle road; and

- Increasing peak period Route 901 bus service frequencies (through the site) to better match the needs of existing and future employees of the locality as terminal development proceeds.

5.3 ASSESSMENT OF KEY ISSUES

5.3.1 TRANSPORT AND ACCESSIBILITY IMPACT ASSESSMENT

Hyder was engaged to prepare a *Transport and Accessibility Impact Assessment* of the SIMTA proposal, which is attached in **Appendix K**. The report has been prepared taking into account a range of technical documentation which provides additional detail regarding the proposal and the methodology that underpins the traffic assessment. These include:

- Public Transport Assessment (prepared by Urbanhorizon Pty Ltd)

- Technical Note 1: Strategic Freight Demand

- Technical Note 2: Needs Assessment (prepared by PwC PricewaterhouseCoopers)

- Technical Note 3: Traffic Generation

- Technical Note 4: Existing Road Network Capacity

- Technical Note 5: Strategic Modelling Calibration/Validation and Forecasting Results

- Technical Note 6: Strategic Rail Capacity Analysis (separately attached as **Appendix L**)

- Paramics (Traffic) Model Audit (prepared by Halcrow and subsequently updated by Hyder Consulting)

The *Transport and Accessibility Impact Assessment* and the appended documents listed above provide a comprehensive assessment of the way in which the SIMTA proposal will facilitate the relevant freight transport objectives, meet the freight infrastructure requirements and address any impacts to local and regional transport networks.

5.3.1.1 FREIGHT TRANSPORT OBJECTIVES AND INFRASTRUCTURE REQUIREMENTS

The *Needs Assessment* undertaken by PwC PricewaterhouseCoopers assessed the likely demand for the proposed SIMTA Moorebank Intermodal Terminal Facility and how the objectives for this facility relate to the freight transport objectives, including the NSW Government's Freight Strategy and Port Botany's Rail Strategy. It also analysed the future container freight needs of Port Botany and the resulting requirement for additional intermodal terminal (IMT) capacity in the Sydney region.

The assessment found that under the 'business as usual' scenario (based on current Sydney region IMT capacity of 0.67 million TEU), an estimated 24% of containers would be transported by rail in 2016. The commencement of the proposed SIMTA Intermodal Terminal Facility in 2016 would provide capacity for an additional one million TEU throughput for the Sydney network, bringing the total IMT capacity to 1.67 million TEU. This would represent around 60% of the total projected TEU throughput of 2.8 million at Port Botany by 2016. Accordingly, around 1.1 million TEU would need to be moved by rail by that time for the 40% policy objective to be achieved.

The assessment also found that the SIMTA Intermodal Terminal Facility would allow the government policy objective of 40% to be achieved. However, this achievement would depend on related transportation initiatives, including investments in intermodal facilities and port and rail efficiency enhancements to meet the rail target. Based on the forecast one million TEU annual throughput, the SIMTA Intermodal Terminal Facility has the potential to provide enough capacity to allow the 40% target to be met up to 2022. It will improve container throughput, increasing productivity of freight rail and eliminate a significant number of truck movements from major arterial roads around Port Botany. The assessment also concluded that even if the 40% target is not met, increased capacity is still required by 2016 in order to maintain the current 23% rail mode share.

5.3.1.2 IMPACTS TO LOCAL AND REGIONAL ROAD NETWORKS

A *Road Network Capacity Assessment* was undertaken by Hyder to understand the existing road network context of the SIMTA site. The road network was analysed both with and without the SIMTA proposal to assess the potential impact of the development on the existing local and regional transport networks.

The key findings of the impact assessment are summarised below:

- By 2031, the population and employment growth predicted in Liverpool LGA and South West Sub-region will impact the traffic operations of key roads and intersections in the M5 corridor. The proposed widening of M5 South West Motorway will involve a further traffic redistribution impact on these roads.

- Even without the SIMTA proposal, peak hour growth in the core study area is forecast between 1.7% and 1.9% per annum. With the proposed widening, the growth on M5 Motorway is forecast to increase between 2.7% and 3% per annum. This background growth will reduce the level of service (LoS) at the following key intersections, regardless of the SIMTA development:

  - M5 Motorway/Hume Highway;

  - Moorebank Avenue/Heathcote Road;

  - Moorebank Avenue/ Newbridge Road.

  It is also expected to worsen the weaving issue on the M5 Motorway/Moorebank Avenue interchange for eastbound traffic, as demonstrated in the consistency of results being generated in the analyses of both the Highway Capacity Manual 2000 and Paramics Modelling.

- When the SIMTA facility is fully developed, the highest traffic growth is forecast on the Moorebank Avenue north of SIMTA site. Without SIMTA, model forecasts peak hour traffic growth on the Moorebank Avenue in the order of 1.6% to 1.8% per annum until 2031. The SIMTA development is forecast to increase traffic growth on Moorebank Avenue by up to 3.1% per annum.

- The results show that on most key roads outside the core area, peak hour traffic growth resulting from the development of SIMTA is small. The additional truck activity generated by the SIMTA proposal would be concentrated on key arterial roads such as M5 Motorway, Hume Highway and M7 Motorway. Regional road upgrades are required regardless of the SIMTA proposal. The AM and PM peak hour car trips are approximately 19.1% and 17.4% of daily car movements, which is considered to be a conservatively high estimate. Employee traffic generation has assumed that 80% of employee trips would be made by private vehicle, which is considered conservatively high, with scope to encourage a greater public transport share. The employee traffic trip distribution was estimated using Hyder's Sydney Strategic Model for the Moorebank catchment. The road based freight distribution was estimated from container distribution model developed for SIMTA.

- The SIMTA proposal would have the potential to reduce the volumes of heavy vehicle movements along the M5 corridor by in the order of 2,700 movements per day. These heavy vehicle movements would be primarily redistributed to the west of M5/Moorebank interchange in Liverpool, part of South West and Industrial West of Sydney. Beyond the core area, where the SIMTA heavy vehicle volume increases, it is generally by a small margin. The additional truck activity generated by the SIMTA proposal would be concentrated on key arterial roads such as M5 Motorway, Hume Highway and M7 Motorway. It is noted that the facility will be able to accommodate the throughput and storage of both full and empty containers onsite. It is noted that in excess of 10,000 TEU are forecast to be accommodated onsite. These will consist of in-bound, out-bound, empty and full TEU to facilitate freight logistic movements.

Further consideration of the potential cumulative impacts and mitigation measures is provided in **Section 5.3.4**.

5.3.2 EXISTING AND PLANNED TRANSPORT INFRASTRUCTURE

5.3.2.1 ACCESS TO AND FROM THE PROJECT

The Concept Plan application proposes a rail link access from the south and three vehicle access points from Moorebank Avenue along the western boundary. These key access points are described in detail below:

- **Rail Access** – the Concept Plan application proposes a rail corridor that will accommodate a future rail to connect the SIMTA Intermodal Terminal Facility to the Southern Sydney Freight Line. The rail link will be subject to a separate Project Approval application, however, it is anticipated to comprise a 30 metre wide corridor with a single track, dual-direction link to the south of the site, then turning west and crossing the Georges River before connecting to the SSFL at a signalised point.

- **Road Access** – the future Project Approval applications will detail the proposed access points to the SIMTA site. The following access points are proposed in the Concept Plan application:

  - Northern Access – will be the key access to the site. This access point will be signalised and provide a multi-directional access for vehicles to turn left and right in and out of the SIMTA site. It will service both trucks and passenger vehicle movements to the warehousing and distribution areas on the eastern side of the Intermodal Terminal.

  - Southern Access – will provide left turn entry only for articulated trucks collecting containers from the Intermodal Terminal. This access may also be used by terminal staff working out of the terminal administration facilities at the southern end of the Terminal area.

  - Central Access – will retain the existing signalised access to the site. Initially, this access will service residual DNSDC activities on the site during the initial stages of the SIMTA development. The on-going operation of this access point is to be determined during design development, however it is anticipated to be used by trucks entering to collect containers from the northern part of the Intermodal Terminal, or trucks exiting that have collected containers from the southern part of the Intermodal Terminal.

5.3.2.2 INTERACTION AND INTEGRATION WITH EXISTING AND PLANNED TRANSPORT INFRASTRUCTURE AND SERVICES

The *Transport and Accessibility Assessment* has given detailed consideration to the existing and planned transport infrastructure within the local, subregional and metropolitan areas. The future road improvement projects used in the base case network were identified from the following key sources:

- Sydney Strategic Travel Model (STM), Bureau of Transport Statistics (BTS)

- M5 West Widening Project, Environmental Assessment, RTA, September 2010

- M5 West Widening Project, Preferred Project Report, RTA, May 2011

- Infrastructure Statement 2010-2011, RTA

Particular consideration was given to the proposed widening of M5 South West Motorway, which will involve a further traffic redistribution impact on the M5 Motorway, Moorebank Avenue, Cambridge Avenue, Newbridge Road and the Hume Highway. This means future traffic on the Moorebank Avenue and M5 Motorway will be influenced not only by the traffic generated from the SIMTA development, but background growth and redistribution traffic effect from proposed M5 South West Motorway will also impact future corridor flows.

The potential impacts arising from the SIMTA development on the local and road network in **Section 5.3.1** were derived from analysis that considered each of the above matters.

5.3.2.3 RAIL NETWORK CAPACITY

Based on preliminary assessment of fright rail capability, 21 round-trip train paths will be required to service the SIMTA intermodal terminal facility at full capacity. Consultation with the ARTC and preliminary modelling has indicated that the SSFL will be able to support these train movements with appropriate investment.

The required infrastructure upgrades and investments can only be determined based on a detailed analysis of a final rail link design. However, based on the ARTC's preliminary modelling, it is anticipated that additional investment in rail infrastructure to support the SIMTA rail movements may include:

- Two 750 metre loops between Leightonfield and Moorebank.
- Extension of the existing Moorebank loop.
- Full duplication of the Botany line.

A more detailed response on scope, timing and cost implications of the SIMTA proposal will be provided by the ARTC when a formal path request is made following the determination of the Concept Plan. More detail on rail infrastructure capacity is contained in Section 3.1 of the *Strategic Rail Capacity Analysis* prepared by Hyder in **Appendix L.**

5.3.2.4 INTERNAL TRANSPORT AND LOGISTIC REQUIREMENTS

The breakdown of site operations for the full development 'business as usual' scenario as described by SIMTA is listed within the Transport and Accessibility Impact Assessment as follows:

- *The volume of container activity through terminal is proposed to be approximately one million TEU per annum moving to and from Port Botany and SIMTA site.*
- *Containers arriving by rail from Port Botany (500,000 TEU) will be unloaded onto rail stacks within the intermodal facility. The 500,000 TEU would be returned to the port by rail. Containers that were unloaded on-site (200,000 TEU), now empty, will be loaded onto trains for return to Port Botany.*
- *Of those 500,000 TEU containers arriving by rail, 200,000 TEU will be transported to warehouses within the intermodal facility and unloaded on-site. The remaining 300,000 TEU will be transferred directly onto trucks for transport off-site.*
- *Of the containers that were transported offsite (300,000 TEU), 175,000 TEU will be unloaded at external depots and returned to SIMTA for loading onto trains for return to Port Botany. The remaining containers that were transported off-site (125,000 TEU) will return full, to be loaded onto trains for return to Port Botany and export.*

SIMTA have advised that some imported containers (125,000 TEU) will be transported to external depots and re-packed off-site ready to be returned to SIMTA for export. This assumes that depots receiving full containers (importing) will also use those same containers for export.

Current industry practice is for the majority of containers unloaded at external depots to return to an empty container store, before being called up for stuffing by customers for export.

In addition to truck movements generated by the transport of shipping containers off-site, rigid truck trips will be generated by the transport of freight which will be unpacked within SIMTA site (200,000 TEU). This freight will either be distributed directly to customers, or to customers via other distribution warehouses outside of SIMTA.

The indicative layout of the proposed intermodal terminal facility has been designed to accommodate the above site operations. Large handling areas are provided adjacent to the rail terminal for container handling. Further, the proposed intermodal terminal warehouses and large format warehouse have been located to meet the needs of individual future tenants, including heavy vehicle access and circulation.

5.3.3 VEHICLE MOVEMENTS

5.3.3.1 TRAIN MOVEMENTS

SIMTA has engaged in preliminary discussions with ARTC on potential access along the Southern Sydney Freight Line (SSFL) between Port Botany and Moorebank to service the SIMTA Intermodal Terminal Facility. The discussions have been of preliminary nature only, as rail access can only be further advanced and allocated once the SIMTA Concept Plan approval has been obtained.

The preliminary discussions to date have been based on projected train movements for four throughput scenarios; 200,000 TEU, 500,000 TEU, 800,000 TEU and one million TEU. The forecast rail movements per day to support these throughput levels are summarised in **Table 5**. These scenarios indicate that at initial operating capacity, five train movements will occur over a 24 hour period. At full operating capacity, the SIMTA proposal will generate up to 21 train movements to the site over a 24 hour period.

It is anticipated that all train movements to and from the SIMTA site will be along the SSFL between Port Botany and Moorebank. However, the creation of a national freight rail network in line with State and Federal policy objectives could potentially facilitate intrastate and interstate rail movements. Freight containers arriving at the SIMTA site by rail will be transported to the warehouse and distribution facilities within the SIMTA site or directly loaded onto trucks for transportation to warehouses and logistics centres in the west and south-western subregions of Sydney.

TABLE 5 – PROJECTED TRAIN PATHS (HYDER)

TEU's Thresholds	Train Paths per Direction per Day
200,000	5
500,000	11
1,000,000	21

It is important to note that the SIMTA proposal has a capacity of one million TEU at full operation, which will amount to 500,000 TEU arriving at the SIMTA site by rail from Port Botany, and 500,000 TEU being returned to Port Botany (generally empty).

5.3.3.2 TRUCK MOVEMENTS

Based on the annual container movement cycle, at full operation it is anticipated that 600,000 TEU will be transported to and from the SIMTA site by articulated vehicles. This amounts to 40% of containers being directed to the SIMTA warehousing and distribution facility and 60% being transported off-site by truck. Based on these assumptions, the anticipated truck movements generated to and from the SIMTA site are summarised in **Table 6** below:

TABLE 6 – TRUCK MOVEMENTS TO THE SIMTA SITE

TYPE OF TRUCK	NUMBER OF TRUCK MOVEMENTS PER WEEKDAY
Articulated Truck	1,603
Rigid Truck	1,034
Total	2,637

According to the "business as usual" assumptions within the Hyder analysis of truck movements, the SIMTA proposal will generate a total of 2,637 truck movements (including both directions) on a standard weekday when fully developed. While the site will operate 24 hours a day, 7 days per week, 85% of truck movements will occur on weekdays. Peak truck movements are expected to generally occur between 7am and 8am, and 2pm and 3pm.

The origin-destination movements for freight and distribution are difficult to predict at this preliminary stage, noting that this will be significantly influenced by the future tenants and future industrial growth demands. Further, the project is forecast to be completed over a number of years and it is also difficult to predict future logistical needs and import/export demands.

5.3.3.3 CAR MOVEMENTS

The 'business as usual' assessment of employee numbers assumes the SIMTA proposal will require approximately 2,258 employees, which would generate a total of 3,613 car movements per weekday. It is noted that the Needs Assessment undertaken by PwC[10] estimates a maximum of 2,840 employees on the SIMTA site, generating approximately 4,544 car movements per weekday.

As the number of staff vehicle movements is directly related to the number of staff on-site, the business as usual employee figure has been adopted in the transport assessment undertaken by Hyder, however the quantum of employees on-site will be reconsidered at each subsequent Project Application stage. The volume of vehicle movements will also be influenced by the public transport services available to staff.

5.3.3.4 PUBLIC TRANSPORT

Route 901 operated by Veolia provides a bus service to and from Liverpool and Holsworthy Railway Stations. Buses generally travel along Anzac Avenue to the north of the site, however, one AM and one PM service provides access from Moorebank Avenue. The first Route 901 bus leaves Liverpool at 5:30am each weekday and the last bus returns at 8:50pm on weekday evenings. The weekday average peak frequencies are about 30 minutes and 60 minutes in the off peak.

The NSW Government has introduced a number of high frequency cross regional bus services across the Sydney metropolitan area. Metro Bus M90 runs between Liverpool and Burwood via Milperra and Newbridge Road. The M90 route does not directly service the proposed SIMTA site, however, Milperra and Newbridge Roads are located approximately two kilometres north of the proposed SIMTA site.

The nearest railway stations are located at Liverpool, Holsworthy and Casula. Liverpool is an interchange station that services the South, Cumberland, Bankstown and Inner West railway lines. Holsworthy is located on the East Hills Line, which runs immediately south of the SIMTA site. Liverpool and Holsworthy Railway Stations are each accessible by the Route 901 bus service, as noted above. Casula is less accessible, being separated from the site by the Georges River.

A detailed assessment of existing public transport infrastructure and measures to influence take-up of public transport is provided within the Public Transport Assessment prepared by Urbanhorizon Pty Ltd. The mitigation measures to increase public transport use are provided on page 26 and have been included in the Draft Statement of Commitments in **Section 18**.

[10] PwC, 2011, *Technical Note 2: Needs Assessment of Moorebank Intermodal Terminal Facility*, page 5.

5.3.4 CUMULATIVE IMPACTS AND MITIGATION MEASURES

5.3.4.1 FREIGHT DEMAND AND CUMULATIVE TRAFFIC IMPACTS

The *Strategic Freight Demand* study undertaken by Hyder Consulting (**Appendix K**) identified a catchment demand for freight arriving in Moorebank of one million TEU by 2025. The catchment demand is discussed in detail in **Section 3.3.2** of this report.

If additional intermodal capacity is delivered to Moorebank through the development of an intermodal facility on the School of Military Engineering site adjacent to the SIMTA site, both intermodal terminals would operate below their maximum throughput capacity. The volume of rail and road vehicles and associated transport impacts would be consistent with the SIMTA operating at maximum capacity and servicing the whole Moorebank catchment, as assessed by way of this Concept Plan application.

Accordingly, the traffic impacts outlined in this Environmental Assessment are an assessment of the cumulative traffic and transport impacts which could be generated by intermodal terminals servicing the Moorebank catchment.

The *Transport and Accessibility Impact Assessment* sought to analyse the cumulative traffic impact considering other proposed developments assumed in the 'base case' network and Strategic Travel Model trip tables. The traffic modelling considered:

- NSW Government population and employment forecasts sourced from Bureau of Transport Statistics (now Transport for NSW).
- Predicted container annual throughput from Port Botany and passenger growth in Sydney Airport.
- Impacts of the planned freight distribution centres in Sydney to derive the catchment for the distribution of freight by road from SIMTA.
- Redevelopment of the School of Military Engineering (SME) site on the western side of Moorebank Avenue (opposite to the SIMTA site). At the time of preparing the traffic impact assessment, the Moorebank Project Office (MPO) was developing a business case, design, approval and an implementation strategy for an intermodal terminal on the SME site. Actual information on the size and potential traffic generation from the SME site was not available.

The key findings of the assessment are summarised below:

- The regional road network will need to be developed progressively over the next 20 years to cater for the forecast increase in traffic volumes which will result from both the SIMTA development and the general growth in traffic that would occur irrespective of whether the SIMTA proposal is realised.
- With the SIMTA proposal, the container model forecasts reductions in truck trips to and from Port Botany and Eastern Creek. The modelling analysis suggests that the operation of SIMTA at Moorebank would have the potential to reduce the volumes of heavy vehicle movements along the M5 corridor by approximately 2,700 movements per day. These heavy vehicle movements would be primarily redistributed to the west of M5/Moorebank interchange in Liverpool, part of South West and Industrial West of Sydney. Beyond the core area, where the SIMTA heavy vehicle volume increases, it is generally by a small margin. The additional truck activity generated by the SIMTA proposal would be concentrated on key arterial roads such as M5 Motorway, Hume Highway and M7 Motorway.

The assessment identified impacts from background traffic growth at five critical intersections, regardless of whether the SIMTA development was to proceed. The modelling results suggest that the SIMTA generated traffic will further contribute to a low Level of Service F (either AM or PM peaks) for the following roads and intersections:

- Moorebank Avenue between M5/Moorebank Avenue interchange and the SIMTA northern access. Capacity problem is forecast for both northbound and southbound movements. The analysis has suggested the need for a potential upgrade to four lanes when SIMTA site is fully developed.
- Concurrent with four lane widening on Moorebank Avenue, the Moorebank Avenue/Anzac Road signal will require some form of widening at approach roads.

- A new traffic signal at SIMTA's northern access with the Moorebank Avenue.
- M5 Motorway/Moorebank Avenue interchange. The analysis has suggested the need for additional capacity improvements in the form of widening at the following ramp locations including:
  - M5 westbound off-ramp
  - M5 westbound on-ramp
  - M5 eastbound off-ramp

To minimise the impacts of the SIMTA proposal on the local and regional road network, a number of mitigation measures have been identified. These include:

- **Infrastructure Upgrades** - the key network upgrades required to support the SIMTA proposal when it reaches full operation forecast for 2031 are summarised in **Table 7** below:

TABLE 7 – INFRASTRUCTURE UPGRADES

LOCATION	POTENTIAL UPGRADE	IMPACT
M5 westbound off-ramp	**Option 1** Provide one additional short lane. New traffic signals at left turn slip lane (from east).	The proposed widening of left turn slip lane would provide adequate capacity for left turning vehicles from M5 (east) into Moorebank Avenue (south). This improvement is required to mitigate impact from SIMTA generated traffic increase. Currently, short left turn slip lane is under give way control. A new traffic signal is proposed to improve vehicle operation and pedestrian safety as well.
M5 westbound on-ramp	**Option 2** Provide one additional short lane. New traffic signals at left turn slip lane (to west). Provide additional capacity on M5 westbound on-ramp.	The proposed widening of left turn slip lane would provide adequate capacity for left turning vehicles from Moorebank Avenue (south) into M5 (west). This improvement is required to mitigate impact from SIMTA generated traffic increase. Currently, short left turn slip lane is under give way control. A new traffic signal is proposed. Currently, M5 westbound on-ramp has two lane short sections prior to merge into one lane. Additional widening is proposed on M5 westbound on-ramp.
M5 eastbound off-ramp	**Option 3** Widening M5 eastbound off-ramp. The widening includes: Provide additional right turn from current 2 lanes to 3 lanes. Increase the length of current single left turn lane. Widening Moorebank Avenue southbound carriageway to three through lanes	Provide additional third right turn lane to increase the stacking capacity and reduce queue length for the right turning vehicles from M5 (west) to Moorebank Avenue (south). This improvement is required to mitigate impact from SIMTA generated traffic increase. To work this option, the exit approach on Moorebank Avenue (south) is required to widen into three lanes. The current M5 eastbound exit divergence

		is one lane. The proposed widening of two lanes is expected to provide additional capacity to accommodate future demand.
M5 westbound on-ramp	**Option 4** Future ramp metering on the westbound on-ramp	Future ramp metering on M5 westbound on-ramp could improve traffic merge without major disruption to M5 westbound through traffic. Further analysis is required to identify an appropriate control methodology and effectiveness of the ramp metering particularly for heavy vehicles.
Moorebank Avenue northern approach	**Option 5** Increase the length of the existing (two-lane) right turn bay	In the future background traffic growth is expected to reduce capacity of right hand turn movement from Moorebank Avenue southbound regardless of SIMTA proposal. It is proposed to extend right turn bay providing additional capacity. The proposed upgrade is expected to reduce disruption to the southbound through traffic on the Moorebank Avenue.

Detailed localised improvements at the access locations will be undertaken during the Project Application stage.

- **Non-Infrastructure Mitigation Measures** - the Hyder assessment also identifies a number of non-infrastructure mitigation measures to be employed to minimise the impacts of the SIMTA proposal on the local and regional network. These are fully detailed within Section 9.2 of the Hyder *Transport and Accessibility Impact Assessment* attached in **Appendix K**.

  In the short term, it is proposed to implement a transport behaviour change programme to market and raise awareness of alternative transport modes and public transport services available to SIMTA staff. This programme will need to be supported by one or more infrastructure measures to influence travel behaviour change for employees from day one.

  This could include the provision of a peak express bus service to and from Liverpool Station via Moorebank Avenue and Newbridge Road. The key features of the service are summarised below:

  - Funded by the proponent.
  - Travel times of less than 10 minutes between the site entry and station.
  - High service frequencies of not greater than 10 minutes in the AM and PM peaks periods and at appropriate shift change over times. Outside the peaks, bus service frequencies of 30 minutes should be maintained.
  - May need to be supported by targeted bus priority measures at key intersections which can be monitored over time.
  - Growth over time, depending on the split of demand between Liverpool and Holsworthy rail stations.

  Longer term possible measures could include the introduction of a Metro bus service which operates via the M5 Motorway.

The mitigation measures have been adopted in the Draft Statement of Commitments for the SIMTA Concept Plan proposal and will be implemented by the Proponent, either independently or with consultation from other stakeholders including the RTA, Liverpool Council and local bus operators.

5.3.5 LEGISLATIVE REQUIREMENTS

The Hyder report includes consideration of a range of strategic transport policies and plans including:

- *NSW State Plan 2010*
- *Sydney Metropolitan Strategy*
- *Draft South West Subregional Strategy*
- *Liverpool City Council Community Strategy*
- *Growing Liverpool 2021*
- *Guide to Traffic Generating Developments (RTA)*
- *Integrating Land Use and Transport Package*
- *Railing Port Botany's Containers: Proposals to Ease Pressure on Sydney's Roads*
- *Port Freight Logistics Plan*

The strategic policies are considered in detail within Section 2.3 of the *Transport and Accessibility Impact Assessment*. The provisions of the Integrating Land Use and Transport package are addressed throughout the report, including identification of the regional and local context in Section 2 and the travel demand measures in Section 8. The RTA requirements are addressed throughout the report, taking into account relevant requirements and ongoing liaison during the preparation of the report.

5.4 SUMMARY AND CONCLUSION

The *Transport and Accessibility Impact Assessment* has demonstrated that there is a clear benefit arising from the SIMTA Intermodal Terminal Facility, having regard to its strategic contribution to the development of Sydney intermodal network and its one million TEU annual capacity throughput at the ultimate stage of the development.

The assessment of the existing local and regional road network conditions has confirmed that there are forecast capacity issues, irrespective of whether the SIMTA proposal proceeds. The highest traffic impact arising from the proposal will be on Moorebank Avenue, north of the SIMTA site. A range of infrastructure and non-infrastructure related mitigation measures have been identified to reduce these impacts. Each of the recommended measures has been incorporated in the Draft Statement of Commitments.

The assessment also indicates that outside the core area, there would be no significant adverse impact on key roads following the introduction of the SIMTA proposal. The additional truck activity generated by the proposed intermodal facility would be concentrated on key arterial roads such as M5 Motorway, Hume Highway and M7 Motorway. Additionally, the SIMTA proposal would have the potential to reduce the volumes of heavy vehicle movements along the M5 corridor in the order of 2,700 movements per day.

6 Noise and Vibration

6.1 OVERVIEW

The Director-General's Environmental Assessment Requirements for the SIMTA Concept Plan application include the following requirement:

> ***Noise and Vibration*** *– including but not limited to:*
>
> - *noise and vibration from all activities and sources (on- and off-site), and impacts to adjoining receivers (including nearby residential areas of Moorebank, Wattle Grove and Casula and sensitive land uses); and*
> - *taking into account the NSW Industrial Noise Policy (DEC), Assessing Vibration: A Technical guidelines (DECC), Environmental Criteria for Road Traffic Noise (DEC), and the Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects (DEC and DoP).*

The *Noise Impact Assessment* (NIA) prepared by PAE Holmes (attached as **Appendix O**) should be reviewed to fully understand the methodology for undertaking the noise and vibration impact analysis, including the identification of the noise receivers, establishment of the relevant noise criteria base on noise monitoring results, the estimated noise emissions resulting from the operation of the SIMTA proposal and the modelling undertaken to predict the noise impacts from operation of the SIMTA proposal at surrounding sensitive receptor locations. The following sections of the report demonstrate the way in which each of the matters identified in the DGRs has been responded to within the detailed documentation that forms part of the Concept Plan application.

6.2 ASSESSMENT METHODOLOGY

The noise and vibration assessment was undertaken having regard to the site context, potential impacts of the proposal, consideration of statutory requirements and identification of appropriate mitigation measures to be implemented to avoid any significant impacts. Each of these matters is outlined in detail within the *Noise Impact Assessment* and as summarised below:

- **Existing Environment** – the key characteristics of the acoustic environment and noise assessment are described in detail with both the NIA and **Section 6.3** of this report and as summarised below:
  - PAEHolmes identified three locations that represent the general area of the SIMTA site and rail corridor to undertake unattended noise monitoring. Monitoring occurred from 9 July 2010 to 21 July 2010 and was undertaken in accordance with the procedures outlined in the INP.
  - The site context is generally dominated by 'urban hum' predominantly from traffic-related sound sources including:
    - Through traffic with heavy and continuous traffic flows during peak periods.
    - Near commercial / industrial districts.
    - Near existing rail lines and the Southern Sydney Freight Line.

    However, the southern portion of Wattle Grove is located further from these noise sources and is less influenced by the 'urban-hum'.

    The noise criteria for 'urban' sources has been used as the assessment criteria for the majority of surrounding noise receivers, while the 'suburban' noise criteria has been used to assess the impacts of the SIMTA proposal on the Wattle Grove area.

- Noise levels at residences to the east (Wattle Grove) are subject to relatively constant noise levels throughout the day. Noise levels at residences further to the north (Holsworthy) and west (Casula) are subject to levels of traffic noise associated with the M5 Motorway and Moorebank Avenue. Noise levels at the army barracks, west of the site, are subject to levels of traffic noise associated with the Moorebank Avenue

- It was found that there were no winds exceeding the 30 per cent threshold in any assessment period (day, evening, night) in any season, hence wind is not considered a feature of the area for purpose of noise assessment. However, it was found that temperature inversions are a likely feature of the area and as such should be assessed.

- **Potential Impacts** - a comprehensive assessment of the potential noise and vibration impacts of the SIMTA proposal is detailed in Section 5 of the NIA and **Section 6.3** of this report. The key findings of this assessment are summarised as follows:

  - The construction noise predictions indicate some marginal exceedances of the noise management level at all residential receivers in the Holsworthy and Wattle Grove areas. Demolition and bulk earthworks have the highest construction noise levels.

  - Predicted noise levels from operation of the SIMTA proposal indicates that the potential for noise impact at surrounding residences would be relatively low and all relevant criteria are likely to be met during operation of the facility. The modelling results show that the SIMTA proposal is acoustically appropriately located for its use with relatively large buffer distances to residences and near proximity to major roads.

  - Train noise levels at the potentially most affected residences near the new rail line and SSFL are expected to comply with the IGANRIP guidelines for a new rail line. In the case of vibration at residences generated by trains within the new rail corridor, this is anticipated to be unnoticeable and well within vibration criteria.

- **Statutory Assessment Considerations** – the key legislation that has been reviewed in the preparation of the noise and vibration assessment is listed in Section 1.2 of the NIA and Section 6.3.2 of this report, including:

  - *NSW Industrial Noise Policy*

  - *Assessing Vibration: A Technical Guidelines*

  - *Environmental Criteria for Road Traffic Noise*

  - *Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects*

- **Management/Mitigation Measures** – the proposed mitigation measures are fully detailed within Section 5.1.1.4 Mitigation of Construction Noise, Section 5.1.2.1 Vibration Mitigation Measures of the Technical Report and **Section 6.3.1** of this report.

6.3 ASSESSMENT OF KEY ISSUES

6.3.1 NOISE AND VIBRATION IMPACT ASSESSMENT

The NIA identifies four sensitive land use areas surrounding the site (refer to **Figure 15**). These are:

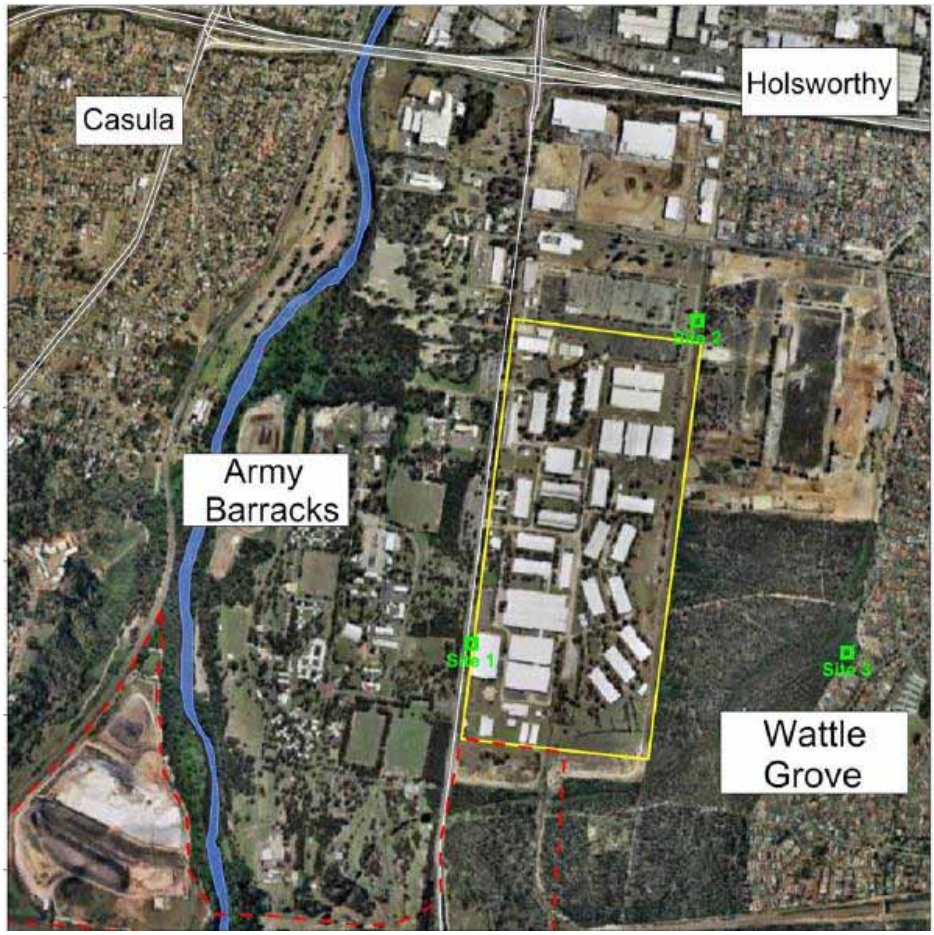
- Army Barracks on the School of Military Engineering site to the west of Moorebank Avenue.

- Holsworthy (Moorebank) residential area to the north-east.

- Wattle Grove residential area to the east.

- Casual residential area to the west of the Georges River and the Southern Sydney Freight Line.

FIGURE 15 – NOISE MONITORING LOCATIONS



6.3.1.1 NOISE AND VIBRATION ASSESSMENT CRITERIA

The existing noise levels were measured at these locations using 24-hour unattended Environmental Noise Loggers between 9 July and 21 July 2011. Noise assessment was undertaken using the following policy criteria:

- **Construction Noise Criteria** – determined using the procedure set out in the *NSW Interim Construction Noise Guideline (ICNG)*, which taking into consideration that construction is temporary, noisy and difficult to ameliorate. The construction noise criteria is summarised in **Table 8**.

TABLE 8 – CONSTRUCTION NOISE CRITERIA AT RESIDENTIAL RECEIVERS

Time of day	Management Level $L_{Aeq,15min}$	How to Apply
Recommended standard hours: Monday to Friday 7am to 6pm Saturday 8am to 1pm No work on Sundays or public holidays	Noise affected RBL + 10 dBA	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured $L_{Aeq\ (15\ min)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to minimise noise. The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected 75 dBA	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the proponent should consider very carefully if there is any other feasible and reasonable way to reduce noise to below this level. If no quieter work method is feasible and reasonable, and the works proceed, the proponent should communicate with the impacted residents by clearly explaining the duration and noise level of the works, and by describing any respite periods that will be provided.
Outside recommended standard hours	Noise affected RBL + 5 dBA	A strong justification would typically be required for works outside the recommended standard hours. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable practices have been applied and noise is more than 5 dBA above the noise affected level, the proponent should negotiate with the community.

- **Operational Noise Criteria** – determined using the procedures set out in the *NSW Industrial Noise Policy (INP)*, which considers noise to be intrusive if it exceeds the noise exceeds the RBL by more than 5dB(A). The operational noise criteria is summarised in **Table 9** below.

TABLE 9 – PROJECTED SPECIFIC OPERATIONAL NOISE LEVELS

Period	L_{Aeq} dBA			
	Army Barracks	Casula	Holsworthy	Wattle Grove
Daytime	54	46	46	40
Evening	51	50	50	42
Night-time	42	45	45	39

- **Sleep Disturbance Criteria** – considering individual transient noise events between 10pm and 6am. This is determined using the *DECCW Environmental Noise Control Manual (ENCM)*, which should not exceed the background noise level by more than 15dBA. The sleep disturbance criteria is summarised in **Table 10** below.

TABLE 10 – SLEEP DISTURBANCE CRITERIA

Location	RBL (dBA)	Sleep Disturbance Screening Criterion, $L_{A1,1minute}$ (dBA)
Army Barracks	37	52
Casula	41	56
Holsworthy	41	56
Wattle Grove	34	49

- **Traffic Noise Criteria** – this is determined by applying the *DECCW Environmental Criteria for Road Traffic Noise*, based on the following vehicle travel assumptions:
  - Traffic associated with the SIMTA proposal will travel north on Moorebank Avenue from the site.
  - Approximately 90% of vehicles would travel east or west on the M5 Motorway
  - Approximately 10% of vehicles will travel north on Moorebank Avenue to Newbridge Road.
- **Rail Noise Criteria** – the noise assessment has applied the *DECCW's Interim Guidelines for the Assessment of Noise from Rail Infrastructure Projects* 'trigger levels' to assess the acoustic impacts of the use of the rail corridor on surrounding residential uses. The rail corridor will be linked to the Southern Sydney Freight Line and run adjacent to the East Hills Railway Line. It is recognised that the surrounding sensitive receivers (residential areas) are currently exposed to railway noise, however, a conservative noise assessment has been undertaken and accordingly, PAE Holmes has classified the SIMTA proposal as 'new' rail line development. The rail noise criteria is summarised in **Tables 11 and 12** below.

TABLE 11 – INTERIM GUIDELINE FOR THE ASSESSMENT OF NOISE FROM RAIL INFRASTRUCTURE PROJECTS – LEVELS FOR NEW RAIL DEVELOPMENT

Type of Development	Day (7 AM – 10 PM)	Night (10 PM – 7 AM)	Comment
New rail line development	Development increases existing rail noise levels **and** resulting rail noise levels exceed:		These numbers represent external levels of noise that trigger the need for an assessment of the potential noise impacts from a rail infrastructure project. An 'increase' in existing rail noise levels is taken to be an increase of 2 dBA or more in L_{Aeq} in any hour or an increase of 3 dBA or more in L_{Amax}.
	60 $L_{Aeq(15hr)}$ 80 L_{Amax}	55 $L_{Aeq(9hr)}$ 80 L_{Amax}	

TABLE 12 – SIMTA RAIL NOISE AT SURROUNDING RESIDENTIAL RECEIVERS

Nearest Receiver Catchment	Day (7.00am-10.00pm) $L_{Aeq(15hr)}$	Night (10.00pm-7.00am) $L_{Aeq(9hr)}$
Army Barracks	41	45
Casula	41	45
Glenfield	32	36
Wattle Grove	33	37

The vibration assessment was undertaken for construction and on-going operation of the SIMTA proposal. Based on the distance of the proposal, including the rail link from the Southern Sydney Freight Line to the SIMTA site, the distances are greater than the 60 metre separation guideline. Accordingly, it is considered vibrations from rail movements to the site will be unnoticeable. For vibration assessment of construction operations on the SIMTA site the following policy criteria have been considered:

- **Human Comfort Criteria** – the vibration assessment has applied the *DECCW Assessing Vibration: A Technical Guideline (AV Guideline)*, which provides acceptable levels for continuous vibration and impulsive vibration.

- **Building Damage Criteria** – The vibration assessment applies the German Standard DIN 4150 guidelines to assess potential damage to buildings dependant on frequency, which include:

  - Sensitive heritage buildings: 3 to 10mm/s

  - Dwellings: 5 to 20mm/s

6.3.1.2 NOISE AND VIBRATION IMPACTS

The PAE Holmes Report identifies the following noise sources from the SIMTA proposal:

- **Operational Noise**:

  - Industrial Noise – on-site including equipment and vehicle movements.

  - Road traffic – along Moorebank Avenue, based on the assumption of 90% heading north to the M5 Motorway and 10% heading north to Newbridge Road.

  - Rail movements – between the site and the Southern Sydney Freight Line, including rolling-stock idling at the SIMTA terminal, assuming 21 trains will service the site per day at full operation. The rail movements have been assessed for an indicative rail link between the SIMTA site and the Southern Sydney Freight Line.

- **Construction Noise**:

  - Demolition of existing building.

  - Earthworks to level and grade the site.

  - Construction of buildings.

Other factors which will influence noise and acoustic impacts include local meteorological conditions and the screening effect resulting from the placement of buildings between noise and vibration sources and areas of sensitivity.

Operational Noise Impacts

Operational noise has been modelled for each receiver catchment with regard to the SIMTA site operations and the indicative rail link within the rail corridor lands.

- Industrial Noise – modelling of the future industrial development indicates that sound power levels from typical plant and operations occurring in an intermodal facility are lower than recommended levels. As such, the proposal is considered compatible with surrounding sensitive noise receptors.

- Road Traffic – noise modelling of vehicles associated with the SIMTA proposal travelling north along Moorebank Avenue to the M5 has indicated an increase of 3dBA. However, there are no residential receivers along this section of Moorebank Avenue.

- Rail Noise – noise modelling was undertaken based on 42 rail movements per 24 hours spread equally across the day, resulting in 26 movements per day period (7am to 10pm) and 16 movements per night period (10pm to 7am) along the indicative rail link. The noise levels modelled for each residential receiver indicate that the modelled rail noise is well below the absolute trigger criteria for both day and night periods.

Accordingly, predicted noise levels from industrial, road and rail operations of the SIMTA proposal indicate that the potential for noise impact at surrounding residences would be relatively low and all relevant criteria are likely to be met during operation of the facility.

Construction Noise Impacts

The NIA concluded that the SIMTA proposal will have relatively low noise impacts on surrounding sensitive land uses during operation of the facility. However, unmitigated demolition and bulk earthworks during the construction stage have been assessed to have marginal exceedances of noise management levels. Accordingly, the NIA includes a number of specific mitigation measures to be included in the Construction Noise Management Plan to minimise construction noise to sensitive land uses, which have been adopted in the draft Statement of Commitments, including:

- Mitigation of specific noise sources may be possible by using portable temporary screens.

- For extended periods of driven piling and use of rock breakers, respite periods might be considered.

- Maximising the offset distance between noisy plant items and sensitive receivers.

- Avoiding using noisy plant simultaneously and/or close together, adjacent to sensitive receivers.

- Orienting equipment away from sensitive receivers.

- Carrying out loading and unloading away from sensitive receivers.

- Using dampened tips on rock breakers.

- Using noise source controls, such as the use of residential class mufflers, to reduce noise from all plant and equipment including bulldozers, cranes, graders, excavators and trucks.

- Selecting plant and equipment based on noise emission levels.

- Using alternative construction methods to minimise noise levels.

- Providing alternative arrangements with affected residents such as temporary relocation.

- Selecting site access points and roads as far as possible away from sensitive receivers.

- Using spotters, closed circuit television monitors, “smart” reversing alarms, or “squawker” type reversing alarms in place of traditional reversing alarms.

- Staff education and training to implement to the noise mitigation measures.

The vibration assessment concludes that the SIMTA proposal will meet the building damage criteria. This indicates there is a low risk of building damage during construction. Accordingly, no building vibration mitigation measures are required.

The vibration assessment against the human comfort criteria indicate that vibrations from roller or impact piling could be perceptible from the residences in Holsworthy, however these vibrations will be limited in duration to comply with the AV Guidelines. Vibration mitigation measures will be adopted for on-going monitoring of construction activities to facilitate on-going compliance with AV Guideline limits.

6.3.2 POTENTIAL CUMULATIVE IMPACTS

It is proposed to commence the Stage 1 works for SIMTA immediately upon obtaining the necessary approvals, while the SME proposal is forecast to be commenced at a later date. It is considered that the completion of these works could assist in further mitigation of noise impacts through provision of additional buffers between the works and the adjacent sensitive receptors to the east and north of the SIMTA site.

In the event that there was overlap in the construction of the SIMTA proposal and the potential intermodal terminal on the SME site, it is considered that the staged nature of the SIMTA proposal (which is likely to also be adopted on the SME site) would result in a reduced intensity of impacts on the surrounding environment.

Noise modelling undertaken for the SIMTA proposal assessed the full one million TEU capacity of the freight catchment demand. The effect of development of the School of Military Engineering site would be to distribute this total freight volume between the two sites and would result in a diffusion of noise generation sources over a greater area and the reduction of freight movements along a proportion of the SSFL and nominated rail corridors for both developments.

With the adoption of typical noise mitigation measures (as proposed within the noise assessment) across both sites, the overall operational noise impacts of both the freight rail movements and the combined operation of the facilities for the residential areas to the east and north of the SIMTA site are predicted to meet the *Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects* for identified sensitive receivers.

6.3.3 LEGISLATIVE REQUIREMENTS

Section 1.2 of the *Noise Impact Assessment* confirms that the scope of work underpinning their analysis took into account each of the following policies and plans:

- *NSW Industrial Noise Policy*
- *Assessing Vibration: A Technical Guidelines*
- *Environmental Criteria for Road Traffic Noise*
- *Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects*

6.4 SUMMARY AND CONCLUSION

The noise and vibration impacts of the proposal have been assessed by PAE Holmes against the relevant noise and vibration criteria as outlined in the DGRs. The assessment concludes that the SIMTA proposal will be able to meet the relevant noise and vibration criteria for surrounding land uses through the implementation of a number of mitigation measures which will minimise the environmental impacts of the SIMTA proposal.

The mitigation measures recommended by PAE Holmes have been adopted in the draft Statement of Commitments, which will be incorporated into future Project Applications for development of the SIMTA Intermodal Terminal Facility.

7 Biodiversity

7.1 OVERVIEW

The Director-General's Environmental Assessment Requirements for the SIMTA Concept Plan application include the following requirement:

> ***Biodiversity*** *– including but not limited to:*
>
> - *assessment of threatened terrestrial and aquatic (including groundwater dependent) species, populations and endangered ecological communities and/or critical habitat, including the Cumberland Plain Woodland;*
> - *ecological surveys commensurate with the biology/ecology of species and extent of habitat within and adjacent to the project site;*
> - *vegetation clearing (including riparian areas and resultant foraging, nesting, roosting and habitat loss and fragmentation, and edge effects) and operational impacts; and*
> - *taking into account the Draft Guidelines for Threatened Species Assessment (DEC & DPI), Threatened Biodiversity and Assessment: Guidelines for Developments and Activities (DEC) and Principles for the Use of Biodiversity Offsets in NSW (DECCW).*

Hyder has prepared a *Flora and Fauna Assessment* (attached as **Appendix F**) that assesses the flora and fauna within the SIMTA site and the rail corridor lands. ALS Water Sciences Group prepared an *Aquatic Ecology* report which is appended to the *Flora and Fauna Assessment,* and Hyder prepared a separate *Riparian* Assessment (attached as **Appendix P**) assessing the potential impacts of the SIMTA proposal on the riparian environments of Anzac Creek and the Georges River. Each of these reports should be reviewed in detail to understand the assessment methodology, findings and recommendations. The following section of the report summarises the way in which the assessment has responded to the DGRs.

7.2 ASSESSMENT METHODOLOGY

The biodiversity assessment was undertaken having regard to the site context, potential impacts of the proposal, consideration of statutory requirements and identification of appropriate mitigation measures to be implemented to avoid any significant impacts. Each of these matters is outlined in detail within the *Flora and Fauna Assessment*, the *Aquatic Ecology* report, the *Riparian* Assessment and as summarised below:

- **Existing Environment** –the key biodiversity characteristics of the subject site with regard to flora and fauna have been identified as follows:
  - 269 flora species, comprising 193 local native species, eight non-local native and 68 exotic species (including 9 species of weeds listed as noxious in the Liverpool City Council LGA).
  - Two threatened flora species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *Threatened Species Conservation Act 1995* (TSC Act).
  - Five threatened ecological communities listed under the TSC Act were identified in the railway corridor land.
  - 59 fauna species, comprising 54 native and 5 exotic species.
  - Three threatened mammal species listed under *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *Threatened Species Conservation Act 1995* (TSC Act).
  - Three broad terrestrial fauna habitat types; remnant vegetation, riparian habitats and cleared and disturbed areas.

- Three fish species and 27 macroinvertebrate families were recorded in aquatic environments (Anzac Creek and Georges River).

- Georges River is classified as Class 1 (Major Fish Habitat), and Anzac Creek as Class 3 (Minimal Fish Habitat).

- **Potential Impacts** - the potential impacts of the SIMTA proposal are comprehensively discussed in Section 4 of the *Flora and Fauna Assessment* and within **Section 7.3** of this report. These impacts are summarised below:

  - Loss of native vegetation, including Endangered Ecological Communities and threatened flora species.

  - Loss of fauna habitat including that of threatened and migratory species.

  - Alteration and degradation of aquatic habitats.

  - Edge effects and weed invasion.

  The ecological impacts within the SIMTA site are considered likely to be low. Habitat fauna is limited across the SIMTA site as a result of previous clearing of native vegetation from much of the site and ongoing maintenance such as mowing across the site. However, there are likely to be impacts to the native vegetation in the rail corridor lands to the south of the SIMTA site, given the requirement for a 30 metre wide area of impact for the length of the proposed indicative rail link. Further detailed design is required to resolve the exact location of the future rail link, at which time the potential impacts will need to be further assessed as part of the associated Project Application.

- **Statutory Assessment Considerations** – the relevant planning, land use and development matters, including strategic and statutory matters are presented within Section 1.4 of the *Flora and Fauna Assessment* and as summarised below:

  - Under the *Environmental Protection and Biodiversity Conservation Act* (EPBC Act), actions that have or are likely to have a significant impact on a matter of NES require approval from the Australian Government Minister for Sustainability, Environment, Water, Population and Communities (the minister). The minister will decide whether assessment and approval is required under the EPBC Act.

  - Section 5A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) provides seven factors that "must be taken into account" by a consent or determining authority in the administration of Sections 78A, 79C and 112 of the Act when considering an activity or development proposal. This assessment has been undertaken in accordance with these seven factors.

  - The NSW *Threatened Species Conservation Act 1995* (TSC Act) provides for the protection and management of threatened species, populations and ecological communities listed under the schedules 1, 1A and 2 of the Act. Threatened ecological communities and species listed under the TSC Act were identified on the railway corridor and on the SIMTA site lands. Assessments of Significance have been undertaken for each of these (see Appendices of Technical Report).

  - The *Fisheries Management Act 1994* (FM Act) provides for the identification, conservation and recovery of threatened fish, aquatic invertebrates and marine vegetation. The Act also covers the identification and management of key threatening processes which affect threatened species or could cause other species to become threatened. One threatened species, Macquarie Perch (*Macquaria australasica*), has been identified in parts of the upper Georges River catchment (NSW Industry & Investment, 2010). Macquarie Perch is listed as Endangered under the Fisheries Management Act 1994 (FM Act). Generally, the species is found upstream of areas inhabited by Australian Bass (Native Fish Australia, 2009b); Australian Bass is known from stretches of the Georges River adjacent to the study area. As a result, it is highly unlikely that Macquarie Perch occur in the lower reaches of the Georges River at or near this site (ALS 2011).

- **Management/Mitigation Measures** – the proposed measures to mitigate the impacts of the proposal on biodiversity are contained detailed in Section 5 of the *Flora and Fauna Assessment* and Section 7.3 of this report and include:

  - The identified ecological values should be avoided as far as practicable. The construction footprint incorporating the rail link footprint and construction access requirements should be reduced as far as possible to minimise impacts.

  - Where impacts cannot be avoided, safeguards should be implemented to mitigate these impacts during construction. If impacts are unable to be avoided or safeguarded against, biodiversity offsets may be used to counterbalance the impact of development on biodiversity. Offsets are to be determined with reference to the Principles for the Use of Biodiversity Offsets in NSW (OEH 2011).

7.3 ASSESSMENT OF KEY ISSUES

7.3.1 ASSESSMENT AND ECOLOGICAL SURVEYS

The *Flora and Fauna Assessment* is based on findings arising from the following scope of work:

- Database searches to identify existing records of threatened species, populations and endangered ecological communities occurring within the study area and the surrounding locality.

- Flora and fauna surveys undertaken across the study area from Tuesday 2 May 2011 to Wednesday 25 May 2011. Detailed flora surveys including six quadrats, random meanders, tree assessment and targeted threatened species searches.

The key findings arising from the above scope of work are summarised below:

- A total of 269 vascular plant species in the study area, comprising 193 local native species, eight non-local native species (mainly planted trees) and 68 exotic species.

- Two threatened plant species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *Threatened Species Conservation Act 1995* (TSC Act) were identified in the Rail Corridor land, being:

  - *Persoonia nutans* (endangered species).

  - *Gravillea parviflora subsp. Parviflora* (vulnerable species).

  The location of these threatened plant species are illustrated in **Figure 16**. Their populations are considered to be of significant conservation value. A referral under Sections 18 and 18A of the EPBC Act is required to be prepared and submitted to the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities.

- Another threatened plant species, the *acacia pubecens* (vulnerable species) was recorded adjacent to the study area, to the east of the SIMTA site.

- Five threatened ecological communities listed under the TSC Act were identified in the study area, all within the Rail Corridor lands, being:

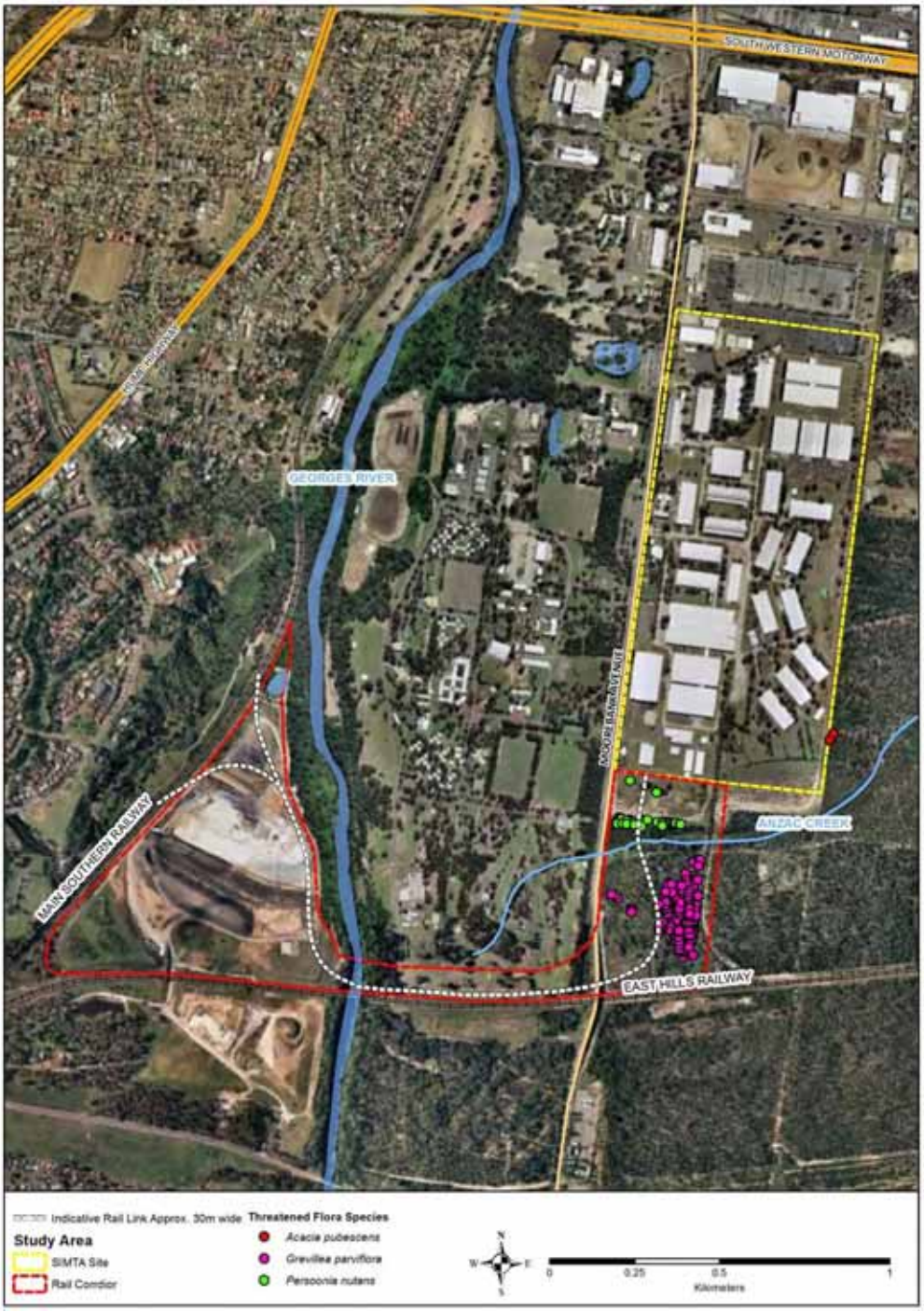
  - *Castlereagh Scribbly Gum Woodland* in the Sydney Basin bioregion

  - *Castlereagh Swamp Woodland*

  - *River-flat Eucalypt Forest* on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions

The location of the indicative rail link is responsive to the findings of the flora and fauna survey findings. The alignment has been selected to minimise impacts on identified threatened flora and fauna species to minimise potential environmental impacts of the SIMTA proposal

FIGURE 16 – SURVEYED THREATENED PLANT SPECIES WITHIN THE STUDY AREA



Source – Hyder, 2011 Flora and Fauna Assessment, Figure 9, page 40.

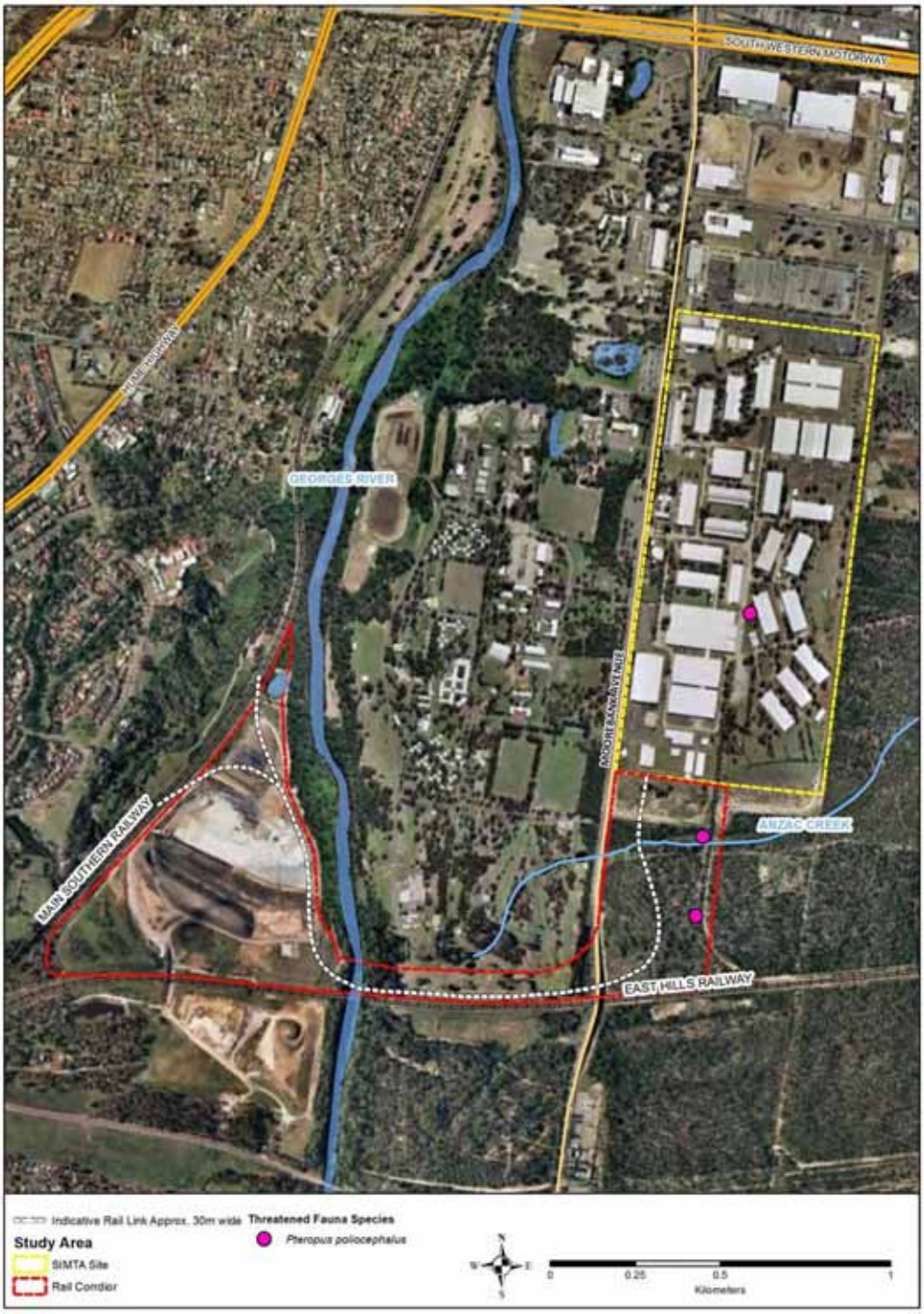
- *Freshwater Wetlands* on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions
- *Cumberland Plain Woodland* in the Sydney Basin Bioregion

- Three threatened fauna species listed under the TSC Act and EPBC Act were recorded within the study area:

- Eastern Bent-wing Bat (*Miniopterus schreibersii oceanensis*)
- Southern Myotis (*Myotis macropus*)
- Grey-Headed Flying-Fox (*Pteropus poliocephalus*)

It is considered possible an additional 16 species may occur in the study area on a temporary or transitional basis, most likely highly mobile species such as birds and microchirpteran bats. The location of the fauna identified during the field surveys are illustrated in **Figure 17**.

FIGURE 17 – LOCATIONS OF THREATENED FAUNA SPECIES RECORDED IN STUDY AREA (HYDER, 2011)



Source – Hyder, 2011 Flora and Fauna Assessment, Figure 12, page 55

- Three broad terrestrial habitat types were identified within the study area - remnant vegetation, riparian habitats and cleared and disturbed areas. Potential shelter and foraging resources to fauna include flowering trees and shrubs, Georges River, Anzac Creek and damp areas, well-developed leaf litter in places and several hollow-bearing trees. However, there is an absence of other important features such as large hollow-bearing trees, rocky features and hollow logs across the site.

- There are significant barriers to fauna movement, including Moorebank Ave, the East Hills Railway Line and the chain-mesh fencing that surrounds the SIMTA site, rail corridor and Royal Engineers Golf Course. The chain-mesh fencing and cleared areas fragment habitat connectivity and would limit movement into and through the study area to small terrestrial mammals, reptiles, amphibians, bats and birds. Larger terrestrial mammals that may occur in the locality would be excluded from much of the study area.

- Aquatic habitats in both the Georges River and Anzac Creek are considered to be poor quality and the only native fish species found was Flathead Gudgeon (*pholypnodon grandiceps*). While the aquatic environment is slight to moderately disturbed, care should be taken to minimise further impacts.

The assessment concludes the following:

> *The SIMTA site is considered to be of limited conservation significance and ecological impacts within the site are likely to be low. The majority of likely impacts on threatened species and communities will occur as a result of construction of the rail link. The extent of scale and impacts within the rail corridor cannot be quantified until the alignment of the rail link has been finalised. The requirement for a 30 metre wide zone of clearing and/or disturbance will result in the removal and fragmentation of threatened communities and threatened plant populations. As the exact area to be cleared and/or disturbed is not yet known, the impacts cannot be assessed with any certainty, a conclusion on the significance of impacts and the potential requirement for additional assessment cannot be made at this stage.*

7.3.2 VEGETATION CLEARING AND OPERATIONAL IMPACTS

The potential impacts of the SIMTA proposal are identified within the *Flora and Fauna Assessment* (page 67) as follows:

> *Likely impacts are those impacts that may arise as a result of unmitigated activities associated with the construction and operation of the SIMTA proposal. Likely impacts include:*
>
> - *Loss of native vegetation, including Endangered Ecological Communities and threatened flora species.*
> - *Loss of fauna habitat including that of threatened and migratory species.*
> - *Alteration and degradation of aquatic habitats.*
> - *Edge effects and weed invasion.*

It is acknowledged that the SIMTA site will be cleared of existing vegetation where required to accommodate the proposed intermodal terminal facility. However, as noted in **Section 7.3.1**, the SIMTA site is considered to be of limited conservation significance, noting that the site has been previously cleared. Habitat connectivity is significantly impacted by the barriers to fauna movement and the existing trees are considered to have low conservation significance. Overall, the ecological impacts arising from the proposed works within the site are considered likely to be low.

Clearing of vegetation within the rail corridor will be required to accommodate a linear corridor of approximately 30 metre in width between the SIMTA site and the SSFL. The rail corridor generally supports the highest abundance of and highest quality fauna habitat components within the study area, including intact native vegetation, riparian habitats and aquatic habitats that offer nesting, sheltering and foraging habitat to a variety of fauna species. However, there is a notable absence of fauna habitat components such as mature hollow-bearing trees, rocky features and hollow logs.

The future assessment of the rail corridor options will need to consider the relative rarity and population sizes of the two threatened plant species on the site, including the endangered species *Persoonia nutans* and the vulnerable species *Grevillea parviflora* subsp. *parviflora*.

- The *P. Nutans* is located to the north of Anzac Creek and consists of 43 recorded plants, most of which appeared to be mature. This population is considered very significant in the context of the generally low population sizes observed in this species and given the limited distribution of *P.nutans* in southern Sydney. Accordingly it is considered that this population of *P. nutans* represents the highest biodiversity constraint in the study area. Impacts on the *P. nutans* population in the study area can be avoided by designing the rail link to follow the existing rail spur along eastern boundary of the rail corridor lands. This option would, however, have impacts on the *Grevillea parviflora* subsp. *parviflora* which is distributed in the eastern parts of this bushland.

- The population of the vulnerable species *Grevillea parviflora* subsp. *parviflora* is also of significance, as there are few records of species in the locality. Potential habitat for this species is mapped on the Defence land to the east and south-east of the study area; there may be populations of the species on these lands, however there is only one record in the NSW Wildlife Atlas in this area, approximately one kilometre to the east of the study area near Wattle Grove. Given the large size of the population and the paucity of records for this species in the locality, it is recommended that impacts on this population be minimised as far as practicable.

Overall, it is concluded that the rail link will require some clearing of threatened species, however, this will be subject to a more detailed impact assessment as part of the Project Approvals application once the final rail alignment as been determined. Mitigation measures will be required to manage the impacts of the development on flora and fauna communities. Appropriate measures have been incorporated in the draft Statement of Commitments to avoid impacts, mitigate impacts and offset impacts, as considered necessary within the detailed design and assessment of the future Project Approval applications.

7.3.3 POTENTIAL CUMULATIVE IMPACTS

The primary impact of the construction and subsequent operation of the SIMTA proposal on ecological values is vegetation clearing resulting in the loss of threatened flora species, fauna habitat and preferred habitat for threatened flora and fauna species known to occur in the locality, such as the hollow bearing trees. Removal of vegetation can also contribute to mobilisation of exposed sediments which, if uncontrolled, may affect riparian habitats, water quality and stream channel functionality. Additional potential impacts include habitat fragmentation (although fauna habitat across the SIMTA proposal is presently considerably fragmented) and alteration to the visual amenity of the immediate vicinity.

There is potential for cumulative impacts to arise from the SIMTA and SME projects on threatened flora and fauna species and Endangered Ecological Communities. The presence of any threatened flora and fauna or Endangered Ecological Communities on the SME site and the need for their removal would increase the overall reduction in the size and distribution of these values in the immediate locale. Combined biodiversity offset consideration for each development would seek to restore and likely enhance the area of habitat available within the immediate vicinity of the operations. However, ecological values of the SME site are unknown at this time. The cumulative impact of the development of intermodal terminals on both sites can only be quantified once environmental investigations of the SME site are undertaken as part of an application for an intermodal terminal development on that site.

Crossings of the Georges River are required by both projects. Fish passage blockage is a potential cumulative impact of the projects, however, the construction times for the crossings and crossing design in consideration of fish passage, in accordance with local, State and Federal regulations, will mitigate potential cumulative impacts. Once operational, both projects have the potential to impact upon fauna in the rail corridor, specifically, as a result of train collisions with fauna. Measures will be taken to exclude fauna from the rail links to minimise this impacts.

Provided that appropriate mitigations are implemented for the construction and operation stages of the SIMTA proposal, the cumulative impacts on biodiversity are anticipated to be minimal.

7.3.4 LEGISLATIVE REQUIREMENTS

Section 1.1 of the *Flora and Fauna Assessment* confirms that it has fully considered the relevant biodiversity policies and guidelines including:

- *Draft Guidelines for Threatened Species Assessment*
- *Threatened Biodiversity and Assessment: Guidelines for Developments and Activities*
- *Principles for the Use of Biodiversity Offsets in NSW*

7.4 SUMMARY AND CONCLUSION

The *Flora and Fauna Assessment* concludes that the SIMTA site is considered to be of limited conservation significance and development on the site will have low ecological impacts.

However, the flora and fauna impacts arising from the proposed rail link is considered likely to result in the removal and fragmentation of threatened communities and threatened plant populations. Further detailed assessment of this impact will be required to be undertaken as part of the Project Approvals application for the rail link once its exact location is known. An appropriate Statement of Commitments has been included in **Section 18.**

8 Hazards and Risks

8.1 OVERVIEW

The Director-General's Environmental Assessment Requirements for the SIMTA Concept Plan application include the following requirement for environmental assessment of hazards and risks for the SIMTA proposal:

> ***Hazards and Risks*** *– including but not limited to:*
>
> - *potential hazards and risks associated with the site as a whole and off-site, taking into account activities that have the potential to cause harm to people and/or the environment, including potential impacts associated with storing and handling dangerous goods on-site and transporting such goods to and from the site consistent with the Department's guideline Applying SEPP 33 and taking into account the Hazardous Industry Planning Advisory Paper No 10: Land Use Safety Planning (Department of Planning);*
> - *a Preliminary Hazard Analysis, if relevant, in accordance with the Department's Hazardous Industry Planning Advisory Paper No. 6 Guidelines Hazard Analysis; and*
> - *bushfire protection, taking into account Planning for Bushfire Protection (RFS).*

Hyder was engaged to prepare a *Hazards and Risks Assessment* (attached as **Appendix Q**) to address the above requirements. This report should be reviewed in detail to fully understand the key potential hazards and risks that have been identified and the way in which these potential hazards and risks will be managed. The following sections of the report demonstrate the way in which each of the matters identified in the DGRs has been responded to within the detailed documentation that forms part of the Concept Plan application.

8.2 ASSESSMENT METHODOLOGY

The hazards and risk assessment was undertaken having regard to the site context, potential impacts of the proposal, consideration of statutory requirements and identification of appropriate mitigation measures to be implemented to avoid any significant impacts. Each of these matters is outlined in detail within the *Hazards and Risks Assessment* and as summarised below:

- **Existing Environment** -the key existing site characteristics associated with hazard and risk are the potential for site contamination (which is described separately in **Section 9**), asbestos and bushfire. The asbestos register developed for the site indicates that asbestos was present in approximately 15 per cent of all buildings on the SIMTA site. An audit of the site and register was undertaken by Hibbs & Associates Pty Ltd in 2002 (H&A Audit) along with a qualitative assessment of the risk to occupants of the buildings in which asbestos was identified. The land to the east and south comprises predominantly vegetated land. This vegetation is mapped as Vegetation Category 1 bushfire prone land (Liverpool City Council 2010).

- **Potential Impacts** - the hazards and risks impact assessment is provided in detail within Section 3 of the *Hazard and Risk Assessment* report and within **Section 8.3** of this report. Potential hazards and risks are limited during the demolition and construction phases and principally occur during the on-going operation of the site. Risks to health and safety during construction and operation of the SIMTA proposal comprise:

  - Dangerous Goods - dangerous goods pose a risk to the health and safety of employees and contractors working on the site and the community surrounding the site, if not handled correctly as they may be explosive, flammable, combustible, spontaneously combustible, oxidising, water-reactive, toxic or corrosive. The transport and storage of dangerous goods is recognised as a high risk activity involving heavy vehicles on the public road and rail network (ADG Code, NTC, 2007).

  - Asbestos – the demolition of affected structures has the potential to release asbestos fibres into the atmosphere, causing harm to human health.

- Bushfire risk – bushfire risk is most likely to arise from the large area of native vegetation contained within the Commonwealth land, adjoining the proposal site to the east and south.

- **Statutory Assessment Considerations** - the following documents and legislation will be consulted during detailed design and incorporated into future Project Applications:

  - The *Occupational Health and Safety Act (OH&S Act)* allows for the formulation of industry codes of practice to provide practical guidance to employers and others who have duties under the Act. While these codes are not legally binding, failure to show compliance with the code in the event of injury at a workplace may count against an employer during prosecution. All works for the SIMTA proposal must be undertaken in accordance with the OH&S Act.

  - The National Occupational Health and Safety Commission (NOHSC) was formed through the Council of Australian Governments (now operating as Safe Work Australia). The *Guideline for the Management and Control of Asbestos in Workplaces 2005* sets out requirements regarding asbestos.

  - The *Code of Practice for the Storage and Handling of Dangerous Goods* provides practical guidance to occupiers of premises on the safe storing and handling of dangerous goods, so that all persons (including members of the public) are not exposed to risks to their health and safety arising from dangerous goods at the occupier's premises. The applicability of chapters within the code of practice will be determined once the type and volumes of materials to be stored on site have been determined.

  - The *Dangerous Goods (Road and Rail Transport) Act 2008 (Dangerous Goods R&R Act)* commenced in 2009 and replaces the *Road and Rail Transport (Dangerous Goods) Act 1997*. The Act provides for the regulation of the transport of dangerous goods by road and rail in order to promote public safety and protect property and the environment. Transport of dangerous goods to and from the SIMTA site will be subject to the *Dangerous Goods R&R Act* and its regulations

  - *State Environmental Planning Policy No. 33* aims to provide for the assessment of the environmental and safety performance of hazardous and offensive or potentially hazardous and offensive. Whether the SIMTA proposal will trigger SEPP No. 33 is dependent on the tenants that will ultimately occupy the site. An assessment of whether this SEPP is triggered will be made during the subsequent project approval application stages as tenancy on the site is determined.

  - The *Rural Fires Act 1997*(RF Act) is administered by the Rural Fire Service (RFS). Section 100B of the RF Act grants the RFS the authority to assess proposed development within bushfire prone land. Development of the SIMTA site should therefore be undertaken in accordance with Planning for Bushfire Protection, in order to meet the requirements of the RFS and obtain their approval.

- **Management/Mitigation Measures** – the mitigation measures are outlined in detail within Sections 4 and 5 of the *Hazard and Risk Assessment* report and **Section 8.3** of this report. The key risk management measures include:

  - An asbestos management plan will be developed for the SIMTA proposal containing a risk assessment undertaken in accordance with Code of Practice for the Management and Control of Asbestos in the Workplace (NOHSC, 2005).

  - A preliminary hazard assessment will be undertaken for each stage of development, as required by SEPP No. 33. Once the level of risk has been identified the aim will be to reduce the risk to as low as reasonably possible through the application of specific operational management procedures that will form part of a framework for managing risks.

  - Buildings will be designed to comply with AS 3959:2009, as adopted by the Building Code of Australia (BCA) (2010), which details construction requirements for buildings in bushfire prone areas. In particular, buildings will be designed and positioned to resist burning embers, radiant heat and flame contact, through measures such as constructing buildings of non-combustible materials, installation of screens over any windows, gutter guards on roofs.

8.3 ASSESSMENT OF KEY ISSUES

8.3.1 HAZARDS AND RISKS ASSESSMENT

The *Hazards and Risks Assessment* report recognises that it is not possible to quantify the operational risks relating to the transport, storage and handling of dangerous goods to, from and within the SIMTA site in the absence of further details regarding the proposed tenancies. Transport, storage and handling of dangerous goods along the Southern Sydney Freight Line (SSFL) have been considered to be acceptable activities in the approval of that development.

The key potential hazards and risks identified in the report are identified as follows:

- Presence of asbestos in existing structures and the soil (construction risk).
- Potential transport, storage and handling of dangerous goods (operational risk).
- Bushfire (operational risk).

The recommendations to address these potential hazards and risks recognise that more detailed assessment will be required in the Project Approval applications once the final layout and operational issues have been further resolved. Each of these recommendations is listed below:

- **Asbestos**
  - *An asbestos management plan would be developed for the SIMTA proposal containing a risk assessment undertaken in accordance with Code of Practice for the Management and Control of Asbestos in the Workplace (NOHSC, 2005).*
  - *Where the management plan recommends the removal of asbestos from site all works would be undertaken in accordance with the Code of Practice for the Safe Removal of Asbestos (NOHSC, 2005), including the development of an asbestos removal control plan and an emergency plan.*
- **Dangerous Goods**
  - *A preliminary hazard assessment would be undertaken either during project application approval stages (if tenants and purposes have been defined) or by tenants during the operational phase of development, as required by State Environmental Planning Policy No. 33 Hazardous and Offensive Development (SEPP No. 33).*

    Once the level of risk has been identified the aim would be to reduce the risk to 'as low as reasonably possible' (ALARP) through the application of specific operational management procedures that would form part of a framework for managing risks, captured within the facility's Hazard and Risk Management Plan and Emergency Response Plan.

    Should unacceptable levels of risk be identified during the Preliminary Hazard Assessment (PHA), SIMTA would require potential tenants to demonstrate measures to reduce the risk to an acceptable level prior to acceptance of tenancy.
  - *SIMTA would require all tenants to disclose the type and quantity of goods entering the SIMTA site prior to award of tenancy. Prior to commencement of a lease on the SIMTA site, all tenants that would handle dangerous goods would be required to sign on to SIMTA's Hazard and Risk Management Plan and the Emergency Response Plan for the site.*
  - *These plans will be reviewed regularly and updated as goods entering the site may change with the tenancies. The requirements in the Code of Practice for storage and handling of dangerous goods (Work Cover NSW, 2005) would be adopted in these plans as a minimum.*

- **Bushfire Management**

  - *The key objectives identified by the Rural Fire Service (RFS), would be incorporated into future design stages, in accordance with the following principles:*

    - *Afford occupants of any building adequate protection from exposure to a bush fire.*

    - *Ensure safe operational access and egress for emergency service personnel and residents.*

    - *Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads in asset protection zones (APZs).*

    - *Ensure that utility services are adequate to meet the needs of fire fighters.*

  - *A Bushfire Management Plan would also be developed for both the construction and operational phases of the SIMTA proposal that would align with the requirements of the local RFS Bushfire Management Committee operational plans of management.*

8.3.2 HAZARD INDUSTRY PLANNING ADVISORY PAPER NO 6

The *Hazard Industry Planning Advisory Paper No 6* has been considered within the context of the policy documentation review undertaken in the preparation of the *Hazards and Risks Assessment*. However, the assessment undertaken by Hyder concludes that this paper does not apply to the Concept Plan application.

The recommendations provided within the report include a requirement for a preliminary hazard assessment to be undertaken either during the project approval stages or by tenants during the operational phase. An appropriate Statement of Commitment has been included within the Concept Plan objective to facilitate compliance with this recommendation.

8.3.3 BUSHFIRE IMPACT ASSESSMENT

An assessment of the proposal against the relevant factors for bushfire risk contained in the *Planning for Bushfire Protection* was undertaken by Hyder within the *Hazards and Risks Assessment* report.

The eastern, southern and western margins of the proposal site are mapped as buffers of *Vegetation Category 1* bushfire prone land under the *Liverpool Bushfire Map* (Liverpool City Council 2010), however the SIMTA site adjoins *Vegetation Category 1* bushfire prone to the east, south and west.

The report confirms that SIMTA has committed to addressing the key objectives identified by the Rural Fire Service during the future design stages (i.e. as part of the Project Approvals applications) in accordance with the following principles:

- ***Afford occupants of any building adequate protection from exposure to a bushfire***

  Buildings will be designed to comply with AS 3959:2009, as adopted by the Building Code of Australia (BCA) (2010), which details construction requirements for buildings in bushfire prone areas. In particular, buildings will be designed and positioned to resist burning embers, radiant heat and flame contact, through measures such as constructing buildings of non-combustible materials, installation of screens over any windows, gutter guards on roofs.

- ***Ensure safe operational access and egress for emergency service personnel and residents***

  The design of roads (internal and perimeter) will be such that:

  - *Fire fighters and their vehicles and equipment are provided with safe all-weather access to structures.*

  - *Public road widths allow safe access for fire fighters while occupants are evacuating an area.*

  - *The capacity of road surfaces and bridges is sufficient to carry fully loaded fire fighting vehicles.*

- *Site occupants are to be afforded safe exits from the site under various fire scenarios.*

- ***Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads in asset protection zones (APZs)***

  Due to the proximity of Bushfire Prone Land to the proposal site (Figure 5), an APZ will be established and maintained, most likely along the eastern, southern and western boundaries of the site. Exact locations and widths of APZs for the proposed development may be defined by the Rural Fire Service Development Assessment and Planning division upon finalisation of development plans.

- ***Ensure that utility services are adequate to meet the needs of fire fighters***

  With regard to utilities, consideration should be given to reticulated water supplies being easily accessible and located at regular intervals, that the location of electricity services limits the risk of ignition of surrounding bushland or the fabric of buildings and that the location of gas services will not increase the risk of ignition of surrounding bushland or the fabric of buildings.

  A Bushfire Management Plan will also be developed for both the construction and operational phases of the SIMTA proposal. The following strategies may be adopted by the plan:

  - *Performance of hot works to be managed so as to minimise risk of bushfire ignition.*

  - *No hot works to be undertaken during the declared bushfire season (typically 1 September to 30 March) on days declared to be total fire ban days by the Rural Fire Service in the absence of specific controls or approval mechanisms.*

  - *During hot works as fire cart is to be on hand and a cleared zone established with no ground fuel present.*

8.3.4 POTENTIAL CUMULATIVE IMPACTS

The SIMTA proposal and SME proposal could cater for similar types of freight, which could include hazardous and dangerous goods transport, handling and storage. Each facility would need to have its own risk assessment and implement risk management procedures particular to their respective sites and to the types of goods transported, handled and stored. The separation distance between the two operations significantly reduces the potential for any hazardous or dangerous goods hazard to be exacerbated by the concurrent operation of both facilities.

Bushfire risk is not increased by the operation of both facilities, assuming standard controls are implemented at both sites during construction and operation, particularly associated with the performance of bushfire hazard reduction activities along boundaries and performance of hot works during declared bushfire seasons and on total fire ban days. Any risks could be further mitigated in developing bushfire management and emergency response plans and procedures that are co-ordinated and aligned between the two operations.

Alarms and alerts could be co-ordinated between the sites to manage the response to any emergency response event that may arise. This would provide additional assistance and enhanced response in managing any hazardous situation and maintaining the safety of the area both on and off site.

8.3.5 LEGISLATIVE REQUIREMENTS

The *Hazards and Risk Assessment* undertaken by Hyder has considered a broad range of policy and guidelines for assessing for potential hazards and risks including:

- *Contaminated Land Management Act 1997*

- *National Environment Protection (Assessment of Site Contamination) Measure 1999*

- *Occupational Health and Safety Act 2000*

- *Occupational Health and Safety Regulation 2001*

- *National Occupational Health and Safety Commission Guideline for the Management and Control of Asbestos in Workplaces 2005*
- *National Occupational Health and Safety Commission Guideline for the Safe Removal of Asbestos 2005*
- *Code of Practice for the Storage and Handling of Dangerous Goods*
- *Dangerous Goods (Road and Rail Transport) Act 2008*
- *Dangerous Goods (Road and Rail Transport) Regulation 2009*
- *Australian Dangerous Goods Code*
- *Environmental Planning and Assessment Act 1979*
- *State Environmental Planning Policy No 55 – Remediation of Land (SEPP 55)*
- *State Planning Policy No 33 - Hazardous and Offensive Development (SEPP 33)*
- *Applying SEPP 33 (Consultation Draft)*
- *Hazardous Industry Planning Advisory Paper No 6: Guidelines for Hazard Analysis*
- *Hazardous Industry Planning Advisory Paper No 10: Land Use Safety Planning*
- *Rural Fires Act 1997*
- *Planning for Bushfire Protection (RFS)*

8.4 SUMMARY AND CONCLUSION

The *Hazards and Risk Assessment* prepared by Hyder has identified the potential on-site and off-site hazards and risks associated with the SIMTA proposal, having regard to the information that is available at the Concept Plan application stage. The report provides a list of recommendations for further detailed assessment to be undertaken at the Project Approvals application stage, once the final layout and operational issues have been further resolved.

The above approach is considered to be satisfactory, having regard to the legislative requirements applying to the site and the likely future activities. The Draft Statement of Commitments has included these recommendations to facilitate compliance as part of the Project Approvals applications and/or the operational phases of the SIMTA Intermodal Terminal Facility.

9 Contamination

9.1 OVERVIEW

The Director-General's Environmental Assessment Requirements for the SIMTA Concept Plan application include the following requirement for environmental assessment of potential contamination and remediation for the SIMTA proposal:

Contamination *– including but not limited to:*

- *potential land contamination, and identification of the need for remediation having regard to the ecological and human health risks posed by past land uses;*
- *where remediation is required, presentation of remediation options;*
- *natural soil constraints, including potential for acid sulphate soils; and*
- *taking into account the Acid Sulfate Soils Manual (ASSMAC), Contaminated Land Management Act 1997, and associated guidelines.*

Golder Associates was engaged to undertake a *Preliminary Environmental Site Assessment* of the SIMTA site and the proposed rail corridor (refer to **Appendix R**). This report should be reviewed in detail to understand the assessment methodology, which takes into account the extensive amount of site investigations previously undertaken in association with the previous development and sale of the SIMTA site. This section of the report summarises the assessment methodology and key findings and responds to the matters listed within the DGRs.

9.2 ASSESSMENT METHODOLOGY

The site contamination assessment was undertaken having regard to the site context, potential impacts of the proposal, consideration of statutory requirements and identification of appropriate mitigation measures to be implemented to avoid any significant impacts. Each of these matters is outlined in detail within the *Preliminary Environmental Site Assessment* reports and as summarised below:

- **Existing Environment** - a walkover of the DNSDC Site was undertaken on 25 July 2011 and a walkover of the Glenfield Quarry and Waste Disposal Facility was undertaken on 15 November 2011, including the active rail corridor vantage points, to understand the existing environmental conditions.

  A review was also undertaken of the extensive environmental investigations that were completed at the SIMTA site between 2002 and 2003, including the URS (2002b) *Investigation Report Review* and the Contamination Management (CM) (2002a) *Summary Site Audit Report* and *Site Audit Statement* (CM, 2002b). These reports concluded that eleven areas of environmental concern had been identified across the SIMTA site.

  It is considered that there is potential for subsurface contamination within the proposed rail corridor, including the following areas:

  – Area 1 – the area immediately south of the proposed SIMTA site, where historic information has noted that areas of unauthorised dumping (partially remediated) may have occurred;

  – Area 2 – the bushland area south of the proposed SIMTA site development, where historic information has noted that potential UXO associated with the former grenade ranges may exist. This areas also has evidence of illegal dumping, with historic reports and the site inspection noting the presence of building rubble and other waste materials;

  – Area 3 – Lot 1 DP825352 (owned by Railcorp) has been subjected to extensive filling with the area levelled approximately 2-2.5m higher than the surrounding areas;

  – Area 4 – the south-western portion of the School of Military Engineering Golf Course, where historic information has noted the former training facility (the mock Viet Cong village), was demolished with potential tunnel supports buried in the area;

- Area 5 – the Glenfield Quarry and Waste Disposal Facility, where extractive and waste disposal is being undertaken in accordance with a current EPL; and

- All areas of the rail link corridor – potential unidentified buried waste, as well as the use of pesticides and herbicides for pest and/or weed control.

- **Potential Impacts** – the potential impacts of the SIMTA proposal are identified within the *Preliminary Environmental Site Assessment* reports and as summarised below:

  - Potential direct impacts within the SIMTA site are likely to be the management of contaminated land possibly encountered during the proposed development. Indirect impacts include the ongoing future management of contaminated land during the ongoing use of the site, post development.

  - Potential direct impacts within the rail corridor land are the management of contaminated land possibly encountered during the proposed development. Indirect impacts are the ongoing future management of contaminated land during the ongoing use of the rail corridor, post development.

- **Statutory Assessment Considerations** - remedial activities (if required), will be detailed in a Remediation Action Plan, prepared in accordance with the *NSW EPA Guidelines for Consultants Reporting on Contaminated Sites* (1997).

- **Management/Mitigation Measures** - Golder recommends further investigations be completed in the areas of environmental concern that are likely to be impacted upon by the proposed development. These investigations should be based on the detailed design of the proposed development, with the objective to identify the extent of contamination, and what, if any, remediation activities are needed. The remediation of areas of the site (if any) would be best matched to the development of the site and considered as part of the future Project Application design. A Contamination Management Plan will be developed to manage any contaminated materials and remediation works including detailed procedures on:

  - Handling, stockpiling and assessing potentially contaminated materials encountered during the development works;

  - Landfill gas management during the excavation, handling, and stockpiling of waste materials, if excavation is required during the development, in the area of the Glenfield Quarry and Landfill;

  - Assessment, classification and disposal of waste in accordance with relevant legislation; and

  - A contingency plan for unexpected contaminated materials, such as materials that is odorous, stained or containing anthropogenic materials, that may be encountered during site works.

9.3 ASSESSMENT OF KEY ISSUES

9.3.1 CONTAMINATION ASSESSMENT AND REMEDIATION OPTIONS

The key findings arising from the *Preliminary Environmental Site Assessment* prepared by Golder Associates are summarised below, having regard to the SIMTA site and the rail corridor land.

9.3.1.1 SIMTA SITE

The previous extensive investigations undertaken for the SIMTA site were reviewed (and enquiries made regarding possible site changes) and it was considered that further Phase 1 investigations were not warranted as:

- The site was considered by the NSW EPA accredited site auditor to be suitable for ongoing commercial/industrial use, subject to the implementation of a Site Management Plan (SMP). The site has continued to operate as the DNSDC since the environmental audit, with a review of aerial photos indicating that there have been no material changes to the site.

- The lack or partial implementation of an SMP on the SIMTA site will require further investigation, particularly, the low risk ordnance issues identified in the south-eastern portion of the SIMTA site. The report recommends that further work be undertaken as part of the detailed design phase for the future Project Approval applications, including:

  - Confirm what actions (if any) were taken in regards to the implementation of the Site Management Plan, including:

    - A groundwater monitoring program to confirm and monitor groundwater quality over time

    - Investigation of the underground tank installations located in the south-western area of DNSDC

    - Integrity testing of the waste oil tank located in the north-east area of the site

    - Investigation and remediation of filled areas in the south-eastern part of the site, particularly materials that have the potential to contaminate groundwater. Hexachlorobenzene (HCB) and asbestos should be considered contaminants of potential concern during works in this area

    - Implementation of site management procedures to control the following:

      - Stormwater discharges for compliance with local and state legislative requirements and protection of the environment;

      - Collection, sorting and disposing of fragments of materials potentially containing asbestos including during intrusive earthworks;

      - Unauthorised access of personnel to the south-eastern corner of the site, where fragments of grenades have been identified, until such time that a hazard reduction operation has been completed in accordance with the recommendations of Milsearch (2002);

      - Incorporate the findings and recommendations of the Ordnance Investigation report by Milsearch 2002 during future development of the site.

  - Further investigations in the areas of environmental concern identified by URS (2002) and Golder (2011) likely to be impacted upon by the proposed development. These investigations should be based on the detailed design of the proposed development and identify the extent of contamination, and what, if any, remediation activities are needed. The remediation of areas of the site (if any) would be best matched to the development of the site and considered as part of the future Project Application design. For example in areas requiring filling to allow construction of the terminal facility may serve the dual purpose of isolating potential site contaminants (e.g. munitions waste).

  - A Contamination Management Plan should be prepared for the development of the SIMTA site and the associated rail corridor. The contamination management plan would include detailed procedures on:

    - *Handling, stockpiling and assessing potentially contaminated materials encountered during the development works;*

    - *Landfill gas management during the excavation, handling, and stockpiling of waste materials, if excavation is required during the development, in the area of the Glenfield Quarry and Landfill;*

    - *Assessment, classification and disposal of waste in accordance with relevant legislation; and*

    - *A contingencies plan for unexpected contaminated materials, such as materials that is odorous, stained or containing anthropogenic materials, that may be encountered during site works.*

A staged approach can be adopted for the additional investigations and Contamination Management Plans outlined above. However, some areas of environmental concern may transverse stage boundaries, so there may be benefit from addressing contamination in a single stage of investigations. Each of the recommended future actions has been incorporated into the Draft Statement of Commitments.

9.3.1.2 RAIL CORRIDOR LAND

The assessment of the rail corridor lands concluded that there is the potential for subsurface contamination. Five areas of environmental interest were identified as a result of the prior use of the site:

- **Area 1** (area immediately south of the SIMTA site) - historic information indicated that partially remediated areas of unauthorised dumping may have occurred.
- **Area 2** (bushland area south of the SIMTA site) - historic information indicated that potential unexploded ordnance (UXO) associated with the former grenade ranges may exist. This area also had evidence of illegal dumping, with historic reports and the site inspection noting the presence of building rubble and other waste materials.
- **Area 3** (Lot 1 in DP825352 owned by RailCorp) - has been subjected to extensive filling with the area levelled approximately 2-2.5 m higher than the surrounding areas.
- **Area 4** (south-western portion of the golf course) - historic information has noted the former training facility (mock Viet Cong village) was demolished with potential tunnel materials buried in the area.
- **Area 5** (Glenfield Quarry and Waste Disposal Facility) - extractive and waste disposal is being undertaken in accordance with a current Environmental Protection Licence. This land is subject to an ongoing maintenance order, as noted on the Section 149 certificate for the site.

The potential contaminants of concern associated with the areas of environmental interest include:

- Heavy metals
- Polycyclic aromatic hydrocarbons
- Hydrocarbons
- Semi-volatile organic compounds and volatile organic compounds
- Phenolic compounds
- Asbestos
- Pesticides
- Unexploded ordnance
- Landfill gas

The following recommendations were made in regard to the rail corridor land:

- *Undertake a Phase 2 intrusive environmental site assessment of the proposed rail corridor lands, with an objective to assess the risk posed to the detailed design and construction of the rail corridor by the areas of environmental concern identified within this report. The Phase 2 intrusive investigation would include a program of soil and groundwater sampling completed in accordance with the guidelines made or approved by the EPA under s 105 of the Contaminated Land Management Act 1997;*
- *Develop and implement a contamination management plan as part of the project construction environmental management plan for managing contaminated materials either expected or unexpectedly encountered during the construction of the rail corridor. The contamination management plan would include detailed procedures on:*

- *Handling, stockpiling and assessing potentially contaminated materials encountered during the development works;*

- *Assessment, classification and disposal of waste in accordance with relevant legislation; and*

- *A contingencies plan for unexpected contaminated materials, such as materials that is odorous, stained or containing anthropogenic materials, that may be encountered during site works.*

Each of these matters has been incorporated into the Draft Statement of Commitments.

9.3.2 NATURAL SOIL CONSTRAINTS

The National Acid Sulfate Soils Atlas indicates there is a low probability that the SIMTA site and the proposed rail corridor lands are underlain by acid sulfate soils (http://www.asris.csiro.au viewed on 26 September 2011). As such, it was considered that further assessment was not warranted.

9.3.3 POTENTIAL CUMULATIVE IMPACTS

The soils overlaying the SIMTA site have undergone significant modification as a result of substantial filling operations related to the development of the existing DNSDC facilities. This is likely to be similar at the SME site.

Cumulative construction impacts associated with exposed soils are expected to be negligible. Operational areas for both sites are predominantly hardstand surface capping, avoiding cumulative impacts for soil management. Further, the SME development is anticipated to commence in 2018, meaning that it is unlikely that remediation works would be undertaken simultaneously with the SIMTA proposal, minimising any cumulative issues that may arise during the remediation.

9.3.4 LEGISLATIVE REQUIREMENTS

The contamination assessment has been prepared taking into account the provisions of:

- *Contaminated Land Management Act 1997*
- *Protection of the Environment Operations Act 1997*
- *State Environmental Planning Policy No 55 – Remediation of Land*
- *Acid Sulphate Soils Manual (ASSMAC)*

9.4 SUMMARY AND CONCLUSION

Overall, the review and investigation undertaken by Golder concludes that no significant environmental issues have been identified that would preclude the currently proposed development of the SIMTA site and associated rail corridor. The site contamination assessment has demonstrated that the SIMTA site is suitable for commercial/industrial use, subject to the implementation of the recommended actions. Assessment of the rail corridor lands concluded that there is the potential for subsurface contamination, which will need to be further investigated as part of the Project Approval application for that component of work.

The Draft Statement of Commitments has adopted the recommendations made within the *Preliminary Environmental Site Assessmen*t to provide for their implementation as part of the Project Approval applications.

10 Stormwater and Flooding

10.1 OVERVIEW

The Director-General's Environmental Assessment Requirements for the SIMTA Concept Plan application include the following requirement for environmental assessment of stormwater and flooding management for the SIMTA proposal:

Stormwater and flooding *– including but not limited to:*

- *changes to the site's hydrology and an assessment of the hydrological impacts of the project and the project effects on flood characteristics on and off the site;*
- *surface water and stormwater quality, erosion and sedimentation impacts, on and off the site; and*
- *taking into account the Managing Urban Stormwater Soils and Construction, Vol. 1, 2A and 2D (DECC), National Water Quality Management Strategy Australian and New Zealand Guidelines for Fresh and Marine Water Quality (AZECC) and the Fish Passage Requirements for Waterway Crossings and Policy and Guidelines for Fish Friendly Waterway Crossings (DPI).*

Hyder was engaged to prepare a *Stormwater and Flooding Environmental Assessment* (attached as **Appendix S**) and a *Flood Study and Stormwater Management Report* (attached as **Appendix T**) to address these requirements. Each of these reports should be reviewed in detail to fully understand the project methodology, the potential impacts and the recommended mitigation measures. The following sections of the report demonstrate the way in which each of the matters identified in the DGRs has been responded to within these documents.

10.2 ASSESSMENT METHODOLOGY

The stormwater and flooding assessment was undertaken having regard to the site context, potential impacts of the proposal, consideration of statutory requirements and identification of appropriate mitigation measures to be implemented to avoid any significant impacts. Each of these matters is outlined in detail within the *Stormwater and Flooding Environmental Assessment* and a *Flood Study and Stormwater Management Report* and as summarised below:

- **Existing Environment** - the existing stormwater system servicing the SIMTA site comprises three existing stormwater discharge outlets, which are described below:
  - Outlet 1 & 2: discharge eastward into Anzac Creek and cross under Greenhills Road via pipes and headwalls. Currently stormwater from the site flows through the site via constructed open grass lined channels to these discharge points. From Greenhills Road to Anzac Creek, the channels are less defined.
  - Outlet 3: discharges westward into the Georges River. Water from the site is collected in a formal concrete lined trapezoidal channel running within the site parallel to Moorebank Avenue. Water flows to a pipe crossing of Moorebank Avenue then into a concrete rectangular channel, which leads to Georges River.

  The key features of the rail corridor land are described below:

  - Stormwater from the Glenfield Quarry and Waste Facility site is collected through an onsite drainage network to a storage basin located on the northern end of the quarry land, before being discharged into the Georges River. Overview discharge from the dam is monitored. Leachate and stormwater are managed through separate systems to limit the potential for cross contamination.
  - A levee, with minimum height of 12.4m AHD, has been constructed along the eastern boundary of the Glenfield Quarry site to prevent surface water from the landfill discharging directly into the Georges River. The facility also has a network of groundwater monitoring points which are routinely monitored.

- Ecological information for Anzac Creek and the Georges River is based on the aquatic ecosystem assessment in the *Flora and Fauna Assessment* and *Riparian Report*. Information relating to the condition of bushland adjacent to the site and riparian vegetation is based on that presented within the *Flora and Fauna Assessment*.

- **Potential Impacts** - the potential impacts of the proposal are described in detail within Section 3 of the *Stormwater and Flooding Environmental Assessment* report and within **Section 10.3** of this report. Potential impacts can occur in both the construction and on-going operation phases as summarised below:

  - The progressive demolition and removal of existing structures on the site is likely to result in a temporary increase in surface permeability and a decrease in surface flows from the site. As the construction progresses surface flows from the site are likely to increase as a result of increasing areas of impermeable surfaces being established.

  - Removal of existing stormwater management structures may result in an increase of surface flows volume and velocity across the site and the associated mobilisation of debris and soils. This increase in surface flow has the potential to contribute to increased erosion, surface scouring and scouring of water channels, as well as the transportation of sand silt and clay off-site into adjacent vegetation and waterways.

  - Increased flows to waterways may also increase the severity and impacts of flood events, particularly in relation to Anzac Creek and its riparian communities. Construction activities on the site that have the potential to impact water quality include:

    - Alteration of the topography and associated water catchment areas of the site.

    - Changing of the soil profile on site to expose potentially more reactive soils.

    - Removal of vegetation.

    - Removal or modification of existing drainage, retention or diversion structures.

    - Transportation of noxious weeds.

    - Modification or removal of drainage pathways across the SIMTA site.

    - Concentration of surface water flows.

  - The proposed flood impacts of the site operations would be negligible for local developments in anything up to a 100 year ARI, at which point it would be part of a larger systemic issue where the sites' surface water flow is not the primary contributing factor to flood heights.

  - Post-construction, there would be minimal exposed soil material to contribute to sediment loads leaving the site. There is likely to be deposition of particulates on the SIMTA site associated with road and rail transport movements. There is also potential for spills of fuels, oils, lubricants or site goods to occur on or off site with the potential to affect water quality.

- **Statutory Assessment Considerations** - relevant planning, land use and development matters for stormwater and flooding assessment and management are listed below:

  - The stormwater runoff quality objectives and treatment targets for the proposed development will be established according to the Liverpool Development Control Plan 2008 (general controls and controls applicable to Moorebank Defence Lands).

  - Guidelines, including: Managing Urban Stormwater: Soils and Construction (Landcom 2004; Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000); National Water Quality Management Strategy Australian Guidelines for Urban Stormwater Management (ARMCANZ/ANZECC 2000); Policy and Guidelines for Fish Friendly Waterway

Crossings (DPI 2004); Fish Passage Requirements for Waterway Crossings will be applied to the SIMTA proposal during the design, construction and operation phases as relevant.

- **Management/Mitigation Measures** - measures to mitigate the potential impacts during the construction and on-going operation of the SITMA proposal are detailed in Section 4 of the *Stormwater and Flooding Environmental Assessment* report and **Section 10.3** of this report. These are also summarised below:

  - The initial clearing of the SIMTA site of vegetation and existing structures is to be progressively staged to minimise surface exposure the disturbed area of the SIMTA site at any one time. Temporary surface water controls are to be installed to divert off-site and on-site clean waters away from areas exposed and disturbed by construction and into existing drainage structures for conveyance through the site. Construction activities are to be undertaken so as to minimise the amount of disturbed area, reduce length and steepness of slopes, implement erosion control measures and rehabilitate or stabilise disturbed areas quickly. Sediment basins and sediment traps are to be provided, where required to enable deposition or filtration of sediments.

  - Generic water quality guidelines (ANZECC 2000) are to be adapted to reflect the existing water quality present within Anzac Creek and Georges River. The baseline monitoring program would commence as soon as possible and extend up until the commencement of the SIMTA proposal. The monitoring program would capture seasonality in water quality conditions. Due to the nature of water courses and drainage conditions of the project area, a mixture of ambient and event based monitoring would be considered for physico-chemical and biological indicators.

  - The ESCPs are to detail the specific measures, locations and methods of construction based on the final construction specification. Chemical containment, spills and leaks will be managed through construction phase emergency response and spill response procedures included within the CEMP.

  - The stormwater flows across the site under a modelled 1 in 10 storm event are to be mitigated through on-site detention including rain gardens and water transport structures. Operation water quality objectives are to be implemented to prevent sediment, particulates and pollutants from entering natural watercourses, including early stabilisation of disturbed and exposed soils, interception of surface flows and separation or deposition of suspended materials prior to stormwater flows entering the natural watercourse.

10.3 ASSESSMENT OF KEY ISSUES

10.3.1 HYDROLOGICAL IMPACTS AND FLOODING

The *Stormwater and Flooding Environmental Assessment* considered the existing on-site drainage patterns for the SIMTA site which comprises three catchments and identified three existing stormwater discharge outlets from the site: two eastward towards Anzac Creek; and one westward into the George River.

The impacts of the SIMTA proposal have been assessed using the DRAINS software to quantify the site runoff and estimated on-site detention requirements for an indicative site layout as well as the TUFLOW model. The DRAINS model identifies that the on-site detention proposed will result in post-development stormwater discharge levels being no greater than under existing conditions.

Existing flow conditions for Anzac Creek have been previously determined by Liverpool City Council, and adopted as part of the flood assessment for the SIMTA proposal. The model indicates only 100 year ARI or larger events along Anzac Creek effect the SIMTA site. The Flood Study prepared by Hyder to accompany this Environmental Assessment has been based on the following models which have been provided by Liverpool City Council for two flood events:

- 100-year ARI 9-hour event.

- Probable Maximum Flood (PMF) 1-hour event TUFLOW model files with TUFLOW version 2006-06-BF.

Using the 100-year ARI 9-hour event the on-site flood storage increased from 28,500m³ in the DRAINS modelling, and the TUFLOW model and potential flood level increases reduced. Using the PMF 1-hour event, there were some increases in flood levels, however:

i) Flood level increases would be limited to approximately 10mm or less impact in the 100-year ARI 9-hour event.

ii) The proposed site raising would result in some increases in water levels to:

- Land to the south of the site however this land is densely vegetated and undeveloped.
- School of Military Engineering golf course which would increase by approximately 0.1 metres to 0.2 metres.
- Anzac Creek flooding corridor by approximately 0.01 metres to 0.05 metres.
- Anzac Creek near Heathcote Road, South Western Motorway Bridge of approximately 0.2 metres.

Technical Note Technical Note 6 - Strategic Rail Capacity Analysis prepared by Hyder considered the potential stormwater and flooding impacts associated with the rail corridor land. It is acknowledged that the detailed design analysis will need to be undertaken at the Project Application stage. The first stage of assessment (using DRAINS, HEC-RAS and MUSIC) will involve quantifying site runoff, any requirements for on-site detention, location of potential flooding impacts on neighbouring land holders and conveyance of stormwater from and around the proposed rail link within the identified rail corridor.

DRAINS software will be used to develop a rainfall runoff model to assess the performance of the proposed drainage system along the rail link with respect to mitigating potential flow impacts on neighbouring downstream areas. The DRAINS model will be developed to represent existing site conditions and post development conditions to enable comparison of discharges under the two development conditions. The DRAINS model will be run for storm durations of five minutes to 24 hours for the two year, five year, 10 year, 20 year, 50 year and 100 year ARI's, and 15 minute to six hours for probable maximum precipitation (PMP) events.

The Anzac Creek and Georges River flood plain modelling (using a TUFLOW model) will assess and evaluate the 100 year ARI rainfall events and flood levels within the Georges River and Anzac Creek. The results identified in the modelling process will be implemented within the detailed design, mitigating potential adverse flooding and stormwater impacts on neighbouring landholders and used to formulate the basis for the civil drainage design along a defined SIMTA rail link.

10.3.2 SURFACE WATER AND STORMWATER QUALITY

The water quality measures are based on the general water quality controls within *Liverpool Development Control Plan 2008*. The water quality treatments and impacts have been modelled using a MUSIC model that assumes the site operates as an industrial use with 100% impervious surface. The key post-development stormwater quantity and quality measures proposed as part of the Concept Plan include:

- **Rainwater Tanks** – will be used to collect roof water from the warehouses on the SIMTA site, and will be used for non-potable water demands such as toilet flushing and outdoor use.

- **Pre-Treatment** – including:

  - **Buffer Strips** – vegetated areas adjacent to drainage lines that intercept diffused stormwater runoff from impervious surfaces before it reaches the treatment measure. It is designed to remove coarse to medium sizes suspended solids and nutrients.

  - **Gross Pollutant Traps** – a stormwater treatment device designed to capture coarse sediment, trash and vegetation matter carried in stormwater.

- **Bio-retention Systems** – including:
  - **Rain Gardens** – comprising a combination of vegetation and filter substrate which treats stormwater through filtration, extended detention and some biological uptake. They are proposed to treat the majority of the site through an integrated structure which provides on-site detention.
  - **Bio-swales** – similar to rain-gardens, but with a longitudinal gradient, allowing for runoff-conveyance as well as water quality treatment and filtration.
  - **Lining** – lining will only be included in bio-retention systems when they are located next to footings or structures such as retaining walls and buildings.

The stormwater management objectives for the rail link within the rail corridor are to:

- Adopt recognised standards reflecting current practises adopted for similar facilities around the world.
- Comply with recognised Australian Standards and Liverpool City Council's Development Control Plan 2008, and ensure that post development flows do not exceed the pre-development conditions for any rail link within the rail corridor.
- Provide engineering levels for the rail link above localised flood levels but do not impact upon capacity of existing floodplains.

10.3.3 EROSION AND SEDIMENTATION IMPACTS

Assessment of potential erosion and sediment impacts during the construction phase concluded that the implementation of appropriate mitigation measures would minimise exposure of site soils and control surface water flows, allowing for dirty water to be retained and treated within the construction area. The assessment of potential erosion and sediment impacts during the operational phase indicated that with the installation of mitigation measures, including flood detention rail gardens, the volume and velocity of surface flows from the site would be static or less than current outflows.

Recommendations for management controls have been provided on the basis of site assessment and application of the relevant guidelines. Key recommendations include:

- *Preparation of a Soil and Water Management Plan (SWMP) and Erosion and Sediment Control Plan (ESCP) for both the construction and operation phases.*
- *Implementation of management plan strategies prior to commencement of the staged construction phase.*
- *Monitoring and review performance of sediment and water control structures during construction and operation phases.*

Each of these matters has been incorporated into the Draft Statement of Commitments.

10.3.4 POTENTIAL CUMULATIVE IMPACTS

Both the SIMTA proposal and SME site would be required to maintain stormwater controls during construction and operation in accordance with local, State and Federal regulations. The cumulative impacts of the proposal would be negligible as each party would be required to manage stormwater appropriately.

As both sites are already developed, it is unlikely that the developments would result in a change to the overall erosion and sedimentation across the precinct. The stormwater controls that have been identified in this environmental assessment are expected to be replicated at the SME site. Implementation of these controls would reduce the risk of exposed surface sediments being mobilised and deposited in riparian habitats or watercourses during construction and operation phases of the two developments.

10.3.5 LEGISLATIVE REQUIREMENTS

The *Stormwater and Flooding Environmental Assessment* assessed the construction and operational activities of the SIMTA proposal against the following guidelines which outline the soil and water management principles that should be applied:

- *Managing Urban Stormwater: Soils and Construction, Vol. 1, 2A and 2D (DECC).*
- *National Water Quality Management Strategy Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC Guidelines).*
- *Fish Passage Requirements for Waterway Crossings and Guidelines for Fish Friendly Waterway Crossings (DPI) under the Water Management Act 2000 (WM Act).*
- *Liverpool Development Control Plan 2008.*

10.4 SUMMARY AND CONCLUSION

Based on the assessment of stormwater and flooding impacts of the SIMTA proposal, it is concluded that stormwater, flooding and erosion and sediment impacts can be appropriately mitigated. Mitigation measures and design principles are included within the Draft Statement of Commitments to facilitate their delivery as part of the detailed Project Application for future stages. With the application of these mitigation measures and principles, the assessments undertaken by Hyder indicate that the SIMTA proposal will have an acceptable environmental impact with regards to stormwater and flooding.

11 Air Quality

11.1 OVERVIEW

The Director-General's Environmental Assessment Requirements for the SIMTA Concept Plan application include the following requirement for environmental assessment of air quality impacts resulting from the SIMTA proposal:

Air Quality *– including but not limited to:*

- *air pollutants, including an assessment of potential air pollution sources and atmospheric pollutants of concern for local and regional air quality;*
- *direct and indirect greenhouse gas emissions; and*
- *taking into account Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (DEC).*

PAE Holmes was engaged to prepare an *Air Quality Impact Assessment* (attached as **Appendix J**) and Hyder was engaged to prepare *Greenhouse Gas Assessment* (attached as **Appendix G**) to address the above requirements. Each of these reports should be reviewed in detail to fully understand the project methodology, the potential impacts and the recommended mitigation measures. The following sections of the report provide a summary of these reports and demonstrate the way in which each of the matters identified in the DGRs has been responded to.

11.2 ASSESSMENT METHODOLOGY

The air quality impact assessment was undertaken having regard to the site context, potential impacts of the proposal, consideration of statutory requirements and identification of appropriate mitigation measures to be implemented to avoid any significant impacts. Each of these matters is outlined in detail within the *Air Quality Impact Assessment* and *Greenhouse Gas Assessment* and as summarised below:

- **Existing Environment** -the key characteristics of the air quality context are summarised below:
  - Temperature data show that January is typically the warmest month with a mean maximum of 28.1^{O}C. July is the coldest month with a mean minimum of 5.1^{O}C.
  - Rainfall data collected at Bankstown Airport show that February is the wettest month with a mean rainfall of 108.5 mm over 11.0 rain days. Annually the area experiences, on average, 869.3 mm of rain.
  - The annual average PM10 concentrations at Liverpool are consistently below the OEH's annual average PM10 criteria of 30 µg/m3. The annual average during 2009 is significantly higher due to the large number of regional dust storm events.
  - Nitrogen dioxide data (OEH) indicated that for the majority of the year (>95%) the ambient concentrations are less than 20% of the air quality goal.
  - Carbon monoxide data (OEH) indicate that ambient concentrations of CO are generally very low and for the majority of the year (>90%) are less than 10% of the air quality goal.
  - The maximum 1-hour average ozone concentration was 0.15 ppm and for the 4-hour averaging period the maximum concentration as 0.09 ppm. The ozone concentrations display seasonal variation, with the higher concentrations observed during the summer months.

- **Potential Impacts** - the potential impacts on air quality are detailed in the *Air Quality Impact Assessment* and **Section 11.3.1** of this report. The key potential impacts are summarised below:

  - While train movements may result in short-term peaks of pollutants (less than a few minutes), emissions would quickly disperse to concentrations that would be unlikely to cause exceedances of air quality goals, considering minimum averaging periods of 1 hour for most pollutants.

  - The operation of the SIMTA proposal is expected to have a net positive impact on regional air quality and result in an overall reduction in emissions to airshed. There will be a reduction in heavy goods vehicle traffic using the M5 Corridor, which is operating at or near capacity in peak hours, and assist in managing projected industrial growth at Port Botany.

  The potential impacts on greenhouse gas emissions are detailed in the *Greenhouse Gas Assessment* and **Section 11.3.2** of this report. The key potential impacts are summarised below:

  - A comparison between the SIMTA proposal and the alternative scenario showed that there was an annual GHG saving of 43,206 tCO2e per annum which can be achieved through operational and transport efficiencies through the implementation of the SIMTA proposal.

  - It is estimated that the annual emissions savings from operation of the SIMTA facility will equalise the emissions associated with construction and those embodied within construction materials within six years of operation.

- **Statutory Assessment Considerations** – the environmental assessment has considered the following requirements with regards to air quality and greenhouse gas emissions:

  - The NSW OEH prescribe ambient impact assessment criteria which as outlined in their 'Approved Methods for Modelling and Assessment of Air Pollutants in NSW' (NSW DEC, 2005).

  - The Australian Government has committed to reduce its emissions by between 5 and 25 per cent below 2000 levels by 2020. It has also committed to a long term emissions reduction target of at least 60 per cent below 2000 levels by 2050.

  - The *National Greenhouse and Energy Reporting (NGER) Act* requires corporations to register and report emissions, energy consumption or production that meets certain thresholds every year. For GHG emissions, thresholds are currently set at 25,000 tonnes carbon dioxide equivalent (tCO2e) for a facility under a corporation and 50,000 tCO2e for a corporation as a whole for 2010-2011 (DCC 2008); and

  - The *NSW Department of Infrastructure, Planning and Natural Resources - Department of Energy, Utilities and Sustainability Guidelines for Energy and Greenhouse in EIA* provides guidance on the consideration of energy and greenhouse issues when developing projects and when undertaking environmental impact assessment.

  - The Greenhouse Gas (GHG) emissions requirements have been considered in the context of the *'State and Territory Greenhouse Gas Inventories for 2008'* which outlines targets for GHG emissions in based on the Kyoto accounting. The assessment of GHG emissions considers emissions generated from key components of developments including transport, waste and manufacturing and construction.

- **Management/Mitigation Measures** - the air quality mitigation measures are detailed in the *Air Quality Impact Assessment*, *Greenhouse Gas Assessment* and **Sections 11.3.1** and **11.3.2** of this report.

11.3 ASSESSMENT OF KEY ISSUES

11.3.1 AIR POLLUTANTS

Assessment of the existing air quality conditions surrounding the site was based on data collected from seven receptors located to represent the closest residential developments, and data collected from the Liverpool and Bankstown Airport weather stations. The key findings of this data provide the air quality context of the SIMTA site:

- Annual average large particle matter (PM_{10}) were consistently below the OEH criteria for large particle matter in 2007, however in 2009 the annual average was significantly higher due to a number of regional dust storm events.
- Records of Nitrogen Dioxide (NO_2) in 2007 indicated no exceedances of the OEH criteria on an annual basis or a maximum 1-hour average basis.
- Records of Carbon Monoxide (CO) in 2009 indicate ambient concentrates are generally very low, with the majority of the year having levels of less than 10% of the air quality goal.
- Records of Ozone (O_3) in 2009 indicate occasional exceedance of OEH goals for both maximum 1-hour averages and maximum 4-hour averages.
- Prevailing winds during various times of the year:
  - Summer: North-north-west through to east-north-east.
  - Winter: Lighter winds from south-west to west-south-west.
- Temperature varies across the year from mean maximum in January (28.1°c) to mean minimum in July (5.1°c).
- Rainfall patterns indicate the wettest month is February.

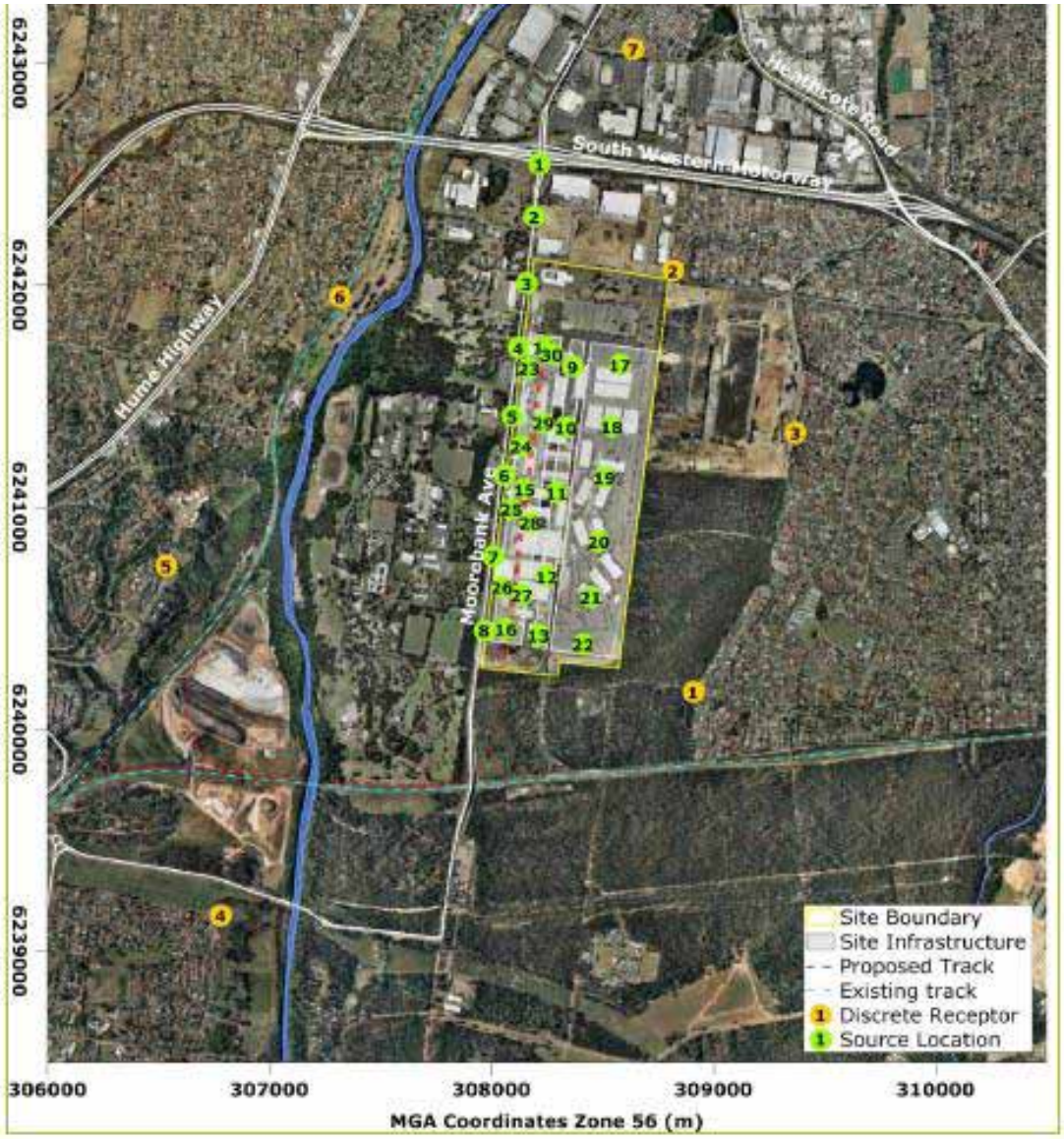
The pollution sources and pollutants at the construction and operational stages are identified as follows:

- **Construction Pollution** – fugitive dust emissions from clearing, stripping, and excavation of the eastern side of the site and the rail corridor land, and demolition and construction:
  - Clearing, stripping and excavation on the eastern side of the site and the rail link within the rail corridor land.
  - Demolition of existing buildings.
  - Construction of the rail siding, container hardstand and new warehousing facilities.
- **Operational Pollution** – fuel (diesel and LPG) exhaust from:
  - Diesel locomotives idling on-site.
  - Tucks entering the site.
  - Diesel powered container handling equipment (forklifts, cranes).
  - LPG powered forklifts in warehousing areas.

Assessment of the potential impacts was modelled for the 'worst case hour', which is considered to be where each of the following activities is occurring simultaneously (refer to **Figure 18** for Source Locations):

- **Source Locations 1 to 13** – trucks travelling.
- **Source Locations 9 to 13** – trucks idling.
- **Source Locations 14 to 16** – diesel locomotives idling.
- **Source Locations 17 to 22** – LPG forklifts in warehouses.
- **Source Locations 23 to 30** – container forklifts, cranes and stackers.

FIGURE 18 – LOCATION OF POLLUTANT SOURCES AND RECEPTORS FOR MODELLING



Key findings of the modelling (with operation of the full SIMTA proposal for the "worst case hour") are as follows:

- Nitrogen Dioxide (NO_2) levels will not exceed criteria goal levels.
- Large particle matter (PM_{10}) will not exceed the impact assessment criteria, with or without the addition of the highest annual average of background large particle matter.
- Small particle matter ($PM_{2.5}$), will not exceed the impact assessment goals of the US EPA.

The operation of the SIMTA proposal is expected to have a net positive impact on regional air quality, taking into account the overall reduction of vehicle kilometres travelled by heavy freight traffic in Sydney (ie reduction of approximately 2,700 heavy vehicle movements between Port Botany and Moorebank per day[11]). The potential impacts of train movements to and from the site have been considered, however, it is concluded that the frequency of movements per day is of sufficiently low frequency and of a transient nature so it would not have a significant impact on air quality. Train movements may result in a short-term peak in pollutants (less than a few minutes), however these emissions would quickly disperse to levels below air quality goals.

While the air quality modelling indicates the SIMTA proposal will not exceed accepted air quality criteria even at the 'worst case hour' levels, mitigation measures are proposed to be implemented during construction and on-going operation so that emissions are minimised. These include:

- Consideration of advances in rolling stock servicing the ITF.
- Use of electrically powered container handling equipment in lieu of diesel equipment where possible.
- Use of LPG forklifts in lieu of diesel forklifts where possible.
- Minimise truck movements through the efficient management of deliveries and dispatches.
- Minimise truck idling and queuing on-site.
- Construction dust mitigation measures should be considered as part of future Project Application construction management plans.

Each of these matters has been incorporated into the Draft Statement of Commitments.

11.3.2 GREENHOUSE GAS IMPACT ASSESSMENT

The *Greenhouse Gas Assessment* assessed the implications of the SIMTA proposal at the construction and operational phases:

- **Site Preparation and Construction** - emissions from the construction phase were based on estimated machinery types, days used and fuel use and areas of clearing and construction required. Emissions from the transport of material to and from site were also included, based on truck fuel use and distances to the closest waste facilities and materials providers. Approximately 16,597 tCO_2e is expected to be emitted during site preparation and construction. The embodied GHG emissions in the construction material and products were estimated to be 196,201 tCO_2e, predominantly within steel and concrete.
- **Operation** - emissions from on-site energy use, once the site is fully operational, was calculated to be 53,668 tCO_2e per annum. Operational emissions were based on electricity and gas demand estimates developed during concept planning.
- **Freight Transport Emissions** – the GHG assessment sought to compare the SIMTA Intermodal Terminal Facility with the potential redevelopment of the site in accordance with the Liverpool Local Environmental Plan 2008, taking into account the projected freight demand in the area. This comparison has demonstrated that the SIMTA proposal can achieve an annual GHG saving of 43,206 tCO_2e per annum through its operational and transport efficiencies. A comparison between the SIMTA proposal and the alternative scenario is illustrated in **Figure 19**. It is estimated that the annual emissions savings from operation of the SIMTA facility will equalise the emissions associated with construction and those embodied within construction materials within six years of operation.

Regular monitoring of emissions is recommended to assess the effectiveness of emissions mitigation actions during the construction and operational phases. The recommendations provided within the report are reproduced below:

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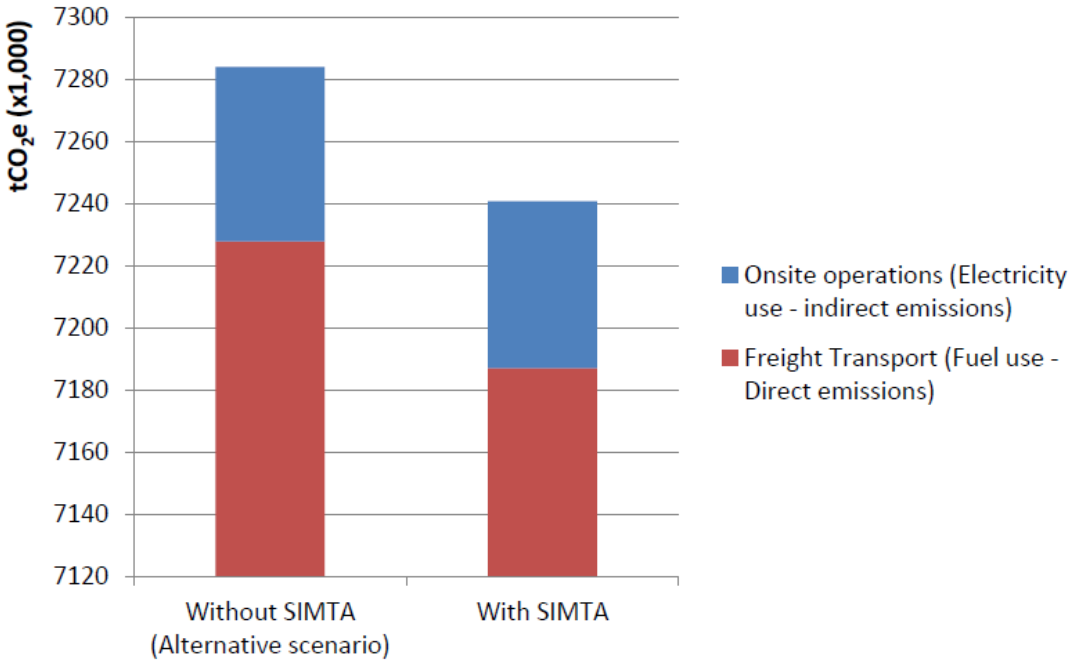
[11] Hyder, 2011, *Transport and Accessibility Impact Assessment: Volume 1*.

- **During Construction:**
  - *Where possible, use locally sourced materials to reduce emissions associated with transport;*
  - *Recycle/compost waste wherever possible;*
  - *When importing fill source from nearby construction sites, wherever possible aim to reduce transport related emissions;*
  - *Plan construction works to avoid double handling of materials;*

FIGURE 19 – GHG EMISSIONS SAVINGS



  - *Make use of recycled emissions to reduce emissions associated with embodied energy (not estimated in this report);*
  - *Develop construction/transport plans to minimise the use of fuel during each construction stage. For example throttling down and switching off construction equipment when not in use;*
  - *Assess the fuel efficiency of the construction plant/equipment prior to selection, and where practical, use equipment with the highest fuel efficiency which use lower GHG intensive fuel (e.g. gas, ethanol); and*
  - *Regular maintenance of equipment to maintain optimum operations and fuel efficiency.*

- **During Operation:**
  - *Incorporate energy efficiency design aspects wherever possible to reduce energy demand. Examples could include energy efficient lighting systems, natural ventilation, insulation and other renewable forms of energy (e.g. cogeneration/tri-generation on site);*
  - *Investigate the procurement of energy efficient equipment for the site (i.e. cranes, forklifts, street lighting etc);*
  - *Investigate the feasibility of on-site renewable energy, such as photo-voltaics to reduce demand from the grid; and*
  - *Tune buildings during commissioning to optimise energy performance.*

The *Greenhouse Gas Assessment* also recognises that the main emissions embodied in the materials are from production of concrete for the site pavement and structural steel for warehouses and there is significant scope to reduce construction emissions. The following additional recommendations are proposed to mitigate GHG emissions embodied in materials:

- *Investigate the feasibility to use supplementary cementitious materials for the concrete pavement;*
- *Source concrete from suppliers who are able to demonstrate low embodied GHG emissions using LCA methodology (could for example be certified by eco-label bodies);*
- *Avoid using recycled content in steel products as a single indicator for low GHG intensity as this has been proven to be misleading;*
- *Achieve high steel scrap recycling rates;*
- *Use low GHG intensive energy in production (i.e. renewable energy for electricity); and*
- *Minimize GHG emissions from steel making by sourcing from suppliers who are able to demonstrate low embodied GHG emissions using LCA methodology (could for example be certified by eco-label bodies).*

Each of these matters has been incorporated into the Draft Statement of Commitments.

11.3.3 POTENTIAL CUMULATIVE IMPACTS

The potential cumulative impacts with regard to air quality would predominately be the generation and deposition of dust and particulate matter from the following construction activities, which could include:

- Vegetation clearing/earthworks during site preparation and access road construction.
- Handling of spoil.
- Demolition of existing structures.
- Movement of heavy plant and machinery within the site on unsealed roads.
- Grader/Scrapers working access road construction.
- Construction of rail link.
- Wind erosion from exposed surfaces.

However, it is anticipated that the scheduled timing for the construction of the two developments will avoid any major cumulative impacts with regard to air quality.

The air quality assessment has been based on the total one million TEU catchment demand. Dispersion of emission sources between the two sites during operations represents a reduction in the intensity of potential emissions from the SIMTA site and is expected to result in increased dispersion of any particulates. Mitigation measures proposed as part of the SIMTA proposal (which are anticipated to be adopted at the SME site) would minimise the air quality impacts across the area.

The demolition of buildings containing asbestos has the potential to cause impacts upon human health if not handled, transported and disposed of in an appropriate manner. However, these works are required, to be undertaken as per local, State and Federal guidelines. Works would be undertaken over a relatively short period of time and would entail removal of asbestos containing materials offsite for appropriate disposal. Accordingly, the potential cumulative impact is considered likely to be low.

11.3.4 LEGISLATIVE REQUIREMENTS

The *Air Quality Impact Assessment* uses the following Air Quality Criteria and Standards for assessing the existing air quality conditions, and modelling the impacts of the SIMTA proposal:

- *Approved Methods for Modelling and Assessment of Air Pollutants in NSW, DEC, 2005.*
- *National Environmental Protection Measure (NEPM), "Advisory Reporting Standards", NEPC, 2003.*
- *Policy Assessment for the Review of the Particle Matter National Ambient Air Quality Standards – Second External Review Draft, June 2010, US EPA, 2010.*

To forecast the greenhouse gas emissions the SIMTA proposal will generate, the *Greenhouse Gas Protocol* (WBCSD 2001) was used, including Scope 1 Direct Emissions, Scope 2 Indirect Emissions from purchased fuel and Scope 3 Indirect Emissions from production of purchased materials.

11.4 SUMMARY AND CONCLUSION

The *Air Quality Impact Assessment* has demonstrated that with the implementation of mitigation measures, the SIMTA proposal will not exceed air quality criteria during construction or operation. Further, it is considered that the proposal will result in a net positive impact on air quality at the regional level, taking into account the increased use of rail based freight transport.

The *Greenhouse Gas Assessment* has demonstrated that the operational and transport efficiencies of the SIMTA proposal (compared to a proposal that would ordinarily be permitted under the LEP) will result in annual emissions savings that will equalise the emissions associated with construction and those embodied within construction materials within six years of operation. Mitigation measures are proposed to manage the construction and operational phases and reduce the GHG emissions embodied in materials.

Each of the mitigations measures to manage air quality impacts and greenhouse gas emissions have been incorporated into the Draft Statement of Commitments.

12 Heritage

12.1 OVERVIEW

The Director-General's Environmental Assessment Requirements for the SIMTA Concept Plan application include the following requirement for environmental assessment of heritage and archaeological impacts resulting from the SIMTA proposal:

Heritage *– including but not limited to:*

- *identify areas and items of indigenous and non-indigenous heritage significance and natural areas that could be impacted directly or indirectly, including potential archaeological deposits and the Australian Army Engineers Group and Kitchener House (formerly Arpafeelie) and an appropriate assessment of potential impacts (including site surveys);*
- *detail how any impacts on items of indigenous and non-indigenous heritage would be addressed and managed as part of the subsequent project stages; and*
- *taking into consideration of NSW Heritage Manual, Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (DEC).*

Archaeological & Heritage Management Solutions (AHMS) was engaged to undertake an assessment of the indigenous heritage impacts. A copy of the *Aboriginal Cultural Heritage Assessment* is attached in **Appendix U**. Artefact Heritage Services was engaged to prepare a *Non-Indigenous Heritage Assessment* addressing non-indigenous heritage impacts of the proposal. This report is attached in **Appendix V**. The following sections of the report provide a summary of the assessment methodology and assessment of the key issues identified above, including the mitigation measures required to address the potential impacts.

12.2 ASSESSMENT METHODOLOGY

The indigenous and non-indigenous heritage assessments were undertaken having regard to the site context, potential impacts of the proposal on heritage value, consideration of statutory requirements and identification of appropriate mitigation measures to be implemented to avoid any significant impacts. Each of these matters is outlined in detail within the specialist reports and as summarised below:

- **Existing Environment** - a detailed description of the indigenous heritage context of the SIMTA proposal is provided in Section 4 of the *Aboriginal Cultural Heritage Assessment* report. The key issues are summarised below:

  - A search of the Aboriginal Heritage Information Management System (AHIMS) database identified 30 sites in the local area composed of 21 artefact scatters, six culturally modified trees, three potential archaeological deposits and a rock shelter.

  - A site inspection revealed little evidence of a natural environment, with numerous structures, roads, hard-stands and cultural plantings being present on the site. No Aboriginal places are registered within the SIMTA site and the Registered Aboriginal Parties (RAPs) indicated that they did not consider it to have any Aboriginal cultural heritage value. While sporadic isolated artefacts may occur within the SIMTA site, the presence of intact significant archaeological deposits was considered low.

  A detailed description of the non-indigenous heritage context is provided in Section 6 of the *Non-Indigenous Heritage Assessment* report. The key issues are summarised below:

  - Existing development on the SIMTA site includes 20 timber post and beam buildings dating to World War II. Fifteen of these are of timber post and beam construction, with nine internal bays. Three buildings are composite timber and steel warehouses which have three bays of timber post and beam construction on either side of a central raised bay. The final two buildings are the smaller Quartermaster's Store, with five bays of timber post and beam construction, and the Carpentry Workshop, which are timber framed and three bays wide. Both the Quartermaster's

Store and the Carpentry Workshop are constructed of Oregon, an American wood (Brooks and Associates 2002:10).

- A number of other buildings on the SIMTA site were built in the mid-1990's. These buildings are not considered to share the same high heritage value as the WW II structures. However, as these buildings are within the DNSDC curtilage as listed on the Commonwealth Heritage Register, the relationship of these buildings to others in the military complex could have some heritage value

- The rail corridor land is unaffected by non-indigenous heritage, noting that the part of the School of Military Engineering site affected by the proposed rail link is disturbed and does not contain any significant heritage items. However, the significance of the site as a whole should be considered, including the Royal Australian Engineers (RAE) Memorial Chapel, RAE Monument, Major General Sir Clive Steele Memorial Gates, and The Cust Hut.

- The land to the north, between the SIMTA site and the residential development at Wattle Grove, was used as a rifle range from WWI. Two structures that were visible on an aerial photograph from 1943 are still present at the site. Other nearby heritage items include: Kitchener House, the Holsworthy Group, Casula Powerhouse, Railway Viaducts and Glenfield Farm.

- **Potential Impacts** - the potential impacts of the proposal on indigenous heritage are outlined in detail within Section 11 of the *Aboriginal Cultural Heritage Assessment* report and **Section 12.3.1** of this report. The key impacts are summarised below:

  - The site contains potential archaeological deposits (PADs) and Aboriginal stone artefacts. The potential impacts on PADs 1 to 3, Area 1 and Transects 1 and 7 will need to be further investigated upon resolution of the detailed design and detailed within the future Project Applications.

  - Excavation, grading or the use of metal tracked or heavy vehicles in any of the PADs or Area 1 have the potential to damage or destroy Aboriginal archaeological deposits or isolated artefacts, which are culturally significant to the RAPs.

  - In all other parts of the subject area, the SIMTA proposal is not considered likely to impact any Aboriginal cultural heritage values.

  The potential impacts of the proposal on non-indigenous heritage are outlined in detail within Section 7 of the *Non-Indigenous Heritage Assessment* report and **Section 12.3.2** of this report. The key impacts are summarised below:

  - Potential exists for WWII-era features to survive in some areas of the SIMTA site. Sub-surface evidence for structures located at a distance from the main complex may still be present. The intermodal terminal development will have a significant impact on the DNSDC site and its heritage values. However there are a number of development options which have been investigated which would enable some of the SIMTA site heritage value and items to be retained. These options will require further assessment upon further resolution of the detailed design associated with the future Project Applications.

  - The proposed rail link will only impact upon the southern edge of the School of Military Engineering. It has undergone significant landscape modification and it is unlikely that the SIMTA project would affect any heritage items or archaeological deposits in this area.

  - The SIMTA development is unlikely to physically impact on Kitchener House or its setting and views. However, demolition of the military structures at the DNSDC site would affect a site with which Kitchener House has a long-standing historic relationship and will require further assessment at the Project Application stage.

  - The Holsworthy Group located south-east of the study area is separated from the SIMTA site by an area of thick scrub and accordingly, the site and its views and setting will not be impacted.

- The Casula Powerhouse is well-screened by mature eucalyptus trees on the south and it is highly unlikely that the building would have views of the study area. Accordingly, the site will not be impacted by the SIMTA development.

- The railway viaducts are level with the railway lines and located at least 800 metres from the study area. Accordingly, they will not be impacted by the SIMTA development.

- It is likely that the SIMTA development will have some impact on views to and from Glenfield Farm. The degree of impact will depend on the height and scale of the development within the rail corridor, which will be further resolved at the Project Application stage.

- **Statutory Assessment Considerations** - the environmental assessment has considered the following statutory requirements with regards to indigenous heritage:

  - No Aboriginal sites or places within the subject area are currently subject to a Declaration required under the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*

  - The *Native Title Act 1993* provides recognition and protection for native title. A search of the registers undertaken on 31 January 2011 returned results indicating that there are currently no native title claims over the site.

  - Where Project approval is to be determined under Part 3A of the EP&A Act, further approvals under the *National Parks & Wildlife Act 1974* are not required.

  The environmental assessment has considered the following statutory, policy and guideline requirements with regards to non-indigenous heritage:

  - As this project is seeking approval under Part 3A transitional arrangements under the *Environmental Planning and Assessment Act 1979,* permits and consents from the Heritage Branch (under the NSW *Heritage Act 1977*) will not be required.

  - The DNSDC site is included on the Commonwealth Heritage List and is protected by the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). As the site is currently leased by the Australian Defence Force (Defence), a federal government authority, it remains under statutory protection, however, before this lease expires it will be necessary for Defence to enter into consultation with SIMTA and the Australian Heritage Council regarding future management and conservation plans or policies.

  - The SIMTA site is not listed as a heritage item under the provisions of the Liverpool Local Environment Plan 2008, however, the nearby items which are listed have been identified and assessed.

- **Management/Mitigation Measures** – the *Aboriginal Cultural Heritage Assessment* report provides a comprehensive list of mitigation measures which are also detailed within **Section 12.3.1** and **Section 12.3.2** of this report. The Non-Indigenous Heritage Report provides an environmental assessment against a range of development options, potential impacts, and possible mitigation measures and resulting heritage value.

12.3 ASSESSMENT OF KEY ISSUES

12.3.1 INDIGENOUS HERITAGE SIGNIFICANCE

The findings of the *Aboriginal Cultural Heritage Assessment* conclude that there is no indigenous heritage significant potential on the SIMTA site, predominantly due to the extensive earthworks and development that has already been undertaken to accommodate the DNSDC activities. However, a number of artefacts and potential artefact deposits (PADs) were identified during the field surveys of the adjoining land, including the proposed rail corridor. The locations of the PADs are illustrated in **Figure 20**.

These artefacts and PADs were assessed for archaeological significance. PAD1, PAD2 and Area 1 were considered to have moderate public cultural and scientific significance.

The artefacts identified in Transects 1 and 7 were considered to have moderate cultural significance. No other parts of the study area were considered to have cultural, public or scientific Aboriginal heritage significance.

Based on the findings of the field surveys and the proposed SIMTA Intermodal Terminal Facility on the SIMTA site and within the rail corridor lands, AHMS conclude the proposal will have the following impacts on the study areas Aboriginal heritage significance:

As the design of the SIMTA proposal has yet to be finalised, it is not known precisely what the potential impact will be on PADs 1 to 3, Area 1 and Transects 1 and 7. However, should excavation, grading or the use of metal tracked or heavy vehicles be required in any of the PADs or Area 1, it would have the potential to damage or destroy Aboriginal archaeological deposits or isolated artefacts, which are culturally significant to the RAPs.

The process of excavation destroys the integrity of a site, and can also damage artefacts and features. Grading and heavy vehicles driving over sites can damage artefacts where they are located on, or close to the surface. Other development related activities not mentioned here may also potentially impact on the Aboriginal cultural heritage values of the aforementioned sites.

In all other parts of the subject area, the SIMTA proposal is not considered likely to impact any Aboriginal cultural heritage values.

To mitigate the potential impacts, AHMS recommend the following mitigation measures be adopted:

General Mitigation Measures:

1. *Consultation between SIMTA and relevant Registered Aboriginal Parties (RAPs) should be maintained throughout the design and construction of the SIMTA proposal.*

2. *Where possible, SIMTA should aim to avoid impacting any known Aboriginal heritage objects, sites or places and places that have potential Aboriginal heritage or cultural values, throughout the life of the SIMTA proposal.*

3. *Where impact cannot be avoided, SIMTA should choose partial impact rather than complete impact wherever possible and ensure that appropriate measures to mitigate impacts are developed and implemented as required and as appropriate during design, construction and operation of the various stages of the SIMTA proposal.*

4. *If relocation of any element of the SIMTA proposal outside area assessed in this study is proposed, further assessment of the additional area(s) should be undertaken to identify and appropriately manage Aboriginal objects/sites/places that may be in this additional area(s).*

5. *In the event that previously undiscovered Aboriginal objects, sites or places (or potential Aboriginal objects, sites or places) are discovered during construction, all works in the vicinity of the find should cease and SIMTA should determine the subsequent course of action in consultation with a heritage professional, relevant Registered Aboriginal Parties and/or the relevant State government agency as appropriate.*

6. *Should suspected human skeletal material be identified, all works should cease and the NSW Police and the NSW Coroner's office contacted. Should the burial prove to be archaeological of Aboriginal origin, consultation with a heritage professional, relevant RAPs and/or the relevant State government agency, should be undertaken by SIMTA.*

7. *SIMTA should ensure that any reports or documents for the SIMTA proposal concerning Aboriginal heritage comply with applicable statutory requirements (those currently applicable are outlined in this report), are prepared in accordance with best practice professional standards and, where appropriate, ensure findings are provided to OEH AHIMS Registrar and the relevant RAPs.*

Site Specific Mitigation Measures:

1. *To ensure cultural values for both the SIMTA site and proposed rail corridor are appropriately characterised and assessed, Aboriginal consultation should continue to be undertaken in accordance with applicable guidelines and requirements.*

2. *The artefacts identified in Transect 1 on the SIMTA site, and Transect 7 immediately south of the SIMTA site, should be collected by RAPs in conjunction with a heritage professional before construction commences. A Care and Control Agreement should be completed between SIMTA and the RAPs regarding the future of the artefacts (it is usually preferred that they be reburied nearby).*

3. *Given the extensive historical disturbance within the remainder of the SIMTA site, it is considered that the likelihood of the presence of intact or significant Aboriginal objects and/or sites is low and no further archaeological investigations are warranted in these remaining areas.*

4. *In relation to the proposed rail corridor, with the exception of PADs 1 - 3 (Figure 33), it is considered that the likelihood of the presence of intact or significant Aboriginal objects and/or sites is low and no further archaeological investigations are warranted in the remaining areas.*

5. *Any areas outside those investigated as part of this assessment, most notably those areas within 50m of the eastern and western banks of the Georges River, should not be impacted without further assessment.*

FIGURE 20 – RESULTS OF FIELD SURVEYS

Source – AHMS, 2011, Aboriginal Cultural Heritage Assessment, Figure 33 page 88.

6. *Areas of the study area in close proximity to Georges River and the south-western most corner of the proposed rail corridor, which could not be adequately investigated due to access issues, should be investigated further. The background and predictive models presented in this report may suffice for a conditional approval, however, access and more detailed assessment of these areas is required to fully identify development impacts.*

7. *In relation to PADs 1 - 3 (Figure 33), it is recommended that, either:*

   Impacts within these areas are entirely avoided (i.e. no modifications are made to any ground surface in any way, including but not limited to excavation, grading and the use of heavy or metal tracked vehicles); or

   Test excavations be undertaken in each of PADs 1 - 3 in accordance with current archaeological practice and any relevant guidelines to determine the nature, extent and significance of any Aboriginal archaeological deposit. Such testing could be undertaken under Section 75U of the Environmental Planning and Assessment Act 1979, and be used to inform the assessment prior to lodgment of the EA, or as part of a Statement of Commitments following the approval.

   If significant Aboriginal site(s) are identified in PADs 1, 2 or 3, then design of the SIMTA proposal to avoid such sites(s) is the preferred option. However, if it is not considered possible to avoid such site(s), then salvage excavations of the PADs in accordance with current archaeological practice, any relevant guidelines and in consultation with the RAPs should be undertaken to gather as much information on the site(s) as possible prior to disturbance.

The *Aboriginal Cultural Heritage Assessment* has been informed through the consultation process required by way of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents, DECCW* guidelines. This process included the following key steps:

- March 2011 - letters were issued to potentially interested parties and local Aboriginal groups to identify Aboriginal people who may hold cultural knowledge relevant to determine the significance of Aboriginal objects and places within the SIMTA site.

- May 2011 - an invitation to register an interest was placed in the *Liverpool City* Champion. A register of three parties was prepared, with a further two parties registering in late July 2011.

- June 2011 - a letter was issued to all registered parties seeking comments on the proposal. This letter outlined the SIMTA proposal, the proponent, the intended approval approach, assessment approaches and processes, timeframes and the proposed field investigations. This letter was also issued to the late registering parties in late July 2011.

- Early 2012 - the report review process was undertaken for a period of 28 days between 16 January 2012 and 16 February 2012, during which the *Draft Aboriginal Cultural Heritage Report* was issued to all registered Aboriginal parties for comment.

The comments received during the report review process were then integrated into the report, where possible. A full list of the comments is contained in Appendix C of the final *Aboriginal Cultural Heritage Report* attached in **Appendix U**.

12.3.2 NON-INDIGENOUS HERITAGE SIGNIFICANCE

The *Non-Indigenous Heritage Assessment* identified the following heritage listings that may be relevant to assessing the potential impact of the SIMTA proposal:

- **Commonwealth Heritage List** - the DNSDC (or SIMTA) site is listed on the Commonwealth Heritage List. It includes 18 intact store buildings dating back to World War II that are considered highly significant as a rare surviving example of a World War II military complex.

- **Register of the National Estate** - Kitchener House is included on the Register of the National Estate, as well as the nearby sites of Glenfield Farm and the Holsworthy Group. The DNSDC site is included in the Interim list of the register.

- **Section 170 Register** - no Section 170 Register listings were found within the study area. However, the nearby railway viaducts at Woodbridge Road and Congressional Drive, Casula are listed on the RailCorp S170 Register.

- **State Heritage Register** - Glenfield Farm, adjacent to the Glenfield Waste depot is listed on the State Heritage Register.

- **Liverpool Local Environmental Plan (LEP) 2008** - the School of Military Engineering (which the rail corridor is proposed to traverse) is listed on the *Liverpool Local Environmental Plan 2008*. Six other items are located in the vicinity of the study area, including:

  - Casula Powerhouse (former power station), Casula.

  - Rail Viaduct, Casula.

  - Two railway viaducts, Casula.

  - Glenfield Farm Group, including the homestead, barn (former dairy and stables), Casula.

  - Holsworthy Group, Holsworthy, including powder magazine and former officers' mess, corporals' club, internment camp, Holsworthy railway station lock-up/gaol, German concentration camp.

  - Kitchener House (formerly 'Arpafeelie'), Moorebank.

The potential heritage impacts of the SIMTA Intermodal Terminal Facility are identified as follows:

- **DNSDC Site (or SIMTA Site)** – *The intermodal terminal development will have a significant impact on the DNSDC site and its heritage values, although a combination of mitigation measures will minimise this impact where practicable. The proposed development is likely to involve the demolition and/or removal of all or some of the heritage buildings on the DNSDC site, the construction of new buildings, and landscape modification through the installation of new water, sewerage, trade waste, and power infrastructure. These changes would impact on the heritage significance of the WWII buildings located at the DSNDC site, although it is likely that these impacts would be mitigated by a combination of conservation, adaptive reuse, and relocation of some of the WWII structures.*

- **School of Military Engineering** - *the SIMTA project will only impact upon the southernmost edge of the School of Military Engineering. This portion of the site overlooks the East Hills Railway Line and is part of the Royal Australian Engineers Golf Course. It has undergone significant landscape modification and it is unlikely that the SIMTA project would affect any heritage items or archaeological deposits in this area.*

- **Kitchener House** – *the site is located approximately 650m north of the study area and is well-screened by vegetation, while a large modern building already blocks views to the south from the house. Longer views of the building from Moorebank Avenue are not available because of the buildings scale, its boundary treatment and surrounding mature trees. Therefore, the SIMTA development is not likely to physically impact on the site or its setting and views. However, the demolition of the military structures at the SIMTA site would affect a site with which Kitchener House has a long-standing historic relationship.*

- **The Holsworthy Group** - *The Holsworthy Group is located south-east of the study area, and is separated from it by an area of thick scrub. Therefore, the site and its views and setting will not be impacted.*

- **Casula Powerhouse** - *The Powerhouse is separated from the study area by the Georges River and the School of Military Engineering. Although it is located on a slope, the Powerhouse is well screened by mature eucalyptus trees on the south and it is highly unlikely that the building would have views of the study area. Therefore the site will not be impacted by the SIMTA development.*

- **Railway Viaducts** - *As the viaducts are level with the railway lines, and are each located at least 800 metres from the study area, they will not be impacted by the SIMTA development.*

- **Glenfield Farm** - *As the adjacent landfill area is the site of part of the proposed rail corridor, it is likely that the SIMTA development will have some impact on views to and from Glenfield Farm. Because the detailed design of the rail infrastructure comprising the rail link will be subject to a further Project Application, it is not currently possible to accurately assess the potential impact of the development. The degree of impact will depend on the height and scale of the proposed rail link.*

The non-indigenous heritage assessment recognises that SIMTA site is currently occupied by Department of Defence and therefore comes under the operation of the EPBC Act 1999. Section 341ZA requires Commonwealth agencies to prepare a heritage strategy where they own or control a place with Commonwealth Heritage values (*Working Together: Managing Commonwealth Heritage Places*, DEWHA p3). Further, the EPBC Regulation 10.03E, Schedule 7C includes within the requirements of a heritage strategy the requirement for an agency to provide:

- An outline of current or expected development works, disposal or other proposals that may affect Commonwealth Heritage values; and

- An outline of the process to ensure that Commonwealth Heritage values are considered in the agency's planning for future development, works, divestment or other proposals.

The process for Department of Defence disposal of property containing Commonwealth heritage value is provided in their online Defence Heritage Toolkit (refer to Appendix 1 of the attached Non-Indigenous Heritage report prepared by Artefact.

For the purposes of evaluating the potential impacts on Commonwealth heritage values on the SIMTA site an evaluation of a number of development option and mitigation measures have been considered. The options, likelihood of their adoption, impact and possible mitigation strategies for each of the heritage items is detailed in Section 7 of the *Non-Indigenous Heritage Assessment Report* and summarised in **Table 13** below, however it is noted that the development options and mitigation measures adopted in the SIMTA proposal will be subject to discussions with the Commonwealth (Defence and Heritage) and State Heritage agencies.

TABLE 13 – DEVELOPMENT AND MITIGATION OPTIONS

DEVELOPMENT OPTION	LIKELIHOOD OF OPTION	SIGNIFICANCE OF IMPACT	POSSIBLE MITIGATION STRATEGIES	SUMMARY OF MITIGATION STRATEGY AND ITS EFFECT ON HERITAGE VALUE
SIMTA Site				
Conservation of the WWII buildings *in situ*	Low	The conservation of some or all buildings *in situ* would preserve some of the heritage value of the site. Values associated with the setting and context of the buildings would be affected.	Adaptive reuse of the buildings *in situ*, wherever practicable. Preservation of buildings to allow their conservation	The adaptive reuse of some buildings *in situ* would involve altering the buildings in order to make them suitable for reuse in new ways. It would avoid total demolition or removal, and would preserve a connection to the military history of the site. Ideally, representative examples of both store building types (timber post and beam, and composite timber and steel) would be retained. The form of adaptive reuse would depend upon the uses to which the buildings would be put as part of the SIMTA development, but should have minimal impact on the heritage significance of the building and its setting. The preservation of all or some of the WWII buildings would involve maintaining their physical fabric in its current state in order to conserve their heritage significance. Preservation of some of the buildings would facilitate the retention of built heritage values, but would affect values related to heritage context and may not allow alterations that could make future use of the buildings viable.
Demolition of the WWII structures to provide development areas for intermodal warehousing	Moderate	The demolition of all structures would have a significant impact on the heritage values of the DNSDC site. If the current boundaries of the site were kept intact,	Architectural interpretation of the heritage value items within the design and construction of structural	Architectural interpretation would be a way of reflecting the site's military past and memorialising the former buildings and layout at the site. Architectural interpretation would be most effective if employed in conjunction with the relocation and adaptive reuse of some of the WWII buildings.

DEVELOPMENT OPTION	LIKELIHOOD OF OPTION	SIGNIFICANCE OF IMPACT	POSSIBLE MITIGATION STRATEGIES	SUMMARY OF MITIGATION STRATEGY AND ITS EFFECT ON HERITAGE VALUE
		the site would retain some local historical significance as an illustration of the boundaries and alignments of the original land grants and subdivisions in the area. The major national significance of the site lies in its role as a military camp, particularly in the WWII buildings (including their fabric, layout, and ability to demonstrate the original road and rail alignments through the military camp) and this would be diminished with the demolition of the buildings.	elements on the SIMTA site (e.g. lighting or building facades). Archival and photographic recording of the site, with copies of the records held at the site and at the new locations of any buildings which have been relocated.	Archival and photographic recording of the site (including the buildings themselves, and the layout of the site) should be undertaken before any changes are made to the site. This mitigation option would not actually conserve the heritage values of the site or buildings, nor provide an easily accessible/visible interpretation of them.
Relocation for adaptive reuse on other Commonwealth land of some or all of the buildings that are of heritage value	Moderate	While there would be no impacts to the physical fabric of the structures, the heritage values of the buildings and the DNSDC site would be significantly reduced by removing them from their historical setting and impacting the relationships that currently exist between the different buildings, the historical road and rail alignments, and the broader	Architectural interpretation of the heritage value items within the design and construction of structural elements of the SIMTA site. Archival and photographic recording of the site, with copies of the records held at the site and at the new	Architectural interpretation would be a way of reflecting the site's military past and memorialising the former buildings and layout at the site. Architectural interpretation would be most effective if employed in conjunction with the relocation and adaptive reuse of some of the WWII buildings. Archival and photographic recording of the site (including the buildings themselves, and the layout of the site) should be undertaken before any buildings are relocated. If copies of these records were held at the site and at the new locations of relocated buildings, they would provide contextual information that would retain a connection with the past of the site and

DEVELOPMENT OPTION	LIKELIHOOD OF OPTION	SIGNIFICANCE OF IMPACT	POSSIBLE MITIGATION STRATEGIES	SUMMARY OF MITIGATION STRATEGY AND ITS EFFECT ON HERITAGE VALUE
		landscape. The relocation of the buildings would retain their aesthetic and representative significance, and, while not ideal, is preferable to demolition. It would be appropriate for the buildings to continue to be used by Defence on a different military site.	locations of any buildings which have been relocated.	buildings. This mitigation option would not actually conserve the heritage values of the site or buildings, nor provide an easily accessible/visible interpretation of them.
Relocation for preservation on other Commonwealth land of some or all of the buildings that are of heritage value	Moderate	While there would be no impacts to the physical fabric of the structures, the heritage values of the buildings and the DNSDC site would be significantly reduced by removing them from their historical setting and impacting the relationships that currently exist between the different buildings, the historical road and rail alignments, and the broader landscape. The relocation of the buildings would retain their aesthetic and representative	Architectural interpretation of the heritage value items within the design and construction of structural elements of the SIMTA site. Archival and photographic recording of the site, with copies of the records held at the site and at the new locations of any buildings which have been relocated	Architectural interpretation would be a way of reflecting the site's military past and memorialising the former buildings and layout at the site. Architectural interpretation would be most effective if employed in conjunction with the relocation and adaptive reuse of some of the WWII buildings. Archival and photographic recording of the site (including the buildings themselves, and the layout of the site) should be undertaken before any buildings are relocated. If copies of these records were held at the site and at the new locations of relocated buildings, they would provide contextual information that would retain a connection with the past of the site and buildings. However, this mitigation option would not actually conserve the heritage values of the site or buildings, nor provide an easily accessible/visible interpretation of them. Other mitigation options would also need to be employed.

DEVELOPMENT OPTION	LIKELIHOOD OF OPTION	SIGNIFICANCE OF IMPACT	POSSIBLE MITIGATION STRATEGIES	SUMMARY OF MITIGATION STRATEGY AND ITS EFFECT ON HERITAGE VALUE
		significance, and, while not ideal, is preferable to demolition. It would be appropriate for the buildings to continue to be used by Defence on a different military site.		The preservation of the buildings (as opposed to adaptive reuse) may allow more scope for heritage interpretation within the buildings – such as signage or posters featuring photographs, plans, and historical information related to the buildings and the DNSDC site.
A combination of Options A, B, C and/or D.	High	Impacts to the heritage values of the site are likely to be significant, but would depend on the combination of options chosen and other determining factors.	Conservation and adaptive reuse of some buildings in situ Relocation and adaptive reuse of some buildings at other sites. Relocation and preservation of some buildings at other sites Archival and photographic recording. Interpretation of heritage values at the SIMTA site and in the relocated buildings	Given the nature of the development, it is unlikely that all of the WWII buildings would be retained. However, rather than demolition, a combination of mitigation options could provide an effective compromise and allow some of the heritage significance of the site and buildings to be preserved. The heritage values of both the in situ and relocated buildings should be interpreted through the use of signage or posters featuring photographs, plans, and/or historical information related to the buildings and the DNSDC site. The heritage values of the SIMTA site should be interpreted through the design and construction of structural elements on the SIMTA site. This interpretation should include physical references to the former buildings and layout of the DNSDC site. Detailed archival and photographic recording should be undertaken before any changes are made to the site.
Demolition of structures built in the 1990s.	High	Impacts to the heritage significance of the site as a whole would be low if only the 1990s buildings were impacted.	Archival recording of the relationship between the 1990s buildings and other structures on the DNSDC site.	Detailed archival and photographic recording should be undertaken before any changes are made to the site in order collect information on heritage values before they are impacted.

DEVELOPMENT OPTION	LIKELIHOOD OF OPTION	SIGNIFICANCE OF IMPACT	POSSIBLE MITIGATION STRATEGIES	SUMMARY OF MITIGATION STRATEGY AND ITS EFFECT ON HERITAGE VALUE
Subsurface excavations within areas of archaeological potential	High	The significance of the impacts will depend on the nature of remains identified within the area of archaeological potential.	Monitoring of works or archaeological test excavations conducted by an appropriately qualified heritage consultant/archaeologist.	Impacts would be mitigated by archaeological investigation as they would provide a means of recording and interpreting information about the heritage values of the site.
School of Military Engineering				
Southern section of SME developed as part of the rail corridor.	High	No impacts to heritage significance.	N/A	N/A
Kitchener House				
Development of the SIMTA site to the south of Kitchener House	High	No impacts to heritage significance.	N/A	N/A
Holsworthy Group				
Development of the SIMTA site to north of the Holsworthy Group.	High	No impacts to heritage significance.	N/A	N/A
Casula Powerhouse				
Outside the development area.	N/A	No impacts to heritage significance.	N/A	N/A
Railway Viaducts				
Outside the development area.	N/A	No impacts to heritage significance.	N/A	N/A

DEVELOPMENT OPTION	LIKELIHOOD OF OPTION	SIGNIFICANCE OF IMPACT	POSSIBLE MITIGATION STRATEGIES	SUMMARY OF MITIGATION STRATEGY AND ITS EFFECT ON HERITAGE VALUE
Glenfield Farm				
Develop rail corridor to the east of the Glenfield curtilage.	High	Possible impacts to views from Glenfield Farm.	Adhere to Glenfield CMP. Limit impacts on views from the Farm to the east across the rail corridor.	If views are retained there will be minimal impacts to heritage values.

The final conclusions and recommendations of the report are provided below:

- *There are no non-Indigenous heritage constraints for the land within the School of Military Engineering along the railway corridor, and to the south of the SIMTA site, or the land within the Glenfield waste depot. The majority of these areas are heavily disturbed and do not contain known items of non-Indigenous heritage significance.*

- *The DNSDC site is highly significant and embodies important national heritage values, as indicated by its inclusion on the Commonwealth Heritage List. It is necessary to conserve the site's heritage values where possible. It is recommended that consultation between Defence, SIMTA, and the Australian Heritage Council should be commenced regarding the management and status of heritage items within the Commonwealth Heritage Listed site, as part of the divestment process prior to the end of the current lease.*

- *The actions necessary before heritage impacts can occur at the SIMTA site will depend on the results of this consultation. A Statement of Heritage Impacts should be produced for each stage of the Project Application process, once the legislative obligations and development plans are more definitively known.*

- *Further archaeological investigation will be required in the area designated as having archaeological potential (former admin block, latrines etc.) if it is to be impacted by the intermodal terminal development.*

- *A Statement of Heritage Impacts should be prepared for Glenfield farm during the staged Project Application for the rail corridor adjacent to it, as the proposed development may impact on views, fabric and setting of this state significant site.*

- *Development near Kitchener House should adhere to the Liverpool DCP Section 2.4 in maintaining adequate screening of Kitchener house to avoid impacts on views and context.*

- *If any archaeological deposit or item of heritage significance is located within the study area and is at risk of being impacted, the NSW Heritage Council should be notified and a heritage consultant/archaeologist should be engaged to assess the item to determine its heritage significance.*

- *As this project will be assessed under transitional arrangements for Part 3A of the Environmental Planning and Assessment Act 1979, permits and consents will not be required from the NSW Heritage Branch to impact on heritage items within sections of the study area not owned or leased by the Commonwealth.*

The referral under the EBPC Act has been submitted to the Department of Sustainability, Environment, Water, Population and Communities, including the proposed heritage strategy. Until such time as an agreement has been reached with the Department of Sustainability, Environment, Water, Population and Communities through the EPBC Act referral process, it is not possible for a divestment strategy to be incorporated into the Concept Plan proposal.

The *Non-Indigenous Heritage Report* that accompanies this Environmental Assessment will be publically available to the Department of Sustainability, Environment, Water, Population and Communities and is likely to be considered in determining the most suitable divestment strategy. This will be reflected in the first Project Application for development on the SIMTA site.

12.4 POTENTIAL CUMULATIVE IMPACTS

12.4.1 INDIGENOUS HERITAGE

The previous and existing activities on the SIMTA site have resulted in a high level of disturbance to the site. It is likely that this would also be the case for the SME site. The introduction of fill would have caused significant detrimental impact to any existing land surface and/or soil profile (and any associated Aboriginal objects) that may have been present within the area of the two proposed developments.

There is potential for items or areas of cultural importance/significance to be present within the rail corridor area of the SIMTA site and surrounding the Georges River, however, these will be identified through ongoing Aboriginal consultation during the preparation and assessment of future project applications.

SIMTA has completed the stakeholder consultation process in accordance with the former NSW Department of Environment Climate Change and Water *'Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010'* Guidelines, and comments received during this process have been incorporated into the final report.

Overall, it is concluded that the cumulative impacts on indigenous heritage of the SIMTA proposal and the potential School of Military redevelopment for an intermodal terminal facility will be negligible, subject to the future compliance of the proposal with the recommended mitigation measures.

12.4.2 NON-INDIGENOUS HERITAGE

The Department of Defence will continue to be consulted during the approvals process to align both the SIMTA proposal and the SME proposal in management of non-indigenous heritage items.

Works will be aligned to the divestment strategy of the Department of Defence, taking into consideration to all heritage items within the site and the vicinity of the site, and maintaining the heritage significance through the development options and possible mitigation measures summarised in **Table 13**.

Based on the above, the potential cumulative impacts on non-indigenous heritage items are expected to be negligible.

12.4.3 LEGISLATIVE REQUIREMENTS

The *Indigenous Heritage Assessment* considered each of the following instruments and policy documents:

- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984.*
- *Environment Protection & Biodiversity Conservation Act 1999.*
- *Native Title Act 1993.*
- *Environmental Planning & Assessment Act 1979.*
- *Liverpool Local Environmental Plan 2008.*

The *Non-Indigenous Heritage Assessment* was undertaken in consideration of the following legislation and policy documents:

- *Heritage Act 1977.*
- *Environment Protection and Biodiversity Conservation Act 1999.*
- *NSW S170 Heritage and Conservation Register.*
- *Environmental Planning and Assessment Act 1979.*
- *Liverpool Local Environmental Plan 2008.*
- *Liverpool Development Control Plan 2008.*

12.5 SUMMARY AND CONCLUSION

The heritage investigations and assessments undertaken by Artefact Heritage Solutions and AHMS have identified the key heritage significance of the SIMTA site, the rail corridor land and surrounding areas.

The findings of the indigenous heritage impact assessment conclude that any potential impacts are likely to occur in the rail corridor. However, as the exact location of the rail link is yet to be resolved, it is not yet possible to determine the potential impact on these artefacts. Further investigations will be required at the Project Approval application stage.

The findings of the non-indigenous heritage impact assessment have found that the principal impact of the SIMTA proposal is likely to be on the heritage significance of the site, particularly the World War II buildings. However, there are a number of other items that may be impacted by the development, particularly the rail corridor, each of which will need to be further assessed once the detailed design of the development has been confirmed.

Each of the reports provides a number of recommendations for further detailed investigations and mitigation measures which can be implemented to minimise impacts where possible. These recommendations and mitigation measures have been adopted in the Draft Statement of Commitments.

13 Visual and Urban Design

13.1 OVERVIEW

The Director-General's Environmental Assessment Requirements for the SIMTA Concept Plan application include the following requirement for assessment of the visual and urban design issues:

Visual and Urban Design *– including but not limited to:*

- *identify and evaluate the visual impacts of the project including an analysis of views from key vantage points and proposed management/mitigation measures to address the visual impact of the proposal.*
- *a design analysis and justification of the key built form elements of the proposal.*

A *Visual Impact Assessment Analysis* of the SIMTA proposal was undertaken by Reid Campbell and is attached as **Appendix W**. Reid Campbell was also engaged to prepare an *Urban Design and Landscape Report* (attached as **Appendix E**) to establish the built form controls for the future development of the site. The following sections of the report describe the assessment methodology and provide a summary of the key impacts and recommended mitigation measures outlined within these reports.

13.2 ASSESSMENT METHODOLOGY

The assessment of the visual and urban design matters was undertaken in accordance with the General Requirements of the DGRs and as listed below:

- **Existing Environment** – the visual and urban design analysis was based on an assessment of the existing site context, taking into account both the SIMTA site and associated rail corridor/indicative rail link. The key features of the site are described in detail within the Urban Design and Landscape Report and as summarised below:

  - The SIMTA site is predominantly cleared of natural vegetation. It currently accommodates warehousing and logistics operations, vehicle and equipment hardstand, with container storage serviced by an internal road network. The site is generally flat, ranging from between RL14 and RL16.

  - The rail corridor land to the south is relatively undisturbed and comprises vegetated land. The land to the west includes an existing golf course and quarry/waste facility. The proposed rail link will need to cross both Anzac Creek and the Georges River.

  - The site is located to the south of developed industrial land and east of the School of Military Engineering. The land immediately to the east and south is relatively undeveloped, while residential areas are located further to the east and west. The key views to the site are along the frontage of Moorebank Avenue and to a lesser extent from further distances where there is currently minimal visual impairment across cleared or unobstructed land. The residential areas generally have minimal or no views due to the significant viewing distances, undulated topography and landform, or shielding by other existing structures and vegetation.

  A view shed analysis was undertaken using Geographic Information System (ArcGIS – Spatial Analysis Extension) to identify locations within the surrounding area that would have views of the proposed development. This is described in further detail within **Section 13.3.1**.

- **Potential Impacts** - the potential visual impacts of the proposal were assessed having regard to the assessment of the existing environment and the potential future buildings that could be developed in accordance with the provisions of the *Urban Design and Landscape Report*. Overall, the potential visual impacts are considered to be low, having regard to the existing visual environment and the mitigation measures proposed to screen the intermodal terminal facility. This is described in further detail in **Section 13.3.1**.

- **Statutory Assessment Considerations** - an objective assessment methodology was utilised to determine the likely visual impacts of the proposed development. The built form design requirements are generally consistent with the requirements of the Liverpool Development Control Plan (DCP) 2008.

- **Management/Mitigation Measures** – the *Urban Design and Landscape Report* provides for the appropriate planning and orientation of development on the site, as well as integration of urban design elements and landscaping to mitigate and minimise any potential loss of visual amenity and integrate with the surrounding natural environment. The Statement of Commitments provide that the future detailed design of the proposed development will be undertaken in accordance with these requirements to avoid the proposal from having an unacceptable visual impact.

13.3 ASSESSMENT OF KEY ISSUES

13.3.1 VISUAL IMPACT

The *Visual Impact Assessment* has assessed the potential visual impacts arising from the built form that could be achieved in accordance with the site layout provided in the *Land Use and Staging Plans* (**Appendix D**) and the built form controls proposed within the *Urban Design and Landscape Report* (**Appendix E**).

A view shed analysis was undertaken using Geographic Information System (ArcGIS – Spatial Analysis Extension) to identify locations within the surrounding area that would have views of the proposed development. 40 key view locations were identified (refer to **Figure 21**) including 35 views of the SIMTA site and nine views of the rail corridor land. The existing views were inspected and photographed using a GIS Camera.

FIGURE 21 – KEY VIEW LOCATIONS USED IN VISUAL ANALYSIS

Source – Reid Campbell, 2011, Visual Impact Assessment, Figure 6 pages 18-19.

The potential visual impacts were assessed based on a digital three-dimensional model using AutoDesk REVIT that included the likely components of the development that would potentially be visible beyond the site. Views were generated of the model that matched the camera positions of the site photographs. The model photographs were combined with the site photographs to create simulated views of the proposal from each of the key viewpoints. Each viewpoint was then assessed using a range of visual impact criteria specific to the individual location. These criteria were broadly categorised into:

- **Visual Adaptation** – describes any significant changes to the landscape and visual amenity that is likely to occur as a result of the proposed development form a particular viewpoint.
- **Visual Sensitivity** – refers to the likely duration of views and number of observers from a given viewpoint and is independent of the 'prominence' of the proposed development.
- **Visual Impact** – a qualitative summary of the impact against the above criteria.
- **Light Spill** – expressed quantitatively in terms of light intensity.

The assessment recognised that the site has already been developed and its existing site character is essentially industrial, consisting of a number of large buildings used for warehouse and distribution purposes. Further, it was acknowledged that the existing site topography is generally flat with a low hill located within the middle section of the eastern boundary of the site. Besides secure perimeter fencing there is very little landscaping or other visual screening to shield operations from the public view and that of surrounding developments. The site is surrounded by expansive areas of natural dense bushland and other lands owned and occupied by the Department of Defence for industrial and military related uses. The next closest developments to the north of the site are also largely industrial. The closest residential areas are Wattle Grove to the north and east and Casula approximately 1km to the west across the Georges River.

The assessment concludes that the proposed development would generally be in keeping with the existing character of the area. Some structures/equipment may increase the visibility of the site beyond its current levels, however the pattern of the adjoining development will screen the development from much of the surrounding area. The most prominent views would occur at localised boundary points such as Moorebank Avenue and Anzac Road, as well as the residential boundary to Wattle Grove. However, these impacts are regarded as relatively low because of their existing and unobstructed views of the DNSDC operations which are reasonably compatible with the proposed SIMTA development. A summary of the potential impacts is provided in **Table 14**.

TABLE 14 – IDENTIFIED VISUAL IMPACTS

VIEW	LOCATION	VISUAL IMPACT
View 14	North of site, Corner of Yulong Close and Anzac Road	The proposed development would be highly prominent at this location from Anzac Road looking south onto the site. There is little to no visual sensitivity from this viewpoint as the viewpoint is within an already established industrial zone. Therefore there will be a low visual impact from this viewpoint.
View 15	North of site, Corner of Greenhills Avenue and Anzac Road	The landscape change from this viewpoint would be barely perceptible due to the viewing distance and the fact that new elements which would be potentially visible would be similar to the existing elements that they would replace in the view.
View 16	North-east of site, Anzac Road	The development would be relatively prominent at this location. The change in the landscape amenity coupled with the zoning in which the viewpoint is situated will make this visual impact moderate to high.
View 17	North-east of site, Castlerock Court,	The development would be relatively prominent at this location. The change in the landscape amenity together with

	Wattle Grove	the zoning in which the viewpoint is situated will make this visual impact moderate to high.
View 18	East of site, Martindale Court, Wattle Grove	The proposed development would be relatively prominent at this location. The change in the landscape amenity coupled with the zoning in which the viewpoint is situated will make this visual impact moderate to high.
View 30	South of site, Moorebank Avenue	The proposed development would be highly prominent at this location. There is little to no visual sensitivity from this viewpoint as the viewpoint is within an already established industrial zone. Therefore there will be a low visual impact from this viewpoint.
View 31	South of site, Moorebank Avenue	The proposed development would be highly prominent at this location. There is little to no visual sensitivity from this viewpoint as the viewpoint is within an already established industrial zone. Therefore there will be a low visual impact from this viewpoint.
View 32	West of site, Moorebank Avenue	The proposed development would be highly prominent at this location. There is little to no visual sensitivity from this viewpoint as the viewpoint is within an already established industrial zone. Therefore there will be a low visual impact from this viewpoint.
View 33	North-west of site, Moorebank Avenue	The proposed development would be highly prominent at this location. There is little to no visual sensitivity from this viewpoint as the viewpoint is within an already established industrial zone. Therefore there will be a low visual impact from this viewpoint.
R1	South of site, Moorebank Avenue (rail overpass)	The addition of the proposed railway line is not a substantial change to the existing landscape amenity. The visual impact at this location will be moderate.

The principal mitigation measures that are to be employed to reduce the visual impact of the SIMTA proposal comprises screen planting and visual buffers achieved from the land use layout across the site. These include:

- High quality landscaping throughout the site, which will reinforce and extend the surrounding natural context and ecological qualities into the site.
- Inclusion of an 18 metre wide corridor of screening vegetation and a bio-retention swale along the Moorebank Avenue frontage, which will utilise a selection of native tree species with dense tree canopy and low screen planting.
- Landscape punctuation of nodal points along Moorebank Avenue.
- A ‘boundary treatment’ or ‘buffer zone’ along the other site boundaries, consisting of existing local species in the area and providing an essential scale of planting to complement the built form, including:
  - Southern boundary: combination of 10 metre and 20 metre wide landscape corridors and a bio-retention swale adjacent to the warehouse and distribution facilities and Intermodal Terminal.

- Eastern boundary: total buffer zone of 13.5 metres consisting of 2.5 metre landscape corridor, a 6 metre internal light vehicle access road and a five metre wide bio-retention swale.

- Land cleared for the railway alignment will include planting consisting of tall trees with a height of 20 metres at Maturity, interspersed with medium height trees.

Overall, the assessment concludes that the proposed landscape treatments would reduce the visibility of the development and improve the overall visual amenity of the site and locality.

The light spill assessment was determined based on modelling a preliminary lighting concept that included Philips Optivision 2000 watt luminaries mounted on 40 metre poles at approximately 120 metre centres. The modelling showed that the 1 lux in residential dark surrounds during curfew hours is achieved approximately 150 metre from the light source. The nearest residential properties are approximately 400 metres away and accordingly, it was concluded that the impact of spill light to the residential properties will be well within the required criteria as specified in Australian Standard AS4282-1997 '*Control of the Obtrusive Effect of Outdoor Lighting*'. Further details regarding the assessment of light spill will be provided with each subsequent Project Application for development on the site.

13.3.2 DESIGN ANALYSIS AND JUSTIFICATION

The Concept Plan application seeks approval for the development of an intermodal terminal facility generally in accordance with the Land Uses and Staging Plans (attached as **Appendix D**). The detailed design for the intermodal terminal and warehouse buildings is to be undertaken in association with the preparation of the Project Applications for the individual future stages.

This will enable the detailed design to respond to current market demand and individual tenant needs. However, it is recognised that an appropriate level of certainty is required regarding the general siting and layout of the proposed facility to enable:

- Assessment of the appropriateness of locating an intermodal terminal facility at the nominated location.

- Facilitate the future construction and operation of the intermodal terminal facility in accordance with the agreed set of criteria to manage and/or mitigate its potential impacts.

Reid Campbell (and Hassell) has prepared an *Urban Design and Landscape Report* which addresses the key built form elements of the proposal (refer to **Appendix E**). While strict compliance with the LEP and DCPs is not necessary for development approval to be granted under Part 3A of the EPA Act, it is noted that the design principles proposed within the Urban Design and Landscape report are generally consistent with the local controls. These principles have been based on a comprehensive site analysis, a clear understanding of the project objectives and a core set of values, which are listed in the report as follows:

- **Responsive**: The design will be both responsive and sympathetic to the form, colours and textures of the natural and cultural character of the existing landscape. The SIMTA development will integrate with and improve the existing site character to form a high performance and quality development.

- **Community**: The development will include a provision for suitable and sufficient amenity which may be accessible by both the occupants and the public. This improved local amenity will incorporate landscaping, open and public spaces, water sensitive urban design and environmental features, creating a "sense of place" and conveying a feeling of community.

- **Considerate**: Landscape and urban treatments will be considerate of the need to provide visual and acoustic shielding in the form of vegetation, landform and structures. A positive visual, environmental and management relationship with adjoining lands will be reinforced.

- **Connectivity**: A suite of design instruments will connect the various SIMTA site precincts, including well defined landscaping, entry statements, newly constructed landforms and streetscape elements, signage, street furniture and other built elements.

- **Identity**: The urban design and landscape form will express the character of the development and communicate a strong and unique identity that complements the surrounding land uses.

The Urban Design Principles provide specific objectives, development controls and/or outcomes for a range of issues, including:

- Landscape
- Streetscape
- Road Network and Hierarchy
- Building Siting and Setbacks
- Building Heights
- Car Parking
- View Corridors
- Signage and Lighting
- Safety and Security
- Water Sensitive Urban Design

The Building and Estate Design Principles address:

- Building Design
- Building Materials and Colours
- Typical Distribution Warehouse
- Typical Cross-Dock Warehouse
- Typical Freight Village

The built form controls within the *Urban Design and Landscape Report* will achieve a satisfactory level of certainty with regard to the management and/or mitigation of the potential impacts identified within the Concept Plan, while providing an appropriate level of flexibility with regard to the delivery of the future buildings in accordance with market demand.

Each of the Urban Design and Building and Estate Design Principles has been considered in the assessment of the Concept Plan application, including the *Visual Impact Assessment* outlined in **Section 13.2** above. It is anticipated that these principles will also guide the future detailed design for the staged redevelopment of the site. An appropriate commitment has been included in the Draft Statement of Commitments to facilitate the preparation of future Project Applications in accordance with the *Urban Design and Landscape Report*.

13.4 POTENTIAL CUMULATIVE IMPACTS

The visual cumulative impact of both the SIMTA development and the potential redevelopment of the School of Military Engineering will be dependent on the design of the SME site, which is not yet available.

It is considered that the potential cumulative visual impact of the two proposals is likely to be affected by the Georges River rail crossing and the streetscape to Moorebank Avenue. The School of Military Engineering is directly adjacent to the Georges River and has the potential to be more visible from the west.

13.5 SUMMARY AND CONCLUSION

The *Visual Impact Assessment* undertaken by Reid Campbell has determined that the visual impact of the SIMTA proposal is relatively low, taking into account the existing DNSDC industrial buildings and the mitigation measures proposed to screen the intermodal terminal facility. The light spill assessment has demonstrated that the lighting can be designed to meet the relevant criteria and avoid detrimental impacts on the surrounding area. The *Urban Design and Landscape Report* provides a comprehensive design analysis that justifies the proposed built form elements that will guide the siting and layout of the proposed rail terminal, warehouse buildings and the ancillary facilities, including the freight village, internal circulation, car parking and the like.

The Draft Statement of Commitments incorporates mitigation measures to address the potential visual impacts. It also includes a commitment to the future design of the Project Approval applications in accordance with the built form controls within the *Urban Design and Landscape Report*.

14 Utility Servicing

14.1 OVERVIEW

The Director-General's Environmental Assessment Requirements for the SIMTA Concept Plan application include the following requirement:

> ***Utilities*** *– including but not limited to:*
>
> - *service demand, capacity and augmentation of existing and proposed utilities and infrastructure as a result of the project.*

A *Utility Strategy Report* has been prepared by Hyder and is attached in **Appendix X**. This report should be reviewed to understand the assessment in more detail, including consideration of the existing utility services for the site and the potential augmentation and adjustments to deliver the necessary utility servicing to support the SIMTA proposal.

14.2 ASSESSMENT METHODOLOGY

The assessment of the utilities servicing was based on the following methodology:

- **Existing Environment** – a review of the existing water, sewer, electricity, gas and telecommunications services currently available on the site (refer to **Section 14.3.2** and **Figure 22**).
- **Impact Assessment** - assessment of the likely impacts of the proposed future development, taking into account the forecast demands for water, sewer, gas, electricity and telecommunications and consultation with individual service providers (refer to **Section 14.3.3**).
- **Management/Mitigation Measures** – identification of the relevant infrastructure upgrades where required to meet the identified demands (refer to **Section 14.3.3**).

14.3 ASSESSMENT OF KEY ISSUES

14.3.1 SERVICE DEMANDS

The SIMTA Intermodal Terminal Facility will require an enhanced level of utility services to connect to the site. The identified utility services which will be required include:

- Water Servicing by Sydney Water
- Sewer servicing by Sydney Water
- Electricity supply by Integral Energy
- Gas supply by Jemena Gas Networks
- Telecommunication servicing by Telstra

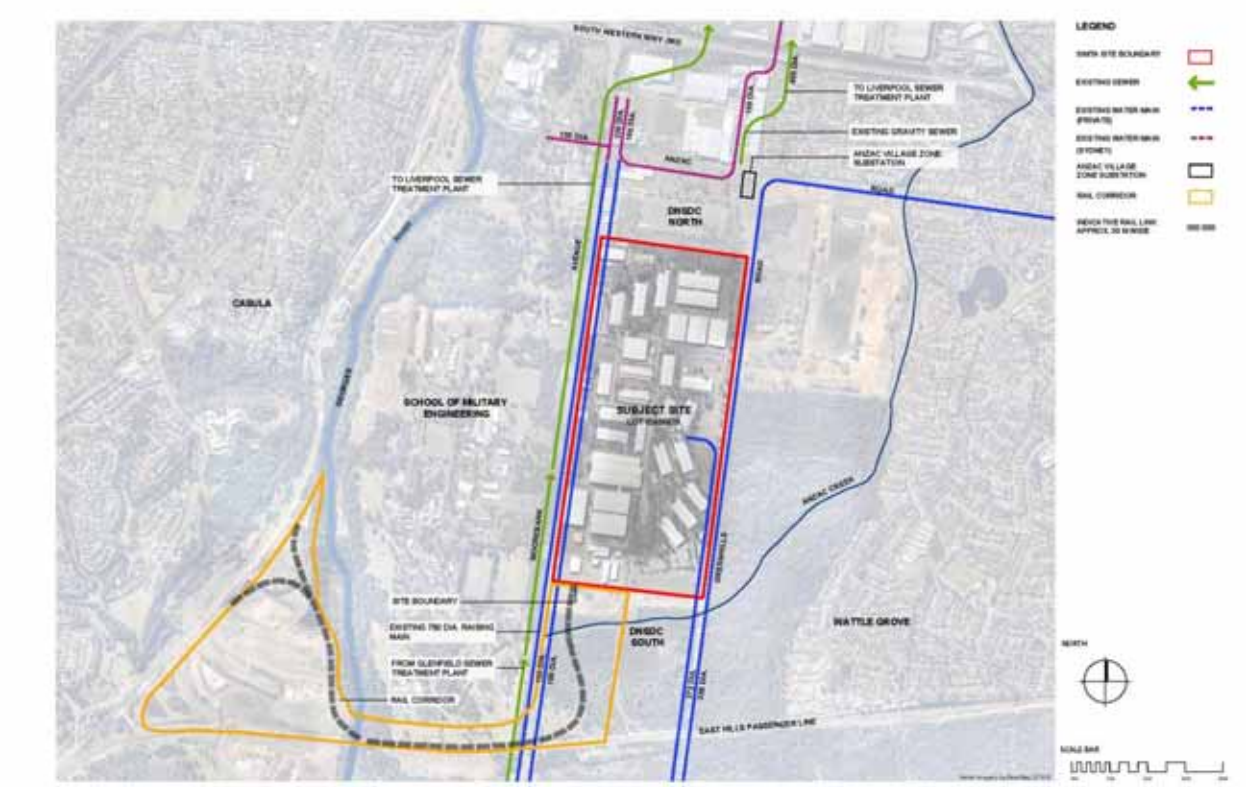
Each of these service providers was approached on service capacity and potential to accommodate future SIMTA utility demands. These responses are contained in the Appendices of the *Utility Strategy Report*.

14.3.2 CURRENT SERVICING CAPACITY AND LOCATIONS

Each of the utility service providers has provided information on capacity and location of existing assets within proximity of the site. The existing utility service capacities and locations are illustrated in **Figure 22** and as summarised below:

- **Potable Water** – the existing potable water services in the vicinity of the SIMTA site include both SWC owned and Department of Defence (DoD) owned assets including:
  - A SWC owned 500 millimetres diameter main in Heathcote Road.
  - A DoD owned 375 millimetres diameter lead in main from the above SWC asset, running in Anzac Road from the intersection with Heathcote Road to a booster pumping station in Greenhills Road reserve.
  - A DoD owned 300 millimetres diameter main runs from the booster pumping station along Greenhills Road reserve to two DoD owned storage reservoirs located 800 m south of the East Hills railway line.
  - A DoD owned 375 millimetres diameter ring main from the storage reservoirs which services existing DoD facilities in both the SIMTA site as well as the School of Military Engineering (SME) site on the western side of Moorebank Avenue. The Deposited Plan indicates that this main crosses the subject site via a formalised 7.5 metres wide easement for water supply.
  - A 150 millimetres diameter main on the west side and a 100 millimetres diameter main on the east side of Moorebank Avenue. Both are indicated as privately owned (DoD) on the Sydney Water network diagrams.
- **Sewer** – the SIMTA site is currently serviced by DoD owned wastewater infrastructure which discharges to the Liverpool sewerage system via SWC SPS 1094. The existing SWC sewer assets which form part of the Liverpool sewerage system in the vicinity of the SIMTA site include:
  - A 375 millimetres diameter gravity sewer in Greenhills Road reserve.
  - A 375 millimetres diameter gravity sewer in Moorebank Avenue.
  - A 300 millimetres diameter gravity sewer in Australia Avenue, Wattle Grove.
- **Electrical Supply** – an existing Integral Energy Zone Substation (Anzac Village Substation) is located at the corner of Anzac Road and the Greenhills Road reserve. The existing site is supplied as a high voltage customer (HC4391).
- **Gas** – Jemena has advised that they have the following assets in the area:
  - A 75 millimetres Nylon medium pressure natural gas main operating at about 210 kilopascal is located in Moorebank Avenue, adjacent to the site.
  - A High Pressure 1050 kilopascal steel network is located in Moorebank Avenue, to the north of the SIMTA site terminating at Bapaume Road.
- **Telecommunications** - existing Telstra assets are located in Moorebank Avenue and Anzac Road.

FIGURE 22 – CURRENT UTILITY SERVICE CAPACITY AND LOCATIONS (REID CAMPBELL 2011)



14.3.3 POTENTIAL CUMULATIVE IMPACTS

The proponents of the SIMTA and SME proposals will liaise with appropriate agencies to confirm the ongoing demands of the staged developments. Agencies will be consulted throughout the detailed design and construction process to accommodate the developments whilst minimising any disturbance upon the utility usage across the area.

14.3.4 AUGMENTATION OF EXISTING AND PROPOSED UTILITIES

Each of the utility service providers was approached in the preparation of this Environmental Assessment to identify capability of utility facilities to service the SIMTA proposal, and identify where augmentation to existing utility infrastructure would be required. Their responses are summarised as follows:

- **Potable Water** - Sydney Water advised on 21 October 2010 that it has sufficient capacity within the Liverpool water system to service the development. Further, Sydney Water advised that the water supply for the SIMTA proposal would be from the existing 500mm water main at the corner of Anzac Road and Heathcote Road.

- **Sewer** - Sydney Water also advised on 21 October 2010 that it will permit the transfer of flow from the SIMTA site and for a future connection to a Sydney Water sewer. However, the SIMTA proposal will require an extension to the existing SWC sewer network, which will be determined during the design development of subsequent Project Applications requiring the approval of Sydney Water. This servicing option may involve an extension of an existing gravity main or construction of a new pumping station and associated rising main.

- **Electrical Supply** - Integral Energy has advised that they are able to provide supply from the existing Anzac Village Substation. Servicing of the SIMTA site will require the disconnection of the existing High Voltage supply, and the SIMTA proposal will be supplied as a 'low voltage tariff customer'. The service will be supplied via two new 11kV feeders, each comprising two 11kV 240mm2 copper cables from Anzac Village Zone Substation. As the SIMTA proposal will be developed in stages, the new electrical feeds will also be staged, which will service both sides of the site.

- **Stage 1** – install new feeds along Anzac Road and Moorebank Avenue to the southern end of the site.

- **Stage 2** – Install new feed in Greenhills Avenue.

- **Gas** - Jemena has advised there are two options for providing gas servicing to the site:

  - The 75mm main in Moorebank Avenue is suitable for light commercial applications and a connection can be provided at any location along the length of the site to suit the development.

  - The high pressure main at Bapaume is capable of supplying an alternative energy source such as co- or tri-generation.

- **Telecommunications** - verbal confirmation has been obtained from Telstra that the site can receive the necessary telecommunication servicing.

- **AGL Upstream Investments** - AGL Upstream Investment holds an exploration license for Coal Seam Gas over the SIMTA site. As part of the *Utilities Strategy Report*, Hyder approached AGL Upstream Investments to determine if this can be relinquished.

14.4 SUMMARY AND CONCLUSION

Based on the outcome of the investigations undertaken in the preparation of the *Utilities Strategy Report*, it is evident that all required utility services can be connected to the site to a sufficient scope to support the proposed SIMTA Intermodal Terminal Facility. The required augmentation and upgrading of existing utility services is included in the Draft Statement of Commitments.

15 Assessment of Additional Issues

15.1 OVERVIEW

In addition to the above issues listed within the DGRs, a number of additional issues were identified during the preparation of the Environmental Assessment that also warranted detailed consideration to determine their potential environmental impact. These issues include:

- Health Impacts
- Economic Impacts
- Climate Change
- Ecologically Sustainable Development (ESD)
- Waste Management

Each of the above matters is addressed within the following sub-sections of the Environmental Assessment and within the specialist reports that are submitted with the Concept Plan application.

15.2 HEALTH IMPACTS

A *Screening Level Health Risk Assessment* was prepared by Toxikos and is attached in **Appendix I**. The report assesses the health impacts associated with airborne particulates, and predictively evaluates the impacts of the proposed SIMTA Intermodal Terminal Facility on air quality of the surrounding residential areas.

The assessment was prepared in consultation with the Department of Health, focusing on the relationship between air quality and human health. The assessment considers a range of health-related issues include:

- Social and economic wellbeing
- Work-life balance
- Amenity
- Environment
- Physical health and wellbeing

The estimations of exposure applied within the *Screening Level Health Risk Assessment* are derived from the *Air Quality Assessment* prepared by PEA Holmes (**Appendix J**). As the final development design, layout and operational details do not form part of the Concept Plan application, the methodology has adopted conservative air quality predictions and precautionary principles. These are likely to generate results which are a 'worst case scenario' and lean towards protecting public health.

The potential health risks of two scenarios are assessed:

- **Scenario 1: The 'Incremental' Scenario** – assessing the emissions generated by freight movements related to the SIMTA proposal only.
- **Scenario 2: The 'Cumulative' Scenario** – combined assesses the health impacts from the existing air quality conditions and emissions from the SIMTA proposal.

The assessment concludes that the SIMTA proposal does not represent a significant acute or chronic health risk either individually or cumulatively. This conclusion is based on following key findings of the *Screening Level Health Risk Assessment*:

- *Acute or chronic direct health effects are unlikely to result from the emissions associated with the SIMTA proposal.*

- *The emissions of major importance for possible health effects are fine particulate matter (PM2.5).*

- *Nitrogen dioxide does not contribute to the overall acute or chronic health risk estimated from the SIMTA proposal.*

- *Predicted PM10, PM2.5 or NO2 emissions released from the SIMTA proposal would have a negligible impact on the surrounding area, either on their own or in combination.*

- *Based on the available data and the substances that have been assessed, there is a low likelihood for cumulative acute or chronic health effects.*

- *Individual concentrations of NO2 and PM10 and for the most part PM2.5 are each below their respective health guideline thresholds.*

- *On rare occasions the accumulation of particulate matter and NO2 (mainly related to PM) can exceed the combined standards, however, this does not indicated probable or imminent health impacts.*

15.3 ECONOMIC IMPACTS

An *Economic Assessment* has been prepared by Urbis and is attached in **Appendix N**. The report assesses the existing freight rail infrastructure across Sydney, as well as the demographic and employment profile of the Liverpool LGA and the South-West Subregion. The demographic and employment analysis of the Liverpool LGA identified:

- 57% of the population fall within the key working age group of 20 to 59 years, consistent with the Sydney average.

- Household incomes are 23% below the Sydney average.

- The Subregion has a higher than Sydney average proportion of labourers, machinery operators and drivers, and technicians and trades workers.

- Key employment industries are: Manufacturing; Retail trade; Construction; and Transport, postal and warehousing. These count for 44% of employment, which is above the Sydney average.

- Approximately 28% of Liverpool LGA residents work in the LGA.

This demographic study indicates that jobs that would be created by the intermodal terminal facility at Moorebank would largely fall within occupational categories which are matched to the employment profile of the local population. There is a demand for employment opportunities in the LGA, which has just 0.72 jobs available per person in the labour force, with only the South and North Subregion having lower local job prospects.

The key economic impacts of the SIMTA proposal are considered to be positive. These are listed in the *Economic Assessment* (page iii) as follows:

- *850 direct and indirect jobs per annum over the six year construction period, or a total of 5,100 one year full time equivalent jobs over the full six year construction period.*

- *7,100 ongoing direct and indirect jobs during once the facility is fully operational.*

- *Reduction in the volumes of heavy vehicle movements along the M5 corridor in the order of 2,700 movements per day.*

- *Reduction in truck vehicle kilometres travelled of approximately 13 million kilometres per annum across the whole Sydney Metropolitan Network by 2031. This compares to a relatively small gain in train kilometres travelled of approximately 332,000 kilometres in 2026 once SIMTA has reached its estimated capacity of 1 million TEU.*

- *Net travel time savings of approximately 530,400 hours per annum, resulting in labour cost savings to businesses in the order of $18.6 million per annum ($2011). Over a 20 year period, this could generate savings with a net present value in the order of $213 million (based on a 6% discount rate on an un-escalated basis).*

- *Net carbon dioxide emissions savings associated with the SIMTA development as opposed to an alternative development on the site consistent with the Liverpool Local Environmental Plan 2008 is estimated at 43,206 tCO2e per annum. Based on the commencing value of the Federal Government's proposed Carbon Tax at $23 per tonne (fixed for the first three years), this would result in carbon tax savings to businesses of approximately $994,000 per annum once the Moorebank Intermodal Terminal reaches full capacity of 1 million TEU. Over a 20 year period on a non-escalated basis (assuming a discount rate of 6% per annum), this saving would result in a net present value of approximately $11.4 million.*

Overall, it is considered that the proposed SIMTA Intermodal Terminal Facility will provide employment and economic benefits for the Liverpool LGA, the South West Subregion, and the Sydney Metropolitan Area.

15.4 CLIMATE CHANGE

While climate change was not specifically listed as a key issue within the DGRs, it is considered to be a relevant environmental concern requiring consideration as part of the assessment of the Concept Plan application. Accordingly, Hyder was engaged to prepare a *Climate Risk Assessment* (CRA) (refer to **Appendix H**), including assessment of possible severe weather events associated with climate change.

A desktop qualitative risk assessment was undertaken to determine risks posed by historical climate and projected climate change impacts for the SIMTA proposal. The objective of the assessment was to assess whether the site would deliver required minimum levels of service throughout the entire design period, having regard to the selection of appropriate materials and design of all structures.

The CRA established the current climate regime based on historical weather data obtained from the Bureau of Meteorology (BOM) Bankstown Airport weather station for rainfall, temperature, humidity and wind speed. Based on records collected since 1968, the key characteristics of the local climate are:

- Highest average rainfall is in February (439.8mm).

- The highest daily rainfall event was in February 1990 with 439.8mm being recorded.

- The lowest rainfall months being July and September (44.6 mm)

- The average maximum temperature ranges between 17.2°C and 28.1°C.

- The highest recorded maximum at the weather station was 44.8°C recorded on 18 January 2003.

- Mean wind speeds generally do not exceed 25 km/h at 9am or 3pm.

- Relative humidity in the area typically ranges between 45% and 80%.

The local climate characteristics were considered with regards to the potential natural hazards associated with climate change. The principal climate change risks and potential implications associated with the SIMTA proposal were identified as follows:

- Flooding in the southern portion of the SIMTA site and within the rail corridor, particularly the eastern, central and western areas.

- Bushfire impacts along the eastern, southern and western boundaries of the proposal site and parallel to the rail link.
- Hail, lightening and wind associated with severe thunderstorms causing damage to infrastructure and structures.
- Heatwaves causing occupational health and safety issues as well impacts on machinery and equipment.

The potential climate change risks associated with the SIMTA proposal were assessed and the priority risks identified for mitigation measures to be developed for both construction and on-going operation of the SIMTA proposal. The adaptation actions for mitigation of priority climate change risks are shown in **Figure 23** below.

FIGURE 23 – ADAPTATION ACTIONS FOR MITIGATION OF PRIORITY CLIMATE CHANGE RISKS

Risk	Risk Rating	Adaptation Measure	Residual Risk*
Flooding of buildings and infrastructure causing higher maintenance costs and reduced asset lifecycle	High	Incorporate climate change sensitivity analyses for 20 per cent increase in peak rainfall and storm volumes into flood modelling assessment to determine system performance	Moderate
	High	Incorporate appropriate flood mitigation measures, where practical within the design to limit the risk to acceptable levels	Low
Flooding of rail infrastructure located within Anzac Creek sub-catchment causing declines in serviceability due to operational impacts	High	Consider the impacts of climate change on system performance, and where practical incorporate adaptive capacity measures within the design to limit the risk to acceptable levels.	Low
Flood management structures are not designed to cope with future rainfall patterns leading to flood damage	High		Low
Storm damage to structural enhancements / add-ons to buildings	High	Use of appropriate materials and engineering design capable of withstanding potential impacts posed by storm damage	Low
Increased heatwave frequency resulting in rail line buckling from sudden temperature rises causing higher maintenance costs and reduced asset life	High	Maintain track stability through regular maintenance, use concrete sleepers in place of wooden ones and use preventative measures in the event of heatwaves e.g. speed restrictions	Moderate
Increased operating costs due to higher carbon pricing	High	Consider further assessment of marginal abatement cost curves to assess commercial opportunities of reducing reliance on single energy source	Moderate

Source – Hyder, 2011, Climate Risk Assessment, Table 12, pages 28-29.

Appropriate mitigation measures have been adopted in the Draft Statement of Commitments to facilitate their delivery in the future staged Project Approval applications.

15.5 ECOLOGICALLY SUSTAINABLE DEVELOPMENT (ESD)

Similar to climate change, it was considered important that Ecologically Sustainable Development (ESD) measures be addressed so that the SIMTA proposal minimises environmental impacts and emissions during its construction and on-going operation.

ESD opportunities exist across the life of the SIMTA proposal through the design, construction, operation, maintenance and decommissioning phases. At each stage the primary opportunities are in energy and water conservation and waste minimisation and resource recovery, as summarised in **Table 15** below.

TABLE 15 – ECOLOGICALLY SUSTAINABLE DEVELOPMENT OPPORTUNITIES

SOURCE	ESD OPPORTUNITY
Energy	▪ The main objectives are to reduce energy demand and GHG emissions. There are two aspects to reducing energy demands - reducing gross energy demands for the site, or a portion of it, and reducing demands during peak times. ▪ This can be achieved through the utilisation of self-generated energy during peak times, through shift time adjustments and scheduling or through selection of energy efficient equipment being utilised preferentially during peak demand times. ▪ Reduction in reliance on non-renewable energy sources is a key outcome.
Water	▪ The main objectives are to reduce water demand and water losses and maintain hydrological flow regimes. ▪ There are two aspects to reducing water demand - reducing potable water demand and reducing water demand across site facilities through water efficient technologies. ▪ Reducing water losses can be achieved through the adoption of water efficient systems and processes and conservation of on-site water resources.
Waste	▪ The main objectives are to reduce waste generated on-site and ultimately reducing the amount of waste leaving the site to landfill in addition to efficient resource recovery. ▪ Reducing waste would be achieved through a combination of design elements and management policy (e.g. procurement strategies).

The SIMTA proposal provides opportunities for beneficial impacts through the adoption of innovative design and management practices that provide local and regional benefits aligned with the principles of ESD and other sustainability performance indicators, such as those identified by the Global Reporting Initiative and SIMTA's commitment to reduce environmental impacts and seek to improve standards set under planning and environmental controls.

Three core groups of ESD initiatives have been identified that would be implemented across the construction, operation and decommissioning stages of the SIMTA proposal. These are categorised as:

- Site management policies and strategies.
- Materials selection and energy and water demand management.
- On-site renewable energy generation.

The combination of these initiatives will contribute to the sustainable management of the SIMTA proposal and will contribute to minimising its ecological footprint. Further, it is considered that there are regional ESD benefits associated with the shift toward rail freight over current road vehicle transportation, reducing traffic in the Port Botany area and resulting in an increase in local employment opportunities.

15.6 WASTE MANAGEMENT

Waste management has been considered to identify re-use opportunities at the demolition and construction phases and minimise long-term environmental issues deriving from landfill. A *Waste Management Strategy* (WMS) has been prepared by Hyder and is contained in **Appendix Y**.

The WMS identifies the types of waste and materials that will be produced at each phase of the development. The waste management and minimisation strategy is summarised in Table 3 of the WMS and as reproduced below as **Table 16**.

TABLE 16 – SUMMARY OF WASTE MANAGEMENT AND MINIMISATION STRATEGIES

DEMOLITION WASTE	CONSTRUCTION WASTE	OPERATIONAL WASTE
▪ Re-use of material will have priority over recycling ▪ Recycling will have priority over disposal ▪ Selection of reputable waste removal contractors who will guarantee that recyclable material will be recycled and will provide any relevant certificates ▪ Vegetation removed shall be either preserved for use in the new development, or mulched for inclusion in landscaping activities. The remainder will be sent to a composting facility ▪ Excavated earth will be used for infill and landscaping where feasible, the remainder will be sent to a recycling facility ▪ Asphalt will be re-used by transferring it to a batching plant or using it as a base layer for access roads ▪ Concrete components will, where possible, be crushed and re-used on site, the remainder will be sent to a recycling facility ▪ Fuel and oil storage from demolition machinery will be secured and managed responsibly within compound sites during works, and removed upon completion of works ▪ Sewage waste shall be disposed of by a licensed waste contractor in accordance with Sydney Water and OEH requirements	▪ Reduce potential waste by ordering the correct quantities of materials ▪ Coordinate and sequence trades people to minimise waste ▪ Prefabricate materials where possible ▪ Use modular construction and basic designs to reduce the need for off-cuts ▪ Re-use formwork ▪ Re-use or recycle materials from the demolition phase ▪ Separate off-cuts to facilitate re-use, resale or efficient recycling ▪ Minimise site disturbance and limit unnecessary excavation ▪ Select landscaping which reduces green waste ▪ Select waste removal contractors to guarantee that recyclable waste are recycled ▪ Engage with the supply chain to supply products and materials that use minimal packaging ▪ Set up schemes with suppliers to take back packaging materials ▪ Sewage waste shall be disposed of by a licensed waste contractor in accordance with Sydney Water and OEH requirements	▪ Appropriate areas shall be provided for the storage of waste and recyclable material ▪ Standard signage on how to use the waste management system and what materials are acceptable in the recycling will be posted in all waste collection and storage areas ▪ All domestic waste shall be collected regularly and disposed of at licensed facilities ▪ Waste collection vehicles will be able to service the development efficiently and effectively ▪ An education programme and on-going monitoring will be implemented for training personnel to properly sort and transport waste into the right components and destinations ▪ Sewage waste will be disposed of by a licensed waste contractor in accordance with Sydney Water and OEH requirements ▪ Trade waste will be discharged to the sewer through a trade waste agreement with Sydney Water

The WMS concludes the mitigation measures outlined in the strategy will achieve best practice waste reduction, waste minimisation and waste management for the SIMTA Intermodal Terminal Facility and help reduce development waste sent to landfill. The recommendations of the Strategy have been adopted in the draft Statement of Commitments.

16 Environmental Risk Analysis

The Director-General's Environmental Assessment Requirements for the SIMTA Concept Plan application include the following requirement for an Environmental Risk Analysis to be undertaken as for the SIMTA proposal as part of the environmental assessment:

> ***Environmental Risk Analysis***
>
> *Notwithstanding the above key assessment requirements, the EA must include an environmental risk analysis to identify potential environmental impacts associated with the project, environmental performance criteria and development standards and other mitigation measures, and any significant residual environmental impacts. Where additional key environmental impacts are identified through this environmental risk analysis, an appropriately detailed assessment of this key environmental impact must be included.*

An *Environmental Risk Assessment* (attached in **Appendix Z**) was undertaken to identify and assess the potential environmental impacts associated with the SIMTA proposal and assign a risk ranking to each of those impacts. Mitigation measures to ameliorate those risks that are proposed in the preliminary environmental assessment specialist studies are discussed and a residual risk ranking assigned. The ERA concludes that with the application of the proposed mitigation measures, no environmental aspect is ranked as 'Very High' and accordingly, there are no unacceptable risks associated with the project.

The risk ranking for the key environmental issues listed in the DGRs is based on the risk analysis categories and criteria illustrated in **Figure 24** below, and are assessed before and after the control measures are applied.

FIGURE 24 – RISK ANALYSIS CATEGORIES AND CRITERIA (HYDER)

Likelihood	Consequence				
	1 – Not significant	2 - Minor	3 – Moderate	4 – Major	5 - Severe
A - Almost certain	Moderate	Moderate	High	Very High	Very High
B – Likely	Low	Moderate	High	Very High	Very High
C – Possible	Low	Low	Moderate	High	High
D – Improbable	Low	Low	Low	Moderate	Moderate
E – Rare	Low	Low	Low	Low	Moderate

The risk category is determined on the basis of consideration of the likelihood of an impact occurring and the consequences of the impact occurring. The criteria for evaluating likelihood and consequence are outlined in the following figures.

FIGURE 25 – CRITERIA FOR EVALUATING LIKELIHOOD (HYDER)

Level	Descriptor	Description	Frequency Of Occurrence
A	Almost Certain	Is expected to occur in most circumstances	Once per month
B	Likely	Will probably occur in most circumstances	Between once a month and once a year
C	Possible	Might occur at some time	Between once a year and once in 5 years
D	Unlikely	Could occur at some time	Between once in 5 years and once in 20 years
E	Rare	May occur in exceptional circumstances	Once in more than 20 years

FIGURE 26 – CRITERIA FOR ESTABLISHING CONSEQUENCE (HYDER)

Level	Category	Safety	Financial	Operational
1	Not Significant	No medical control	<$250,000	< 6 hours track closure or disruption to facility operations
2	Minor	Lost time injury occurs or medical control required	≥ $250,000 but less than $2,000,000	≥ 6hrs but less than 24 hrs track closure or disruption to facility operations
3	Moderate	Serious injury occurs	≥ $2M but less than $10M	≥ 24 hrs but less than 48 hrs track closure or disruption to facility operations
4	Major	Single fatality occurs	≥ $10M but less than $50M	≥ 2 days but less than 5 days track closure or disruption to facility operations
5	Severe	Multiple but localised fatalities occur	≥ $50M	≥ 5 days track closure or disruption to facility operations

Each of the potential environmental impacts was initially ranked between low and very high based on the environmental impacts that could potentially result if the issue was un-mitigated. Following the initial risk ranking, the environmental impacts were assigned a second risk ranking to indicate the risk following implementation of the control measure(s).

A summary of the risk analysis undertaken for each of the environmental aspects is provided on the following pages. The results present the outcome of the assessment of the perceived impacts, proposed control measures, and any residual impacts that may result. Overall, the report concludes that the proposed mitigation measures will result in no unacceptable risks.

Issue	DGR key issue?	Potential impacts	Risk ranking before control measures applied	Control measures	Residual impacts	Risk ranking after control measures applied	Reference
Transport and access	Yes	Increased traffic on proposed local road and rail routes.	H	• A detailed Transport and Accessibility Impact Assessment along with a Traffic Management Plan would be drafted to present likely impacts of the works and recommendations on management practices to be implemented accordingly. • Strategic and project modelling would be undertaken to inform decisions on appropriate control measures to be prepared and implemented (e.g. access and intersection upgrades where required). • An assessment of the road and rail infrastructure quality would be undertaken to determine capacity to handle increased traffic.	Yes	H	N/A
		Decrease in quality of local road and rail infrastructure.	M		None	L	
Noise and vibration	Yes	Increased noise and vibration levels upon adjoining receivers during construction (including nearby residential areas of Moorebank, Wattle Grove and Casula and sensitive land uses).	H	• A Construction Noise and Vibration Management Plan would be prepared and implemented to include the appropriate control measures to avoid, reduce and manage noise emissions and vibration.	Yes	M	Noise and Vibration Assessment

Issue	DGR key issue?	Potential impacts	Risk ranking before control measures applied	Control measures	Residual impacts	Risk ranking after control measures applied	Reference
		Increased noise and vibration caused by locomotive movements once SIMTA proposal is operational.	H	• An Operational Noise and Vibration Management Plan would be prepared and implemented to include the appropriate control measures to avoid, reduce and manage noise emissions and vibration.	There may be intermittent residual impacts during adverse weather conditions, i.e. overcast, low pressure or wind direction.	M	
Biodiversity	Yes	Permanent loss of threatened aquatic (including groundwater dependent) fauna and flora species habitat due to installation of infrastructure (e.g. bridge and rail link).	M	• Implementation of design principles for maintaining fish friendly passage. • Implementation of construction and operation management plans for maintenance of structures in riparian and aquatic zones.	Yes	L	Flora and Fauna Assessment
		Permanent loss of threatened fauna and flora species due to installation of infrastructure (e.g. bridge and rail link).	M	• The route of the proposed rail link should be designed to minimise potential impacts on the populations of *Persoonia nutans* and *Grevillea parviflora* subsp. *parviflora* in the study area. • Construction and operation activities to be undertaken in accordance with a Flora and Fauna Management Plan within CEMP and OEMP respectively.	Yes	L	
		Inadvertent removal and/or modification of areas containing populations, endangered ecological communities and/or critical	VH	• Endangered Ecological communities and known locations of threatened flora species would be avoided where possible.	Yes	H	

Issue	DGR key issue?	Potential impacts	Risk ranking before control measures applied	Control measures	Residual impacts	Risk ranking after control measures applied	Reference
		habitat (including the Cumberland Plain Woodland).		• High visibility plastic fencing is to be installed to clearly define the limits of the construction works area so as to not encroach on EEC and locations of threatened flora species.			
		Inadvertent removal and/or modification of native and threatened flora. Vegetation clearing (including riparian areas and loss and fragmentation of foraging, nesting and roosting areas.	VH	• Vegetation would be cleared only where required and outlined for the SIMTA proposal. • A Vegetation Management Plan (VMP) would be prepared prior to construction of the rail corridor, detailing restoration, regeneration and rehabilitation of areas of native vegetation in the vicinity of the proposed rail corridor. • The VMP would detail appropriate management for the potential habitat of threatened plant species in the study area, including monitoring during and after construction works to enable potential impacts to be minimised. Appropriate management may include fencing the habitat, signage and educating contractors of the presence of habitats, its significance and no-go zones. • The VMP should be integrated with the landscape plan for the SIMTA proposal. • A Soil and Water Management Plan would be prepared and implemented	Yes. A biodiversity offset strategy may be negotiated with Department of Premier Cabinet – Office of Environment (OEH) for unavoidable impacts.	H	

Issue	DGR key issue?	Potential impacts	Risk ranking before control measures applied	Control measures	Residual impacts	Risk ranking after control measures applied	Reference
				that would include appropriate soil erosion and sedimentation control measures for both construction and operation.			
		Loss of hollow bearing trees and fauna habitat.	H	• Important fauna habitat features, such as large hollow bearing trees, would be avoided where possible. • Fauna microhabitat such as logs would be removed from areas to be cleared and relocated to suitable nearby bushland areas (where practicable) in the presence of an ecologist. Strategic removal of hollow-bearing trees. • Installation of nest boxes would be considered in woodland vegetation in the rail corridor that may offer alternative nesting habitat to hollow-dependent species recorded in the study area	Yes	M	
		Loss of biodiversity due to bushfire.	M	• Hot work not to be undertaken on declared total fire ban days. • Vehicles and plant should not block fire trails. • Bushfire awareness included in staff induction and in toolbox talks pre-commencement. • Construction and operation phases would be conducted in accordance with bushfire response and emergency	Yes	L	

Issue	DGR key issue?	Potential impacts	Risk ranking before control measures applied	Control measures	Residual impacts	Risk ranking after control measures applied	Reference
				procedures and hazard reduction activities would be undertaken where endorsed by the RFS.			
		Loss of biodiversity due to changes in hydrological function of the SIMTA site, in particular the Castlereagh Swamp Woodland community.	M	• Design of on-site water retention to facilitate discharges to receiving waterways matching pre-construction discharges. • Installation of appropriate drainage infrastructure (e.g. sediment basins), sediment and erosion controls to manage surface waters. • Bio-retention installed in base of channels and swales proposed to capture and store stormwater. This will consist of bio-filtration layers, planting and subsoil collection and drainage.	No	L	
		Loss of biodiversity due to weed infestation.	M	• CEMP would include requirements for washdown of equipment prior to entering site to remove seed and plant material. • A weed control program is recommended as part of the conservation management of the retained vegetation. • Ongoing monitoring for identification of weed outbreaks and treatment where required. • Any imported soils or earth materials to site would be classified and certified as	Yes	L	

Issue	DGR key issue?	Potential impacts	Risk ranking before control measures applied	Control measures	Residual impacts	Risk ranking after control measures applied	Reference
				weed free prior to acceptance on site.			
		Loss of fish habitat and passage.	M	• Design and construction of rail crossings over Anzac Creek and Georges River to be in accordance with Fish Passage Requirements for Waterway Crossings (Fairfull and Witheridge 2003). • Installation of appropriate drainage infrastructure (e.g. sediment basins), sediment and erosion control to prevent degradation of aquatic habitat.	Yes	L	
Riparian	Yes	Alteration of Anzac Creek / Georges River flow regime effecting water quantity and quality.	L	• Development of the rail link across Anzac Creek and Georges River will comply with the required riparian corridor setbacks. Approval will be sought to undertake works within riparian corridors. • The following mitigation strategies would be adopted during construction to ameliorate impacts on riparian zones: • A Soil and Water Management Plan would be prepared and implemented that would include appropriate soil erosion and sedimentation control measures for both construction and operation. This will be defined through the preparation of a construction environmental management plan.	No	L	Riparian Assessment
		Loss of riparian biodiversity.	M		Yes	L	
		Removal of riparian vegetation for purposes of waterway crossings.	VH		Yes	M	
		Introduction of hazardous materials into watercourse as a result of spills.	H		Yes	M	

Issue	DGR key issue?	Potential impacts	Risk ranking before control measures applied	Control measures	Residual impacts	Risk ranking after control measures applied	Reference
				• Areas of disturbance would be progressively developed to reflect the need of progressive construction. Areas would be rehabilitated and stabilised as soon as possible following construction. • Potentially hazardous activities would be conducted in accordance with industry standard practice environmental protection measures and in areas isolated from stormwater drainage systems or natural watercourses. • An OEMP would be prepared and implemented to address monitoring and maintenance of riparian vegetation and water and sediment control structures.			
Bushfire	Yes	The SIMTA site has the potential to increase bushfire frequency.	M	• Future design stages of the SIMTA proposal will be undertaken in accordance with the management principles identified in *Planning for Bushfire Protection* (NSW RFS, 2006b). • A Bushfire Management Plan would be developed for both the construction and operational phases of the SIMTA proposal.	None	L	Hazards and Risks Assessment
		Increased risk of bushfire ignition from rail corridor activities.	M		None	L	
Hazards and risks (storing and handling	Yes	Pressure explosion. Fire.	H	• A preliminary hazard assessment would be progressivley undertaken in accordance with State Environmental	None	L	Hazards and Risks

Issue	DGR key issue?	Potential impacts	Risk ranking before control measures applied	Control measures	Residual impacts	Risk ranking after control measures applied	Reference
dangerous goods on site)		Health hazard to humans.		Planning Policy No. 33 – Hazardous and Offensive Development as required as tenancy of the SIMTA site is determined. • All tenants would be required to sign onto the SIMTA site's Hazardous Material Management Plan which will adopt the Code of Practice for storage and handling of dangerous goods (WorkCover NSW, 2005) as a minimum.			Assessment
Contamination	Yes	Contaminated land. Natural soil constraint - including potential acid sulphate soils (PASS).	**M**	• A Phase 2 and 3 Environmental Site Assessment to be undertaken at five sites identified by Golders Associates Pty Ltd as potentially contaminated. • Where required, a remedial action plan would be prepared and an approval sought under State Environmental Planning Policy No. 55 – Remediation of land. • The Soil and Water Management Plan would include the appropriate measures to control associated impacts of remediation areas.	None	**L**	Hazards and Risks Assessment Phase 1 Environmental Site Assessment
Stormwater and flooding	Yes	Regional and local hydrological impacts including: • Effects on flood characteristics on and off the SIMTA site.	**M**	• Stormwater detention facilities would be designed to limit peak discharges for a range of storm durations to no greater than under existing conditions. • Water sensitive urban design measures would be incorporated in to the site	None	**L**	Stormwater and Flooding Environmental Assessment

Issue	DGR key issue?	Potential impacts	Risk ranking before control measures applied	Control measures	Residual impacts	Risk ranking after control measures applied	Reference
		• Loss of operations of the SIMTA proposal due to flooding. • Structural damage to railway line resulting to loss of serviceability/freight access to site.		design including the use of large open swales and channels and rainwater tanks.			
		Reduced surface water and stormwater quality.	M	• A Soil Water and Management Plan and Water Sensitive Urban Design would be drafted. The plan would confirm the engineered design solutions to minimise associated impacts upon surface and stormwater quality.	None	L	
		Increased erosion during construction (on and off the SIMTA site).	H	• An Erosion and Sediment Control Plan (ESCP) would be developed and implemented to include the appropriate control measures to minimise impacts upon water quality.	None	L	
Air quality	Yes	Increased air pollution (particulate matter, NO2, CO and ozone) from the construction of the SIMTA site.	VH	• An Air Quality Management Plan would be prepared and implemented to include appropriate control measures during the construction and operation phases, including control of dust and other particulate emissions.	Yes	M	Air Quality Impact Assessment
		Increased air pollution due to increased locomotive movements during operation (particulate matter, NO2, CO	VH		Yes	M	

Issue	DGR key issue?	Potential impacts	Risk ranking before control measures applied	Control measures	Residual impacts	Risk ranking after control measures applied	Reference
		and ozone).					
Greenhouse gas	Yes	Increase in greenhouse gas emissions as a result of construction and embodied emissions in materials used.	H	• A Greenhouse Gas Management Plan would be developed and implemented to include appropriate control measures during the construction and operation phases of the SIMTA proposal. This will include selection of materials to minimise embodied greenhouse gases.	Yes	M	Greenhouse Gas Assessment
		Potential net increase in direct greenhouse gas emissions as a result of operation	L	• The transfer of freight movements from road to rail will result in a decrease in transport related GHG emissions.	None	L	
Heritage	Yes	Damage and/or destruction of Aboriginal heritage items of significance.	H	• A management strategy for Aboriginal Heritage would be appropriate control measures during the construction and operation phases. This would include consideration of consultation requirements and process for managing any identified Aboriginal items uncovered during construction and operation.	None	L	Non-Indigenous Heritage Assessment Aboriginal Cultural Heritage Assessment
		Damage and/or destruction of European heritage items of significance.	H	• Further archaeological investigation would be undertaken in the area designated as having good archaeological potential if it is to be impacted by the SIMTA proposal. • A Statement of Heritage Impact should be prepared for the Glenfield Farm during the staged project application for	None	L	

Issue	DGR key issue?	Potential impacts	Risk ranking before control measures applied	Control measures	Residual impacts	Risk ranking after control measures applied	Reference
				the rail link. • A Heritage Management Plan would be drafted in consultation with the Australian Heritage Council and the State heritage council			
Visual and urban design	Yes	Change in visual character of the SIMTA site and rail corridor.	M	• A landscape management plan will be developed and implemented to reinforce the surrounding natural context and ecological qualities of the SIMTA proposal. • Along the site boundaries, a landscape treatment consistent with existing local species in the area would be applied to provide an essential scale of planting to complement the developments built forms.	None	L	Visual Impact Assessment
Utilities	Yes	Increase on service demand, capacity and augmentation of existing and proposed utilities and infrastructure as a result of the SIMTA proposal.	M	• Lead in works and network upgrade works required to supply utilities to the SIMTA proposal will be undertaken at the cost of the development.	None	L	Utilities Strategy Report
Waste	No	Increase in demolition waste production.	M	• A Waste Management Plan would be drafted to include appropriate control measures and recommendations to be implemented during the construction and operation phases of the SIMTA proposal.	None	L	Waste Management Strategy
		Increase in construction waste production.	H		Yes	M	
		Increase in operational waste	M		None	L	

Issue	DGR key issue?	Potential impacts	Risk ranking before control measures applied	Control measures	Residual impacts	Risk ranking after control measures applied	Reference
		production.					
Climate change	No	Increase frequency of flooding to buildings and infrastructure causing higher maintenance costs and reduced asset life.	H	• Incorporate climate change sensitivity analyses for 20 per cent increase in peak rainfall and stormwater volume into flood modelling assessment to determine system performance.	Yes	M	Climate Change Risk Assessment Hazards & Risks Assessment
				• Incorporate appropriate flood mitigation measures, where practical within the design to limit the risk to acceptable levels.		L	
		Flooding of rail infrastructure located within Anzac Creek sub-catchment causing declines in serviceability due to operational impacts.	H	• The impacts of climate change on system performance will be considered, to incorporate adaptive capacity measures within the design to limit the risk to acceptable levels.	None	L	
		Flood management structures are not designed to cope with future rainfall patterns leading to flood damage.	H				
		Increased risk of storm damage to structural enhancements/add-ons to buildings.	H	• A Soil and Water Management Plan and WSUD would be drafted to include the following control measures: • Use of appropriate materials and engineering design capable of withstanding potential impacts posed by	None	L	

Issue	DGR key issue?	Potential impacts	Risk ranking before control measures applied	Control measures	Residual impacts	Risk ranking after control measures applied	Reference
				storm damage.			
		Increased bushfire frequency and intensity causing structural damage to buildings and infrastructure creating higher maintenance costs and reduced asset lifecycle.	H	A Bushfire Management Plan would be drafted to include the following control measures: • Incorporating appropriate strategic protection zones, including asset protection zones into design to limit bushfire risk to acceptable levels. • Control of performance of hotworks on total fire ban days during construction and operation, particularly within any defined asset protection zones.	None	M	
		Increased heatwave frequency resulting in rail line buckling from sudden temperature rises causing higher maintenance costs and reduced asset life	H	• Maintain track stability through regular maintenance, use concrete sleepers in place of wooden ones and use preventative measures in the event of heatwaves (e.g. speed restrictions, warehouse ventilation for improved heat removal).		M	
		Increased operating costs due to higher carbon pricing	H	• Consider further assessment of Marginal Abatement Cost Curves to assess commercial opportunities of reducing reliance on single energy source.		M	
Landuse	No	Alteration to the current landuse of the SIMTA site, rail corridor and surrounds.	M	Consideration of a Landuse Assessment to be drafted to include measures to control associated landuse impacts.	None	L	N/A

Issue	DGR key issue?	Potential impacts	Risk ranking before control measures applied	Control measures	Residual impacts	Risk ranking after control measures applied	Reference
		Rail line construction across Glenfield Waste facility would adversely affect operation of the waste facility.	H	Consultation will be undertaken with the owner/operator of the facility to keep them informed during design and construction.	Yes	M	
Community	No	Disruption to the community during construction.	VH	A Community Consultation and Involvement Plan would be drafted to include the following: • Maintaining communication with the community and all relevant stakeholders throughout the construction process.	Yes	M	Community Consultation Outcomes Report
		Community concern over impacts on air quality of queuing and idling trucks.	H	• SIMTA is committed to implementing a system for the management of truck arrivals and departures to reduce the likelihood of trucks queuing and idling in and around the proposed intermodal.	Yes	M	
		Impacts on community resulting from light shed	M	• SIMTA proposal will use a lighting concept designed specifically to minimise light spill and comply with Australian Standard AS4282- 1997 – Control of Obtrusive Effects of Outdoor Lighting. The lights would be shaded and downward pointing to minimise light spill. Luminaires which spread light would not be used.	Yes	L	

17 Consultation

The Director-General's Environmental Assessment Requirements (DGRs) include the following requirement for consultation to be undertaken during the preparation of the Environmental Assessment documentation:

> *You should undertake an appropriate level of consultation with relevant parties during preparation of the EA, including but not limited to:*

- *Local, State or Commonwealth government authorities such as:*
  - *Department of Sustainability, Environment, Water, Population and Communities;*
  - *Department of Finance and Deregulation;*
  - *NSW Department of Environment, Climate Change and Water;*
  - *NSW Roads and Traffic Authority;*
  - *Transport NSW;*
  - *NSW Rural Fire Service;*
  - *NSW Industry and Investment;*
  - *RailCorp;*
  - *Australian Rail Track Corporation;*
  - *Sydney Ports Corporation; and*
  - *Liverpool City Council.*
- *service and infrastructure providers such as:*
  - *i) Sydney Water Corporation;*
  - *ii) Integral Energy;*
  - *iii) Jemena;*
  - *iv) Telstra; and*
  - *v) AGL Upstream Investments Pty Ltd.*
- *specialist interest groups and the public, including adjoining and affected landowners.*

Each of the above parties was consulted by SIMTA and the consultant team during the preparation of the Environmental Assessment documentation. A summary of these consultation processes is provided below. A copy of the *Community and Stakeholder Consultation Outcomes Report* prepared by Elton Consulting is attached as **Appendix AA**.

17.1 GOVERNMENT AUTHORITIES

Each of the relevant government agencies was invited to a Planning Focus Meeting at the SIMTA site on 13 December 2010. This meeting included representatives of:

- Department of Sustainability, Environment, Water, Population and Communities
- Department of Finance and Deregulation
- Department of Planning and Infrastructure
- Office of Environment and Heritage
- NSW Roads and Traffic Authority
- Transport NSW

- NSW Rural Fire Service
- NSW Industry and Investment
- RailCorp
- Australian Rail Track Corporation
- Sydney Ports Corporation
- Liverpool City Council

Further consultation was undertaken with a range of authorities to address the key issues identified within the DGRs. A summary of the Government Authority consultation, including mediums and attendees, is identified within the Consultation Schedule attached as **Appendix AA**. Further details are provided within each of the specialist consultant reports that are submitted with the Environmental Assessment and as summarised below:

- **Department of Sustainability, Environment, Water, Population and Communities (DSEWPC)** – representatives of SIMTA and Hyder met with officers of DSEWPC on 15 March 2011 to discuss the expectations and requirements of the support documentation and assessment process for the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) referral. The EPBC Act referral is being made separately to the Concept Plan application.

- **Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS)** – discussions were undertaken between SIMTA specialist consultants and representatives of DTIRIS regarding scope of investigations required within the Georges River. The outcomes of these discussions are reflected in the *Flora and Fauna Assessment* in **Appendix F** and the *Riparian Assessment* in **Appendix P**.

- **Department of Planning and Infrastructure (DoPI)** – representatives from SIMTA and Urbis met with officers from the DoPI on a number of occasions during the preparation of the Concept Plan application for the SIMTA Intermodal Terminal Facility.

  The initial meetings on 12 July 2010 and 15 October 2010 were generally intended to provide DoPI with an understanding of the project and confirm the requirements for the preparation of the Preliminary Environmental Assessment.

  A further meeting was held on 10 May 2011 so that the SIMTA project team could clarify and fully understand the relevant requirements provided within the DGRs.

- **Department of Health (DOH)** – SIMTA's health consultants liaised with DOH to clarify the scope and structure of the *Screening Level Health Risk Assessment*. These discussions have been incorporated in the *Screening Level Health Risk Assessment* in **Appendix I**.

- **Office of Environment and Heritage (OEH)** – Hyder liaised with representatives of OEH to clarify scope of documentation to be prepared for the relevant DGRs. The key issues raised by the OEH related to water and stormwater management, contamination and acid sulphate soils. These matters have been responded to in **Sections 9 and 10** of the Environmental Assessment.

- **Transport NSW and NSW Roads and Traffic Authority (RTA)** – a number of meetings were held with Transport NSW and the RTA do discuss and clarify the traffic issues, modelling assumptions and SIMTA trip generation to be incorporated in the *Transport and Accessibility Impact Assessment*. This consultation is discussed in more detail in the *Transport and Accessibility Impact Assessment* (page 4) attached in **Appendix K.**

- **Moorebank Project Office (MPO)** – discussions were undertaken with MPO and SIMTA representatives to establish aligned and concurrent understanding of risks and impacts of concurrent site investigations within the vicinity of the SIMTA site.

- **Australian Rail Track Corporation (ARTC)** – Hyder liaised with ARTC representatives in determining the line capacity on the Southern Sydney Freight Line to handle forecast freight capacity generated by the SIMTA proposal. These discussions are reflected in the *Strategic Rail Capacity Analysis* prepared by Hyder in **Appendix L**.

- **Liverpool City Council** – SIMTA representatives met with Liverpool Council representatives in late-2010 and mid-2011 to discuss the SIMTA proposal. These discussions include an overview of the community concerns raised during the stakeholder and community consultation process, as well as discussions relating to management controls to be incorporated into the SIMTA proposal on the surrounding built, natural, social and economic environments.

17.2 SERVICE AND INFRASTRUCTURE PROVIDERS

Hyder consulted with the following services and infrastructure providers to identify existing capacity and scope for augmentation of existing networks and infrastructures to support the SIMTA proposal:

- Sydney Water Corporation.
- Integral Energy.
- Jemena.
- Telstra.
- AGL Upstream Investments Pty Ltd.

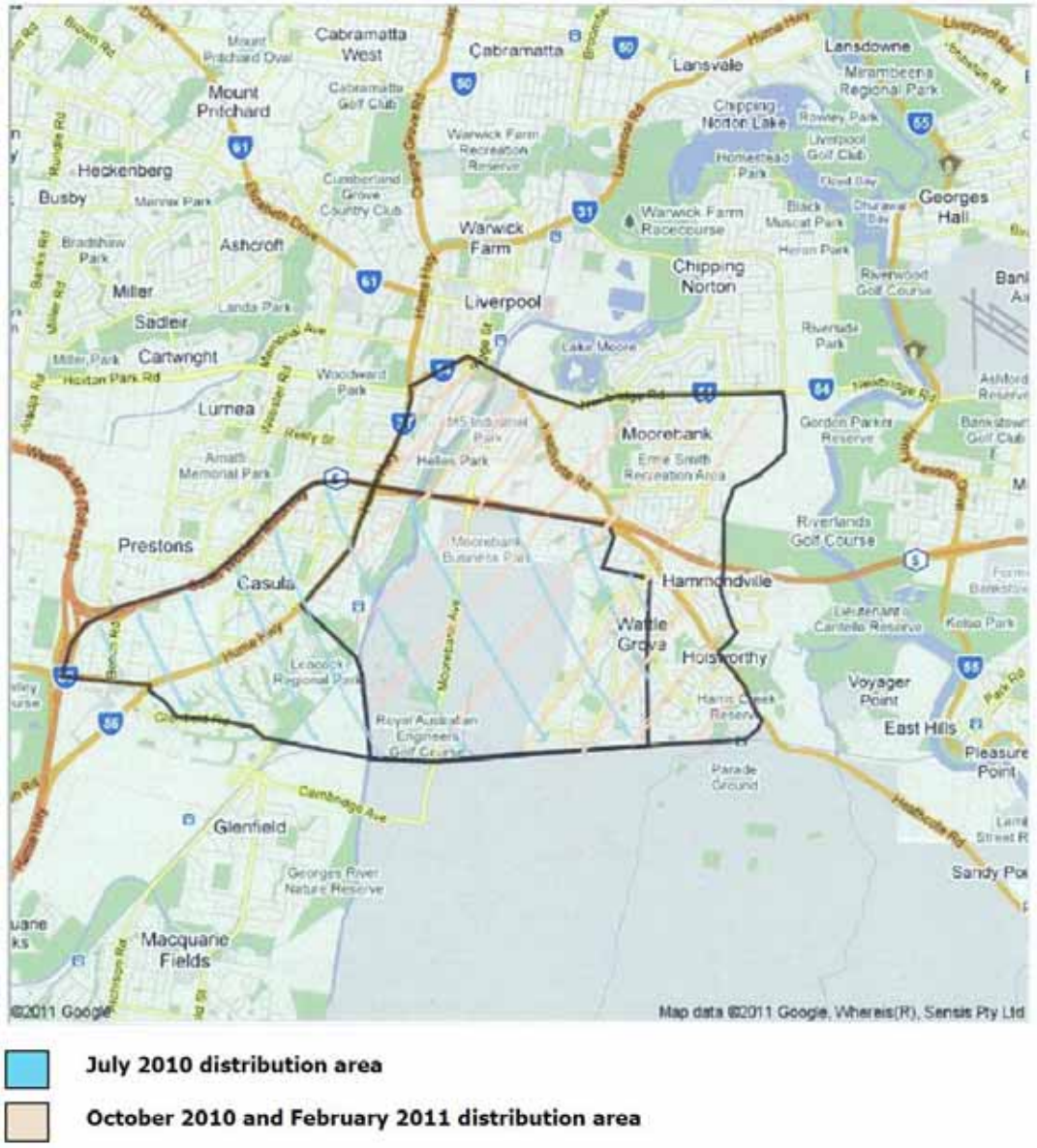
The outcome of the consultation process with these service providers is summarised in the *Utilities Strategy Report* attached as **Appendix X**.

17.3 SPECIALIST INTEREST GROUPS AND THE PUBLIC

SIMTA commenced consultation with the local community and stakeholders prior to the lodgement of the Environmental Assessment and its formal public exhibition by the Department of Planning and Infrastructure. Community consultation was undertaken by Elton Consulting and included:

- Letters to residents (refer to **Figure 27** for distribution areas).
- Establishing a Community Information Centre (CIC).
- One-on-one Stakeholder Meetings.
- On-going consultation Communication Methods including:
  - Stand-along project website.
  - Email feedback system.
  - Free-Call Information Line.
  - Community Information Newsletters.

FIGURE 27 – DISTRIBUTION AREAS FOR LETTERS TO RESIDENTS (ELTON CONSULTING 2011)



Source – Elton Consulting, 2011, Community and Stakeholder Consultation Outcomes Report, Appendix 11

The issues raised in the community and stakeholder consultation process included:

- Traffic
- Air Quality and Health Impacts
- Light Spill
- Noise
- Location and Operation of the Intermodal
- Consultation Process
- Environmental Impacts
- Heritage Impacts

The consultation process and the responses to community issues are outlined in the *Community and Stakeholder Consultation Outcomes Report* prepared by Elton Consulting attached in **Appendix AA**.

Each of these impacts was further explored by way of an assessment of the potential social impacts of the SIMTA proposal within the *Social Impact Commentary* prepared by Urbis and attached as **Appendix M**. A summary of the responses to each of the identified issues is provided below:

- **Traffic** – the potential for traffic congestion was identified as a major issue, including the potential for increased trucks on residential streets, congestion and truck impact on the M5 and truck traffic along Anzac Road and Moorebank Avenue. However, it is acknowledged that a range of mitigation measures are proposed to minimise these impacts, including intersection/road upgrades, pedestrian and cycle infrastructure and public transport infrastructure to increase the frequency and accessibility of services, which will provide benefits for local residents.

- **Air Quality** – concern has been raised regarding the potential impacts of the SIMTA proposal on local air quality and the health impacts associated with diesel fumes, the effects of idling trucks and the methodologies for the assessment of existing and future air quality. The air quality and human health impacts were assessed by Hyder and Toxikos (refer to **Appendix J** and **Appendix I**). The *Air Quality Assessment* did not identify any likely significant exceeded standards for air quality for the local community, however did identify an overall net positive impact on air quality at the regional level. The *Health Impact Assessment* assessed the cumulative health impacts and concluded the SIMTA proposal was unlikely to have acute or chronic direct health effect on the local residents. The Social Impact Review recommends that the following additional potential mitigation measures are considered:

  - *A program to encourage the use of diesel/electric hybrid trucks to both minimise local air quality impacts and provide a more sustainable long-term solution.*

  - *Consider a program to encourage the uptake of vehicles that meet the European emissions standards, e.g. http://en.wikipedia.org/wiki/European_emission_standards.*

  - *A program to ensure maximum tyre pressure is maintained to improve the efficiency of the truck stock.*

  - *Potentially providing an on-site monitoring system to monitor individual truck emissions with requests for servicing.*

  The review concludes that from a social impact perspective, the air quality impacts have not been identified as exceeding the standards and determined as unlikely to have acute or chronic direct health effects on local residents.

- **Light Spill** – concerns have been raised regarding the potential brightness and extent of light spill and how it is proposed to be measured. The potential light spill from the SIMTA proposal has been assessed by Hyder in association with an assessment of the potential visual impacts of the SIMTA proposal by Reid Campbell. This assessment has concluded that the light spill will be well within the criteria established in the relevant Australian Standard. The social impact review notes that the assessment did not consider existing vegetation and orientation and is considered to be conservative. Further, it notes that the proposed landscaping and works will reduce the visual impacts and the effect on light spill.

- **Noise and Vibration** – concerns have been raised regarding the methods of assessment for monitoring of noise levels; the extent of the areas included in noise level studies; how impacts on existing noise levels might occur; impacts of rail noise and ongoing noise monitoring plans. The review of the social impacts concludes that the Noise Impact Assessment prepared by PAE Holmes sets out best practice mitigation and management measures to minimise construction noise at noise sensitive receivers and will be described in a construction noise management plan.

- **Locational Issues** – concerns have been raised about the suitability of the location for the proposed intermodal terminal facility and its impact on the amenity and character of the area and on property values. The review of the social impacts acknowledges that the Commonwealth and State Governments previously identified Moorebank as the preferred location for an intermodal terminal, the

distances from nearest residences and existing buffers. The proximity to the freight rail network and connection to the M5, M7 and the Hume Highway is considered to be a primary consideration for the function of an intermodal terminal and there are regional benefits from an employment perspective with Liverpool having an above average rate of unemployment and a low ratio of local jobs to local people.

- **Employment** - the review of the social impacts acknowledges that the SIMTA Intermodal Terminal Facility will provide significant local employment opportunities during the construction and operation phases. This creates the potential to provide for a significant social benefit to the region, including:
  - Reduced travel distances and commuting time for local potential employees.
  - New jobs created in construction, operation, maintenance, logistics and transport.
  - The types of employment will include a range of skilled and unskilled labour needs.
  - Potential opportunities for some of the youth or long term unemployed people in the region.
  - Potential opportunities to support and improve employment outcomes for Aboriginal people.
- **Cumulative Impacts** - analysis undertaken by Hyder Consulting identifies that the West and South-West Regions have a catchment demand of approximately one million TEU. Accordingly, any additional intermodal capacity provided on the School of Military Engineering site will not result in additional TEU movements that have not been assessed within this assessment. Details of the scale and layout of the proposal on the School of Military Engineering is not currently known, however the potential cumulative impacts and social benefits may include:
  - The potential to enhance pedestrian/cycleway links to the site as part of recreational facilities to connect to the Georges River. This could potentially service employees and local recreational users and benefit the health of the broader community.
  - The potential for recreational facilities (such as commercially operated gyms, walking tracks, exercise areas) on-site that may be available for the health benefit of employees and the wider community.
  - The potential for inclusion of facilities such as commercially operated child care that may be available both for the benefit of employees in a younger population.

Overall, it is considered that each of the matters raised by the special interest groups and the public has been thoroughly assessed. It has been demonstrated that the SIMTA proposal will result in both social impacts and benefits that will affect the local and regional community.

The social benefits of the SIMTA proposal include infrastructure upgrades that may improve public transport services local community and the generation of significant local employment opportunities, which are suitably matched to the local labour force.

Each of the social impacts is proposed to be addressed through the implementation of the mitigation and management measures proposed within the specialist reports. These matters have been incorporated into the Draft Statement of Commitments within **Section 18**.

18 Draft Statement of Commitments

The following table outlines the Draft Statement of Commitments proposed by SIMTA as the proponent for the Concept Plan.

It incorporates each of the recommendations provided in the specialist consultant reports to mitigate the environmental impacts, monitor the environmental performance and/or achieve a positive environmentally sustainable outcome.

TABLE 17 – DRAFT STATEMENT OF COMMITMENTS

SUBJECT	COMMITMENT
Development and Staging	The SIMTA Intermodal Terminal Facility will be carried out generally in accordance with the following plans and documents: ▪ Land Use Plan, prepared by Reid Campbell. ▪ Indicative Staging Plan, prepared by Reid Campbell. The Proponent commits to the delivery of a rail link within Stage 1.
Transport and Access	The Proponent commits to negotiating with the relevant agencies/authorities as required to facilitate the staged delivery of the following road infrastructure upgrades in accordance with the Transport Accessibility Impact Assessment: ▪ Widen Moorebank Avenue to four lanes between the M5 Motorway/Moorebank Avenue grade separated interchange and the Northern SIMTA site access. Some localised improvements will be required around central access and southern access points. ▪ Concurrent with four lane widening on Moorebank Avenue, the Moorebank Avenue/Anzac Road signal will require some form of widening at the approach roads. ▪ A new traffic signal at SIMTA's northern access with Moorebank Avenue. ▪ Potential upgrading works at the M5 Motorway/Moorebank Avenue grade separated interchange to cater for both background and additional SIMTA traffic growth as outlined in Table 9-1 of the *Transport Accessibility Impact Assessment* (and Table 6 of the *Environmental Assessment* report). The Proponent commits to negotiating with the relevant agencies/authorities as required to facilitate the staged delivery of the public transport infrastructure in accordance with the *Transport Accessibility Impact Assessment*: ▪ Designing and constructing the central spine road and other site roads to accommodate buses, bus infrastructure and cyclist use for employees. ▪ Construction of a covered bus drop off/pick up facility within the site to encourage the use of buses for employees. ▪ Review and rationalisation of the locations of Route 901 bus stops in the vicinity of the site to match the proposed northern terminal entry location and enhance accessibility.

SUBJECT	COMMITMENT
	▪ Providing peak period and SIMTA shift work responsive express buses to/from the site and Liverpool Station via Moorebank Avenue and Newbridge Roads with frequency dependant on the development of the site. ▪ Providing peak period express buses to/from the site and Holsworthy Rail Station via Anzac Road, Wattle Grove Drive and Heathcote Road with frequency dependant on the development of the site. ▪ Extending Route 901 bus through the site via the light vehicle road. ▪ Increasing peak period Route 901 bus service frequencies (through the site) to better match the needs of existing and future employees of the locality as terminal development proceeds.
Noise and Vibration	The Proponent will undertake further detailed assessments at each Project Application stage to provide input to planning and confirm the need for and degree of noise mitigation if required. Consideration should be given to locating less noise-intensive activities and operations at the north-eastern and south-eastern corners of the site where residences are closest. All construction activities shall be restricted between the hours of: ▪ 7:00am to 6:00pm (Monday to Fridays). ▪ 8:00am to 1:00pm (Saturday – With approval from Principal). ▪ At no time on Sundays and Public Holidays. Works outside the above hours that may be permitted include: a) Any works which do not cause noise emission to be audible at any nearby residential property. b) The delivery of materials which is required outside these hours as requested by Police or other authorities for safety reasons. c) Emergency work to avoid the loss of lives, property and/or to prevent environmental harm. d) Any other work as approved through the Construction Noise and Vibration Management Plan Process. In relation to (b) above, local residents shall be informed of the timing and duration of approved works in accordance with the SIMTA proposal's notification provisions. Prior to undertaking demolition and construction, a Construction Noise and Vibration Management Plan should be prepared based on details of the proposed construction methodology, activities and equipment. This should identify potential noise and vibration impacts and reasonable and feasible noise mitigation measures that may be implemented to minimise any potential impacts, including engineering and management controls. Consideration shall be given to:

SUBJECT	COMMITMENT
	a) Identification of nearby residences and other sensitive land uses. b) Development of noise management levels consistent with the ICNG. c) Assessment of the potential impact from the proposed construction methods. d) Where management levels are exceeded, examination of feasible and reasonable noise mitigation. e) Development of reactive and proactive strategies for dealing with any noise complaints. f) Identification of a site contact person to follow up complaints. g) Noise monitoring. In general, management of noise and vibration requires attention to the following: ▪ Construction hours. ▪ Noise and vibration monitoring on site and at sensitive receivers. ▪ Training and awareness. ▪ Communication. ▪ Incident and emergency response. ▪ Non-conformance, preventative and corrective action. Where appropriate, specific noise mitigation measures could include: ▪ Mitigation of specific noise sources may be possible by using portable temporary screens. ▪ For extended periods of driven piling and use of rock breakers, respite periods might be considered. ▪ Maximising the offset distance between noisy plant items and sensitive receivers. ▪ Avoiding using noisy plant simultaneously and/or close together, adjacent to sensitive receivers. ▪ Orienting equipment away from sensitive receivers. ▪ Carrying out loading and unloading away from sensitive receivers. ▪ Using dampened tips on rock breakers. ▪ Using noise source controls, such as the use of residential class mufflers, to reduce noise from all plant and equipment including bulldozers, cranes, graders, excavators and trucks. ▪ Selecting plant and equipment based on noise emission levels.

SUBJECT	COMMITMENT
	▪ Using alternative construction methods to minimise noise levels. ▪ Providing alternative arrangements with affected residents such as temporary relocation. ▪ Selecting site access points and roads as far as possible away from sensitive receivers. ▪ Using spotters, closed circuit television monitors, “smart” reversing alarms, or “squawker” type reversing alarms in place of traditional reversing alarms. Education and training of site staff is necessary for satisfactory implementation of noise mitigation measures. Education and training strategies should focus on: ▪ Site awareness training/environmental inductions that include a section on noise mitigation techniques/measures to be implemented throughout the SIMTA proposal. ▪ Ensuring work occurs within approved hours. ▪ Locating noisy equipment away from sensitive receivers. ▪ Using noise screens for mobile plant and equipment. ▪ Ensuring plant and equipment is well maintained and not making excessive noise. ▪ Turning off machinery when not in use. Prior to commencing operations, an Operational Noise and Vibration Management Plan should be prepared based on the details of the proposed activities to be incorporated within each stage. This should identify potential noise and vibration impacts and reasonable and feasible noise mitigation measures that may be implemented to minimise any potential impacts, including engineering and management controls.
Biodiversity	The Proponent will undertake further detailed investigations to establish the potential biodiversity impacts of the proposed rail link and measures to mitigate its potential impacts prior to the submission of the Project Application. The detailed investigations shall incorporate the following mitigation measures: <u>Avoid Impacts</u> The identified ecological values should be avoided as far as practicable, including: ▪ Site establishment, earthworks and rail construction. – Vegetation removal - avoid Endangered Ecological communities and known locations of threatened flora species where possible. – Fauna habitat loss - avoid important fauna habitat features such as large hollow bearing trees where possible. Where possible, the construction footprint incorporating the rail link footprint and

SUBJECT	COMMITMENT
	construction access requirements should be reduced to minimise impacts. <u>Mitigate Impacts</u> The Proponent will mitigate impacts on biodiversity value by implementing the following safeguards during construction: ▪ Soil disturbance related to site establishment, earthworks and rail construction. – Erosion and sedimentation resulting from newly exposed soils degrading waterways - installation of appropriate drainage and sediment control infrastructure (e.g. sediment basins), sediment and erosion controls – Weed establishment ▪ A weed control program is recommended as part of the conservation management of the retained vegetation. ▪ Ongoing monitoring for identification of weed outbreaks and treatment if required. ▪ Vegetation clearance for rail construction, access and maintenance tracks. – Loss of fauna habitat ▪ Fauna microhabitat such as logs should be removed from areas to be cleared and relocated to suitable nearby bushland areas in the presence of an ecologist. Strategic removal of hollow-bearing trees. ▪ Consider the installation of nest boxes in woodland vegetation in the rail corridor that may offer alternative nesting habitat to hollow-dependent species recorded in the study area. ▪ High visibility plastic fencing is to be installed to clearly define the limits of the works area as to not further encroach on fauna habitat. – Injury to fauna species ▪ Pre-clearance surveys for fauna species. Prior to tree felling, trees are to be nudged using a bulldozer or banged loudly with the back of an axe or sledge hammer to flush out sheltering wildlife. ▪ Undertake a pre-start up check for sheltering native fauna of all infrastructure, plant and equipment and/or during relocation of stored construction materials. – Loss of native vegetation ▪ Clearance of native vegetation should be minimised as far as is practicable. ▪ Consider retention of some, or all, of the remnant scattered *E.*

SUBJECT	COMMITMENT
	sclerophylla over patches of shrub and grass cover in the cleared grassland immediately south of the SIMTA site in landscaping areas. ▪ Extent of clearing should be fenced with highly visible temporary fencing to ensure that clearing does not extend beyond the area necessary. ▪ A Vegetation Management Plan (VMP) should be prepared prior to construction of the rail corridor, detailing restoration, regeneration and rehabilitation of areas of native vegetation in the vicinity of the proposed rail corridor. The VMP should also detail appropriate management for the potential habitat of threatened plant species in the study area, including monitoring during and after construction works to ensure impacts are minimised. Appropriate management may include fencing the habitat, signage and educating contractors of the presence of habitats, its significance and no-go zones. The VMP should be integrated with the landscape plan for the SIMTA proposal. – Loss of EECs - high visibility plastic fencing is to be installed to clearly define the limits of the works area as to not further encroach on EEC and locations of threatened flora species. – Loss of threatened flora species - the route of the proposed rail line should be designed to minimise impacts on the populations of *Persoonia nutans* and *Grevillea parviflora* subsp. *parviflora* in the study area. ▪ Construction in riparian areas/in proximity to watercourse – Sedimentation and erosion leading to a reduction in water quality and degradation of aquatic habitat - installation of appropriate drainage infrastructure (e.g. sediment basins), sediment and erosion controls. – Obstruction to or alteration of fish passage - design and construction of rail crossings over Anzac Creek and Georges River to be in accordance with *Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge 2003). – Development within the Castlereagh Swamp Woodland community adjoining Anzac Creek altering existing infiltration and run-off - consider potential impacts on groundwater quality and quantity as any localised pollution or reduction in the groundwater table is likely to influence this endangered community. ▪ Construction of pavement, slabs and building structures – Altered hydrological regimes related to an increase in impervious surface such as changes in runoff and infiltration, redirection of flows. ▪ Landscaped zones to capture gross pollutants and oil and grits from pavement. These areas can be regularly maintained to remove rubbish and can be renewed on a regular basis.

SUBJECT	COMMITMENT
	▪ Bio-retention installed in base of channels and swales proposed to capture and store stormwater. This will consist of bio-filtration layers, planting and subsoil collection and drainage. ▪ Hot works (including vegetation clearing requiring heat producing equipment). – Outbreak of Bushfire ▪ Hot work not to be undertaken on declared total fire ban days. ▪ Vehicles and plant should not block fire trails. ▪ Bushfire awareness included in staff induction and in toolbox talks pre-commencement. <u>Off-Set Impacts</u> If impacts are unable to be avoided or safeguarded against, biodiversity offsets may be used to counterbalance the impact of development on biodiversity. Offsets are to be determined with reference to the *Principles for the Use of Biodiversity Offsets in NSW* (OEH 2011). It may be appropriate to use the bio-banking assessment process (*Biodiversity Banking and Offsets Scheme,* DECC 2007) to calculate off-sets required to compensate for the impacts of the SIMTA proposal on threatened species listed under the TSC Act. This could include development and implementation of a restoration plan for the bushland south of the SIMTA site which is of high conservation significance, but degraded in parts. The restoration plan would require the inclusion of the following measures as a minimum: ▪ Removal of dumped fill and rubble from the site, particularly from the Castlereagh Swamp Woodland south of Anzac Creek. ▪ Weed management around cleared edges. ▪ Revegetation of disturbed areas using local native species. Given the specific disturbance regimes required by *Persoonia nutans*, the use of fire or other disturbance mechanisms as a management tool should be considered, in consultation with OEH and DSEWPC <u>Aquatic Flora and Fauna</u> To protect the aquatic flora and fauna the following measures will be implemented as part of the future Project Approval application(s), as relevant to each stage: ▪ Implementation of design principles for friendly fish passage. ▪ Implementation of Construction and Operation Management Plans for maintenance of structures in riparian and aquatic zones. ▪ Minimise siltation of the Georges River during construction through implementing the water quality mitigation measures detailed within the Stormwater and

SUBJECT	COMMITMENT
	Flooding section of the Statement of Commitments. ▪ Thorough assessment of any development within the Anzac Creek CSWL community, including potential impacts on groundwater quality and quantity. ▪ Lantana removal to reduce degradation of streamside vegetation and off-set any potential impacts to aquatic biodiversity.
Hazards and Risks	<u>Asbestos</u> ▪ An asbestos management plan will be developed for the SIMTA proposal containing a risk assessment undertaken in accordance with Code of Practice for the Management and Control of Asbestos in the Workplace (NOHSC, 2005). ▪ Where the management plan recommends the removal of asbestos from site all works will be undertaken in accordance with the Code of Practice for the Safe Removal of Asbestos (NOHSC, 2005), including the development of an asbestos removal control plan and an emergency plan. <u>Dangerous Goods</u> ▪ A preliminary hazard assessment will be undertaken either during project application approval stages (if tenants and purposes have been defined) or by tenants during the operational phase of development, as required by State Environmental Planning Policy No 33 Hazardous and Offensive Development (SEPP No 33). Once the level of risk has been identified the aim will be to reduce the risk to 'as low as reasonably possible' (ALARP) through the application of specific operational management procedures that would form part of a framework for managing risks, captured within the facility's Hazard and Risk Management Plan and Emergency Response Plan. Should unacceptable levels of risk be identified during the Preliminary Hazard Assessment (PHA), SIMTA will require potential tenants to demonstrate measures to reduce the risk to an acceptable level prior to acceptance of tenancy. ▪ SIMTA will require all tenants to disclose the type and quantity of goods entering the SIMTA site prior to award of tenancy. Prior to commencement of a lease on the SIMTA site, all tenants that would handle dangerous goods would be required to sign on to SIMTA's Hazard and Risk Management Plan and the Emergency Response Plan for the site. These plans will be reviewed regularly and updated as goods entering the site may change with the tenancies. The requirements in the Code of Practice for storage and handling of dangerous goods (Work Cover NSW, 2005) would be adopted in these plans as a minimum. <u>Bushfire Management</u> ▪ The key objectives identified by the Rural Fire Service (RFS), will be incorporated

SUBJECT	COMMITMENT
	into future design stages, in accordance with the following principles: – Afford occupants of any building adequate protection from exposure to a bushfire – Ensure safe operational access and egress for emergency service personnel and residents – Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads in asset protection zones (APZs). – Ensure that utility services are adequate to meet the needs of fire fighters. ▪ A Bushfire Management Plan will be developed for both the construction and operational phases of the SIMTA proposal that align with the requirements of the local RFS Bushfire Management Committee operational plans of management.
Contamination	The Proponent will undertake the following tasks in association with the first Project Application for the redevelopment of the SIMTA site and/or the associated rail corridor: ▪ Confirm what actions (if any) were taken in regards to the implementation of the Site Management Plan, including: – A groundwater monitoring program to confirm and monitor groundwater quality over time. – Investigation of the underground tank installations located in the south-western area of DNSDC. – Integrity testing of the waste oil tank located in the north-east area of the site. – Investigation and remediation of filled areas in the south-eastern part of the site, particularly materials that have the potential to contaminate groundwater. Hexachlorobenzene (HCB) and asbestos should be considered contaminants of potential concern during works in this area. – Implementation of site management procedures to control the following: ▪ Stormwater discharges for compliance with local and state legislative requirements and protection of the environment. ▪ Collection, sorting and disposing of fragments of materials potentially containing asbestos including during intrusive earthworks. ▪ Unauthorised access of personnel to the south-eastern corner of the site, where fragments of grenades have been identified, until such time that a hazard reduction operation has been completed in accordance with the recommendations of Milsearch (2002). ▪ Incorporate the findings and recommendations of the Ordnance Investigation report by Milsearch 2002 during future development of the site.

SUBJECT	COMMITMENT
	▪ Undertake further investigations in the areas of environmental concern identified by URS (2002) and Golder (2011) likely to be impacted upon by the proposed development. These investigations should be based on the detailed design of the proposed development and identify the extent of contamination, and what, if any, remediation activities are needed. The remediation of areas of the site (if any) would be best matched to the development of the site. For example in areas requiring filling to allow construction of the terminal facility may serve the dual purpose of isolating potential site contaminants (e.g. munitions waste). ▪ Undertake a Phase 2 intrusive environmental site assessment of the proposed rail corridor lands, with an objective to assess the risk posed to the detailed design and construction of the rail corridor by the areas of environmental concern identified within this report. The Phase 2 intrusive investigation would include a program of soil and groundwater sampling completed in accordance with the guidelines made or approved by the EPA under s 105 of the Contaminated Land Management Act 1997. ▪ The proponent will prepare a Contamination Management Plan as part of the Environmental Management Plan for managing contaminated materials either expected or unexpectedly encountered during the construction of the SIMTA site and rail corridor. The contamination management plan would include detailed procedures on: – Handling, stockpiling and assessing potentially contaminated materials encountered during the development works. – Assessment, classification and disposal of waste in accordance with relevant legislation. – A contingencies plan for unexpected contaminated materials, such as materials that is odorous, stained or containing anthropogenic materials that may be encountered during site works.
Stormwater and Flooding	The Proponent will incorporate the following stormwater quantity and quality management measures into the future Project Approval application(s) in accordance with the objectives and performance standards outlined in Section 5 of the *Flood Study and Stormwater Management* report prepared by Hyder Consulting dated 11 August 2011: ▪ Rainwater Tanks – collect roof water from the warehouses on the SIMTA site, and will be used for non-potable water demands such as toilet flushing and outdoor use. ▪ Pre-Treatment – including: – Buffer Strips – vegetated areas adjacent to drainage lines that intercept diffused stormwater runoff from impervious surfaces before it reaches the treatment measure. It is designed to remove coarse to medium sizes suspended solids and nutrients. – Gross Pollutant Traps – a stormwater treatment device designed to capture

SUBJECT	COMMITMENT
	coarse sediment, trash and vegetation matter carried in stormwater. ▪ Bio-Retention Systems – including: – Rain Gardens – comprising a combination of vegetation and filter substrate which treats stormwater through filtration, extended detention and some biological uptake. They are proposed to treat the majority of the site through an integrated structure which provides on-site detention. – Bio-swales – similar to rain-gardens, but with a longitudinal gradient, allowing for runoff-conveyance as well as water quality treatment and filtration. – Lining – lining will only be included in bio-retention systems when they are located next to footings or structures such as retaining walls and buildings. The Proponent will include on-site stormwater detention design to achieve flood management in accordance with the flood modelling results outlined in the *Flood Study and Stormwater Management* report prepared by Hyder Consulting dated 11 August 2011. The water quality assessment methodology and treatment performance of the WSUD measures proposed in any future Project Application(s) are to address the treatment targets provided within Liverpool Development Control Plan (2008). When designing any bridge/arch crossing of the Georges River, the Proponent will incorporate the design principles: ▪ Siting of a bridge would avoid crossing Georges River at, or near, sharp bends, sections of unstable channel, or major "riffle" systems (shallow areas where water flows swiftly over rocks, gravel or timber). ▪ Removal of essential shade trees would be avoided. ▪ Locating of bridge piers or foundations within the main waterway channel would be avoided as far as possible. ▪ Bridge piers would be designed and orientated to avoid the formation of large-scale turbulence or the erosion of the bed and banks of the waterway. ▪ Light penetration under bridges to encourage fish passage would be maximised. ▪ Use and extent of those bed and bank erosion control measures that may reduce aquatic habitat values or inhibit the regrowth of natural in-stream and bank vegetation would be minimised. ▪ Where practical, construction works across the bed of the Georges River should be staged to minimise the total disturbance at any given time and to allow the full bypassing of stream flows around the works to maintain fish passage. The proponent will consider the following principles in the culvert crossing design for Anzac Creek: ▪ Fish passage requirements would be considered when selecting the type of

SUBJECT	COMMITMENT
	culvert box or pipe, concrete or corrugated metal, single cell or multi-cell). ▪ Where practical, the culvert would be aligned with the downstream channel to minimise bank erosion. ▪ A multi-cell culvert design would be considered with a combination of elevated "dry" cells to encourage terrestrial movement, and recessed "wet" cells to facilitate fish passage ▪ Altering the channel's natural flow, width, roughness and base-flow water depth through the culvert's wet cells would be avoided where possible. Wet cells would aim to have a minimum water depth of 0.2-0.5 metres to facilitate fish passage. ▪ The culvert would be designed to maximise the geometric similarities of the natural channel profile from the bed of the culvert up to a flow depth of 0.5 metres ("Low Flow Design‖) as a minimum. ▪ Where conditions allow, the construction of pools would be considered at both the inlet and outlet of the culvert to assist in the dissipation of flow energy and to act as resting areas for migrating fish. ▪ If a low-flow channel is constructed within the base slab of the culvert, the channel would extend across the inlet and outlet aprons. ▪ Debris deflector walls may be used to reduce the impact of debris blockages on fish passage. ▪ Rock protection and/or the formation of a stabilised energy dissipation pool at the outlet would be considered if necessary to assist in minimising erosion to avoid the formation of a perched culvert and damage to the stream bed and banks. ▪ The design of the crossing would refer to the detailed engineering guidelines provided in Fairfull and Witheridge (2002). During the construction phase: ▪ All reasonable efforts would be taken to program construction activities during those periods when flood flows and fish passage is not likely to occur. As a minimum requirement, fish migrations and breeding periods, as advised by NSW DPI, would be avoided. ▪ Temporary sidetrack crossings would be constructed from clean fill (free of fines) using pipe or box culvert cells to carry flows, or a temporary bridge structure. ▪ All temporary works, flow diversion barriers and in-stream sediment control barriers would be removed as soon as practicable and in a manner that does not promote future channel erosion. ▪ The construction site would be left in a condition that promotes native revegetation and shading of habitat pools. A flood emergency response plan will be prepared and updated as necessary to address the staged development of the site. Details are to be provided with the

SUBJECT	COMMITMENT
	Project Approval application for each stage. The proponent will prepare and implement a Soil and Water Management Plan (SWMP) and Erosion and Sediment Control Plan (ESCP) for the construction and operation phases of the development, with monitoring and review performance of sediment and water control structures during construction and operation phases.
Air Quality	<u>Air Quality</u> The proponent will prepare and submit an Air Quality Management Plan with each of the Project Approval applications. The Plan will take into account the final design, layout and operational details for each of the future stages and detail the proposed mitigation measures for the operational phases, including consideration of the following: ▪ Advances in rolling stock servicing the SIMTA proposal. ▪ Electrically powered container handling equipment in lieu of diesel equipment where possible. ▪ LPG forklifts in lieu of diesel forklifts where possible. ▪ Minimising truck movements through the efficient management of deliveries and dispatches. ▪ Minimising truck idling and queuing on-site. An Environmental Management Plan will be prepared prior to release of the first construction certificate to provide air quality and dust management/mitigation procedures to be adopted during each of the construction phases of the development. The EMP shall: ▪ Outline procedures for controlling / managing dust. ▪ Define roles, responsibilities and reporting requirements. ▪ Outline the dust control inspection regime. ▪ Outline potential contingency measures for dust control where standard measures are deemed ineffective. Dust mitigation measures are to address the following: ▪ Clearing / Excavation - emissions from site clearing, vegetation removal, topsoil clearing and excavation, particularly during dry and windy conditions, can be effectively controlled by increasing the moisture content of the soil / surface. Other controls that will be considered are: – Modify working practices by limiting excavation during periods of high winds. – Limiting the extent of clearing of vegetation and topsoil to the designated footprint required for construction and appropriate staging of any clearing. ▪ Rail Corridor - dust generated during the construction of the rail corridor and

SUBJECT	COMMITMENT
	bridge should be controlled as follows: – Modify working practices by limiting clearing and excavation during periods of high winds. – Limiting the extent of vegetation removal and topsoil to the designated footprint required for the rail corridor. – Use of water sprays during rail construction for dusty activities such as ballast dumping and compacting. ▪ Demolition of Existing Structures - when conditions are dry and windy, consideration should be given to modify or cease demolition activities. Special consideration will need to be given to the demolition of buildings containing asbestos. ▪ Access Route Construction - use of earth moving equipment can be a significant source of dust, and emissions should be controlled through the use of water sprays during road construction. Where conditions are excessively dusty and windy, and fugitive dust can be seen leaving the site, work practices should be modified by limiting scraper / grader activity. ▪ Haulage and Heavy Plant and Equipment - vehicles travelling over paved or unpaved surfaces tend to produce wheel generated dust and can result in dirt track-out on paved surfaces surrounding the work areas. Mitigation measures include: – All vehicles on-site should be confined to a designated route with speed limits enforced. – Trips and trip distances should be controlled and reduced where possible, for example by coordinating delivery and removal of materials to avoid unnecessary trips. – Dirt that has been tracked onto sealed roads should be cleaned as soon as practicable. – When conditions are excessively dusty and windy, and dust can be seen leaving the works site the use of a water truck (for water spraying of travel routes) should be used. ▪ Wind Erosion - wind erosion from exposed surfaces should be controlled as part of the best practice environmental management of the site. Wind erosion from exposed ground should be limited by avoiding unnecessary vegetation clearing and complete rehabilitation as quickly as possible. Wind erosion from temporary stockpiles can be limited by minimising the number of stockpiles on-site and minimising the number of work faces on stockpiles. <u>Greenhouse Gas Emissions</u> A Greenhouse Gas Management Plan will be prepared and submitted with each of

SUBJECT	COMMITMENT
	the Project Approval applications demonstrating the way in which the following recommendations will be addressed during the materials selection, construction, operational phases. ▪ Materials Selection: – Investigate the feasibility to use supplementary cementitious materials for the concrete pavement; – Source concrete from suppliers who are able to demonstrate low embodied GHG emissions using LCA methodology (could for example be certified by eco-label bodies); – Avoid using recycled content in steel products as a single indicator for low GHG intensity as this has been proven to be misleading; – Achieve high steel scrap recycling rates; – Use low GHG intensive energy in production (i.e. renewable energy for electricity); and – Minimize GHG emissions from steel making by sourcing from suppliers who are able to demonstrate low embodied GHG emissions using LCA methodology (could for example be certified by eco-label bodies). ▪ During Construction: – Where possible, use locally sourced materials to reduce emissions associated with transport; – Recycle/compost waste wherever possible; – When importing fill source from nearby construction sites, wherever possible aim to reduce transport related emissions; – Plan construction works to avoid double handling of materials; – Make use of recycled emissions to reduce emissions associated with embodied energy (not estimated in this report); – Develop construction/transport plans to minimise the use of fuel during each construction stage. For example throttling down and switching off construction equipment when not in use; – Assess the fuel efficiency of the construction plant/equipment prior to selection, and where practical, use equipment with the highest fuel efficiency which use lower GHG intensive fuel (e.g. gas, ethanol); and – Regular maintenance of equipment to maintain optimum operations and fuel efficiency.

SUBJECT	COMMITMENT
	▪ During Operation: – Incorporate energy efficiency design aspects wherever possible to reduce energy demand. Examples could include energy efficient lighting systems, natural ventilation, insulation and other renewable forms of energy (e.g. co-generation/tri-generation on-site); – Investigate the procurement of energy efficient equipment for the site (i.e. cranes, forklifts, street lighting etc); – Investigate the feasibility of on-site renewable energy, such as photo-voltaics to reduce demand from the grid; and – Tune buildings during commissioning to optimise energy performance.
Heritage	<u>Indigenous Heritage</u> General Mitigation Measures: ▪ Consultation between SIMTA and relevant Registered Aboriginal Parties (RAPs) should be maintained throughout the design and construction of the SIMTA proposal. ▪ Where possible, SIMTA should aim to avoid impacting any known Aboriginal heritage objects, sites or places and places that have potential Aboriginal heritage or cultural values, throughout the life of the SIMTA proposal. ▪ Where impact cannot be avoided, SIMTA should choose partial impact rather than complete impact wherever possible and ensure that appropriate measures to mitigate impacts are developed and implemented as required and as appropriate during design, construction and operation of the various stages of the SIMTA proposal. ▪ If relocation of any element of the SIMTA proposal outside area assessed in this study is proposed, further assessment of the additional area(s) should be undertaken to identify and appropriately manage Aboriginal objects/sites/places that may be in this additional area(s). ▪ In the event that previously undiscovered Aboriginal objects, sites or places (or potential Aboriginal objects, sites or places) are discovered during construction, all works in the vicinity of the find should cease and SIMTA should determine the subsequent course of action in consultation with a heritage professional, relevant Registered Aboriginal Parties and/or the relevant State government agency as appropriate. ▪ Should suspected human skeletal material be identified, all works should cease and the NSW Police and the NSW Coroner's office contacted. Should the burial prove to be archaeological of Aboriginal origin, consultation with a heritage professional, relevant RAPs and/or the relevant State government agency, should be undertaken by SIMTA. ▪ SIMTA should ensure that any reports or documents for the SIMTA proposal

SUBJECT	COMMITMENT
	concerning Aboriginal heritage comply with applicable statutory requirements (those currently applicable are outlined in this report), are prepared in accordance with best practice professional standards and, where appropriate, ensure findings are provided to OEH AHIMS Registrar and the relevant RAPs. Site Specific Mitigation Measures: ▪ To ensure cultural values for both the SIMTA site and proposed rail corridor are appropriately characterised and assessed, Aboriginal consultation should continue to be undertaken in accordance with applicable guidelines and requirements. ▪ The artefacts identified in Transect 1 on the SIMTA site, and Transect 7 immediately south of the SIMTA site, should be collected by RAPs in conjunction with a heritage professional before construction commences. A Care and Control Agreement should be completed between SIMTA and the RAPs regarding the future of the artefacts (it is usually preferred that they be reburied nearby). ▪ Given the extensive historical disturbance within the remainder of the SIMTA site, it is considered that the likelihood of the presence of intact or significant Aboriginal objects and/or sites is low and no further archaeological investigations are warranted in these remaining areas. ▪ In relation to the proposed rail corridor, with the exception of PADs 1 - 3 (Figure 33), it is considered that the likelihood of the presence of intact or significant Aboriginal objects and/or sites is low and no further archaeological investigations are warranted in the remaining areas. ▪ Any areas outside those investigated as part of this assessment, most notably those areas within 50m of the eastern and western banks of the Georges River, should not be impacted without further assessment. ▪ Areas of the study area in close proximity to Georges River and the south-western most corner of the proposed rail corridor, which could not be adequately investigated due to access issues, should be investigated further. The background and predictive models presented in this report may suffice for a conditional approval, however, access and more detailed assessment of these areas is required to fully identify development impacts. ▪ In relation to PADs 1 - 3 (Figure 33), it is recommended that, either: Impacts within these areas are entirely avoided (i.e. no modifications are made to any ground surface in any way, including but not limited to excavation, grading and the use of heavy or metal tracked vehicles); or Test excavations be undertaken in each of PADs 1 - 3 in accordance with current archaeological practice and any relevant guidelines to determine the nature, extent and significance of any Aboriginal archaeological deposit. Such testing could be undertaken under Section 75U of the Environmental Planning and Assessment Act 1979, and be used to inform the assessment prior to lodgment of the EA, or as part of a Statement of Commitments following the approval.

SUBJECT	COMMITMENT
	If significant Aboriginal site(s) are identified in PADs 1, 2 or 3, then design of the SIMTA proposal to avoid such sites(s) is the preferred option. However, if it is not considered possible to avoid such site(s), then salvage excavations of the PADs in accordance with current archaeological practice, any relevant guidelines and in consultation with the RAPs should be undertaken to gather as much information on the site(s) as possible prior to disturbance. <u>Non-Indigenous Heritage</u> The proponent is to commence consultation with the Department of Defence and the Australian Heritage Council prior to the end of the current lease regarding the management and status of heritage items within the Commonwealth Heritage Listed site, as part of the divestment process. A Statement of Heritage Impacts is to be prepared and submitted with each Project Approval application once the legislative obligations and development plans are more definitively known. Each Statement will need to address the impacts that may arise as a result of the works proposed within the Project Application. Each of the following matters must be addressed where relevant to the specific stage: ▪ Details of consultation with the Department of Defence and the Australian Heritage Council regarding the heritage value of the SIMTA site. ▪ Assessment of the potential impacts on the heritage significance of the SIMTA site, including the proposed demolition of the WWII buildings, construction of new buildings and landscape modification through the installation of new water, sewerage, trade waste and power infrastructure. ▪ Assessment of the potential impacts on Glenfield Farm which is located adjacent to the proposed rail corridor as the proposed development may impact on views, fabric and setting of this state significant site. ▪ Assessment of the potential impacts on Kitchener House (to the north of the study area) and its curtilage. Consideration must be given to the provisions of Liverpool DCP Section 2.4 including maintaining adequate screening of Kitchener house to avoid impacts on views and context. ▪ Archaeological investigations of the area where the WWII complex (administration block, garage, POL store, AWAS rest room and men's latrines) once stood. ▪ Appropriate Statement(s) of Commitments relating to non-Indigenous Heritage to be incorporated into the Project Approval once the development impacts and results of the divestment negotiations are known. If any archaeological deposit or item of heritage significance is located within the study area and is at risk of being impacted, an archaeologist should be notified to assess the item for its heritage significance. All items of heritage significance are protected under the *Heritage Act 1977*. As this project is being assessed under transitional arrangements for Part 3A of the *Environmental Planning and Assessment Act 1979*, permits and consents will not be

SUBJECT	COMMITMENT
	required from the NSW Heritage Branch to impact on heritage items within sections of the study area not owned or leased by the Commonwealth.
Visual and Urban Design	The Proponent commits to the preparation and submission of a Landscape Management Plan with the Project Approval applications for the future stages that address each of the objectives and design principles contained within the Urban Design and Landscape report and the following mitigation measures: ▪ High quality landscaping throughout the site, which will reinforce and extend the surrounding natural context and ecological qualities into the site. ▪ Inclusion of an 18 metre wide corridor of screening vegetation and a bio-retention swale along the Moorebank Avenue frontage, which will utilise a selection of native tree species with dense tree canopy and low screen planting. ▪ Landscape punctuation of nodal points along Moorebank Avenue. ▪ A 'boundary treatment' or 'buffer zone' along the other site boundaries, consisting of existing local species in the area and providing an essential scale of planting to complement the built form, including: – Southern boundary: combination of 10 metre and 20 metre wide landscape corridors and a bio-retention swale adjacent to the warehouse and distribution facilities and Intermodal Terminal. – Eastern boundary: total buffer zone of 13.5 metres consisting of 2.5 metre landscape corridor, a 6 metre internal light vehicle access road and a five metre wide bio-retention swale. – Land cleared for the railway alignment will include planting consisting of tall trees with a height of 20 metres at Maturity, interspersed with medium height trees. The Proponent will use lighting which is in accordance with Australian Standard AS4282-1997 "Control of Obtrusive Effect of Outdoor Lighting'.
Utilities	▪ The Proponent will protect and relocate (where required) the existing services passing through the site, including stormwater, sewer, water, telecommunications and electricity. ▪ The Proponent will undertake further investigations, as required, and provide details that adequate services are available to the site and/or provide details regarding the proposed servicing upgrades. Details are to be provided with the Project Approval applications for each of the future stages of the development.
Climate Change Risk	The Proponent will, where applicable, implement the controls and mitigation measures summarised in Table 13 of the *Climate Risk Assessment* report prepared by Hyder Consulting dated 15 August 2011 and including: – Incorporate climate change sensitivity analyses for 20 per cent increase in peak rainfall and storm volumes into flood modelling assessment to determine system performance.

SUBJECT	COMMITMENT
	– Incorporate appropriate flood mitigation measures, where practical within the design to limit the risk to acceptable levels. – Consider the impacts of climate change on system performance, and where practical incorporate adaptive capacity measures within the design to limit the risk to acceptable levels. – Use of appropriate materials and engineering design capable of withstanding potential impacts posed by storm damage. – Incorporate appropriate strategic protection zones, including asset protection zones into design to limit bushfire risk to acceptable levels. – Control of performance of hotworks on total fire ban days during construction and operation, particularly within any defined asset protection zones. – Maintain track stability through regular maintenance, use concrete sleepers in place of wooden ones and use preventative measures in the event of heatwaves (e.g. speed restrictions, warehouse ventilation for improved heat removal). – Consider further assessment of Marginal Abatement Cost Curves to assess commercial opportunities of reducing reliance on single energy source.
Ecological Sustainable Development	The Proponent will prepare an ESD report with each Project Application that demonstrates the implementation of Environmental Sustainable Development initiatives across the construction, operation and decommissioning stages of the SIMTA proposal including: ▪ Site management policies and strategies. ▪ Materials selection and energy and water demand management. ▪ On-site renewable energy generation. The report(s) will demonstrate the way in which the following principles will be achieved during the design development and construction phase of the proposal: ▪ Precautionary principles. ▪ Inter-generational equality. ▪ Conservation of biological and ecological integrity. ▪ Improved valuation, pricing and incentive mechanisms.
Waste Management	The proponent commits to undertaking waste management in the demolition, construction and operational phases of the development as listed below: <u>Demolition</u> ▪ Re-use of material will have priority over recycling.

SUBJECT	COMMITMENT
	▪ Recycling will have priority over disposal. ▪ Selection of reputable waste removal contractors who will guarantee that recyclable material will be recycled and will provide any relevant certificates. ▪ Vegetation removed shall be either preserved for use in the new development, or mulched for inclusion in landscaping activities. The remainder will be sent to a composting facility. ▪ Excavated earth will be used for infill and landscaping where feasible, the remainder will be sent to a recycling facility. ▪ Asphalt will be re-used by transferring it to a batching plant or using it as a base layer for access roads. ▪ Concrete components will, where possible, be crushed and re-used on-site, the remainder will be sent to a recycling facility. ▪ Fuel and oil storage from demolition machinery will be secured and managed responsibly within compound sites during works, and removed upon completion of works ▪ Sewage waste shall be disposed of by a licensed waste contractor in accordance with Sydney Water and OEH requirements. <u>Construction</u> ▪ Reduce potential waste by ordering the correct quantities of materials. ▪ Coordinate and sequence trades people to minimise waste. ▪ Prefabricate materials where possible. ▪ Use modular construction and basic designs to reduce the need for off-cuts. ▪ Re-use formwork. ▪ Re-use or recycle materials from the demolition phase. ▪ Separate off-cuts to facilitate re-use, resale or efficient recycling. ▪ Minimise site disturbance and limit unnecessary excavation. ▪ Select landscaping which reduces green waste. ▪ Select waste removal contractors to guarantee that recyclable waste are recycled. ▪ Engage with the supply chain to supply products and materials that use minimal packaging. ▪ Set up schemes with suppliers to take back packaging materials. ▪ Sewage waste shall be disposed of by a licensed waste contractor in accordance

SUBJECT	COMMITMENT
	with Sydney Water and OEH requirements. Operations ▪ Appropriate areas shall be provided for the storage of waste and recyclable material. ▪ Standard signage on how to use the waste management system and what materials are acceptable in the recycling will be posted in all waste collection and storage areas. ▪ All domestic waste shall be collected regularly and disposed of at licensed facilities. ▪ Waste collection vehicles will be able to service the development efficiently and effectively. ▪ An education programme and on-going monitoring will to implemented for training personnel to properly sort and transport waste into the right components and destinations. ▪ Sewage waste will be disposed of by a licensed waste contractor in accordance with Sydney Water and OEH requirements. ▪ Trade waste will be discharged to the sewer through a trade waste agreement with Sydney Water
Consultation	The Proponent will continue to consult with relevant government authorities and bodies during the design development process for future Project Applications for the SIMTA proposal. The Proponent will continue to engage and consult with the community during the Environmental Assessment process. During the exhibition period SIMTA will: ▪ Open the Community Information Centre to provide stakeholders with information and to receive feedback on the proposal. ▪ Update the existing project website and maintain access. ▪ Continue operation of the email feedback system and free-call information line.

19 Summary and Conclusion

The proposed development outlined in the Concept Plan application for the SIMTA Intermodal Terminal Facility at Moorebank Avenue, Moorebank is considered to be appropriate and entirely suitable for the site for the following reasons:

- There has been strong and consistent policy support at both State and Commonwealth level for the expansion of the rail freight network across NSW. In particular, the development of an intermodal terminal facility at Moorebank has been proposed since 2004. The Concept Plan application lodged by SIMTA will facilitate the timely development of this facility by the private sector in accordance with the recommendations of the Freight Infrastructure Advisory report '*Railing Port Botany's Containers: Proposals to Ease Pressure on Sydney's Road*' dated July 2005.

- The SIMTA site comprises 83 hectares of land which is currently occupied by the Defence National Storage and Distribution Centre (DNSDC). The Concept Plan also nominates a rail corridor to the south and south-west of the SIMTA site connecting to the Southern Sydney Freight Line, including an indicative rail link. The SIMTA site is surrounded by Commonwealth owned land, including the School of Military Engineering to the west and undeveloped land held by the Department of Finance to the east.

- The SIMTA proposal will not restrict the assessment options that are currently being investigated by the Moorebank Project Office. As such, there is no reason to further delay the redevelopment of the SIMTA site while the relocation of the School of Military Engineering and future development of the Commonwealth owned land is resolved by the Moorebank Project Office.

- The proposal is entirely consistent with strategic planning and transport policies, including the NSW State Plan, Metropolitan Transport Plan, State Infrastructure Strategy, Sydney Metropolitan Plan 2036 and the South West Subregional Strategy. The proposal will make a significant contribution to the key freight objective of increasing the proportion of container freight being moved by rail from Port Botany to 40% by 2016.

- The proposed development is permissible under the provisions of Part 3A of the *Environmental Planning and Assessment Act 1979*, *State Environmental Planning Policy (Infrastructure) 2007* and the *Liverpool Local Environmental Plan 2008*. It has been demonstrated that the proposal satisfactorily responds to each of the relevant environmental planning instruments. The proposed variations to the local planning controls are considered minor and have been fully justified within the report.

- The key issues for all components of the project identified in the DGRs have been assessed in detail, with specialist reports underpinning the key findings and recommendations outlined in the Environmental Assessment. It has been demonstrated that each of the impacts will either be positive or can be appropriately mitigated as summarised below:

  - **Transport and Access** – the assessment has demonstrated that there is a clear benefit arising from the proposal with regard to its strategic contribution to the development of the intermodal network and the increased share of container freight being moved by rail. There are forecast capacity issues for the local and regional road network, however, it has been demonstrated that these are irrespective of whether or not the SIMTA proposal proceeds. A range of infrastructure and non-infrastructure related mitigation measures have been identified to reduce these impacts.

  - **Noise and Vibration** – it has been demonstrated that the SIMTA proposal will be able to meet the relevant noise and vibration criteria for surrounding land uses through the implementation of a number of mitigation measures during the construction phase to minimise its potential impacts.

  - **Biodiversity** – the SIMTA site has been determined to be of limited conservation significance and its redevelopment will have minimal ecological impacts. An indicative rail link has been provided based on the outcomes of this assessment. The exact location of the rail link within the proposed rail corridor will be determined as part of the future Project Approval application. It will be located to minimise the potential flora and fauna impacts identified within the Concept Plan assessment.

- **Hazards and Risks** – the potential on-site and off-site hazards and risks have been identified, with a list of recommendations for further detailed assessment to be undertaken at the Project Approval application stage, once the final layout and operational issues have been further resolved.

- **Contamination** – it has been demonstrated that the SIMTA site is suitable for the proposed use, subject to further site investigations, including confirmation of a Site Management Plan being undertaken. A preliminary environmental assessment has been undertaken for the rail corridor lands including the indicative rail link. Further investigations will be completed as part of the Project Approval application. A Contamination Management Plan is to be prepared as part of a Construction Environmental Management Plan to address any expected or unexpected contaminated materials during the construction process.

- **Stormwater and Flooding** – the stormwater, flooding and erosion sediment impacts have been identified and mitigation measures have been incorporated into the proposal. These measures will facilitate the treatment of stormwater quantity and quality in the future construction and operational phases of the project in accordance with the relevant legislative requirements.

- **Air Quality** – the assessment concludes that the SIMTA proposal will not exceed air quality criteria during the construction or operational phases, subject to the implementation of a range of mitigation measures. Further, it has been demonstrated that the proposal will result in a net positive impact on air quality at the regional level, taking into account the increased use of rail based freight transport.

- **Heritage** – the assessment has concluded that there is no indigenous heritage significant potential on the SIMTA site, having regard to the extensive earthworks and development that has already been undertaken to accommodate the existing site activities. The potential impacts are likely to occur within the rail corridor and mitigation measures are provided to address these potential impacts. The non-indigenous heritage impact assessment has concluded that the principal impact of the proposal will be on the SIMTA site, particularly with regard to the World War II buildings. The report recommends that a Statement of Heritage Impacts should be produced once divestment negotiations have been completed and statutory obligations are known and submitted with the Project Approval application.

- **Visual and Urban Design** – a comprehensive assessment has been undertaken with regard to the potential visual impacts arising from the SIMTA proposal and it has been concluded that the impact is relatively low, having regard to the existing DNSDC industrial buildings and the mitigation measures to screen the intermodal terminal facility. The design analysis has demonstrated that the proposed built form controls will satisfactorily guide the siting and layout of the future staged development.

- **Utilities** – it has been demonstrated that all required utility services can be connected to the site and are capable of accommodating the proposed intermodal terminal facility, subject to the augmentation and upgrading of the existing facilities by the proponent.

- Further to the issues listed within the DGRs, the proponent has identified a number of additional important issues that are assessed within the Environmental Assessment. It has been demonstrated that each of the impacts arising from these additional issues will either be positive or can be appropriately mitigated as summarised below:

  - **Health Impacts** – the potential health impacts associated with the proposal have been assessed and indicate that acute or chronic health impacts are unlikely to result from the emissions associated with the SIMTA proposal on an individual or cumulative impact basis.

  - **Economic Impacts** – the potential employment generating potential of the proposal has been assessed and it has been determined that the proposed intermodal facility will generate a significant number of direct and indirect jobs. It will also result in a number of other economic benefits, including net travel time and labour cost savings.

  - **Climate Change** – the possibility of severe weather events associated with climate change has been assessed with regard to the SIMTA proposal. Appropriate mitigation measures have been

recommended for the construction and operational phases which will be incorporated into the future Project Approval applications.

- **Ecologically Sustainable Development (ESD)** – a range of ESD initiatives have been proposed during the construction, operation and decommissioning stages of the SIMTA proposal, including site management policies and strategies, materials selection and energy and water demand management and on-site renewable energy generation. These initiatives will contribute to the sustainable management of the proposal and contribute to minimising its ecological footprint. Further, there are considered to be regional ESD benefits arising from the shift towards rail based freight transport.

- **Waste Management** – a waste management strategy has been prepared to achieve best practice waste reduction, waste minimisation and waste management at the SIMTA Intermodal Terminal Facility and help reduce the amount of waste sent to landfill.

- An environmental risk analysis has been undertaken to identify the potential environmental impacts associated with the proposal. This analysis concluded that the proposed mitigation measures to be implemented within the SIMTA proposal will result in no unacceptable environmental risks.

- Each of the relevant issues raised during the consultation process has been addressed within the Environmental Assessment.

It has been demonstrated that the proposed redevelopment will result in a number of significant benefits, including:

- Reduction in congestion and heavy vehicle movements along the M5 Motorway between Port Botany and Moorebank by approximately 2,700 vehicles per day.

- Restoration and regeneration of degraded areas of vegetation to improve the overall biodiversity quality of the rail corridor land.

- Improvements to the water quality of surrounding riparian corridors, including the Anzac Creek and Georges River through the introduction of more rigorous on-site water management and water quality control measures.

- A net positive impact on regional air quality, having regard to the increased use of rail based freight transport.

- Creation of 850 direct and indirect jobs per annum over the six year construction period and 7,100 direct and indirect jobs once the facility is fully operational.

- Reduction in truck vehicle kilometres travelled of approximately 13 million kilometres per annum and net travel time savings of approximately 530,400 hours per annum, with associated labour cost savings of $18.6 million per annum (2011 figures).

The potential direct, indirect and cumulative impacts of the proposed intermodal terminal facility have been identified and thoroughly assessed. It is considered that the potential impacts can be satisfactorily mitigated through a range of measures that will be addressed as part of the future Project Approval applications and throughout the construction and operational phases of the project. A Draft Statement of Commitments has been prepared listing each of these mitigation measures.

Overall, the assessment concludes that the development proposed in the Concept Plan application is in the public interest and approval is recommended.

Appendix A Quantity Surveyor Certificate

Appendix B Director-General's Environmental Assessment Requirements

Appendix C Liverpool DCP 2008 Compliance Table

Appendix D Land Use and Staging Plans

Appendix E Urban Design and Landscape Report

Appendix F Flora and Fauna Assessment

Appendix G Greenhouse Gas Assessment

Appendix H Climate Risk Assessment

Appendix I Screening Level Health Risk Assessment

Appendix J Air Quality Impact Assessment

Appendix K Transport and Accessibility Impact Assessment

Appendix L Strategic Rail Capacity Analysis

Appendix M Social Impact Commentary

Appendix N Economic Assessment

Appendix O Noise Impact Assessment

Appendix P Riparian Assessment

Appendix Q Hazards and Risks Assessment

Appendix R Preliminary Envrionmental Site Assessment

Appendix S Stormwater and Flooding Environmental Assessment

Appendix T Flood Study and Stormwater Management

Appendix U Aboriginal Cultural Heritage Assessment

Appendix V Non-Indigenous Heritage Assessment

Appendix W Visual Impact Assessment

Appendix X Utilities Strategy Report

Appendix Y Waste Management Strategy

Appendix Z Environmental Risk Assessment

Appendix AA Community and Stakeholder Consultation Outcome Report

SYDNEY

Level 21, 321 Kent Street
Sydney, NSW 2000
Tel: 02 8233 9900
Fax: 02 8233 9966

MELBOURNE

Level 12, 120 Collins Street
Melbourne, VIC 3000
Tel: 03 8663 4888
Fax: 03 8663 4999

BRISBANE

Level 12, 120 Edward Street
Brisbane, QLD 4000
Tel: 07 3007 3800
Fax: 07 3007 3811

PERTH

Level 1, 55 St Georges Terrace
Perth WA 6000
Tel: 08 9346 0500
Fax: 08 9221 1779

Australia • Asia • Middle East
urbis.com.au
info@urbis.com.au