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 planning approval applications.

2.4.3 STATE ENVIRONMENTAL PLANNING POLICY (MAJOR DEVELOPMENT) 2005

At the time of obtaining the DGRs, Schedule 1 of *State Environmental Planning Policy (Major Development) 2005* listed the types and classes of development that could be considered Part 3A projects. The SIMTA Intermodal Facility was 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. Accordingly, the Minister for Planning confirmed that the proposed development was of a type described in the Major Development SEPP and was a project to which Part 3A of the Act applies.

2.4.4 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 2.4.4**.

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.

2.4.5 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**.

2.4.6 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 transitional Part 3A project, 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 detailed planning approval 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 3 – 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**
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**
Consideration of the *NSW State Rivers and Estuaries Policy* and *NSW Wetlands Management Policy*	**Section 10**
Runoff and water quality management from the development into the Georges River	**Section 10**
▪ 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**

2.4.7 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 2.4.2** above, Section 75O(3) of the EPA Act 1979 continues to apply to a transitional Part 3A project. Section 75O(3) 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

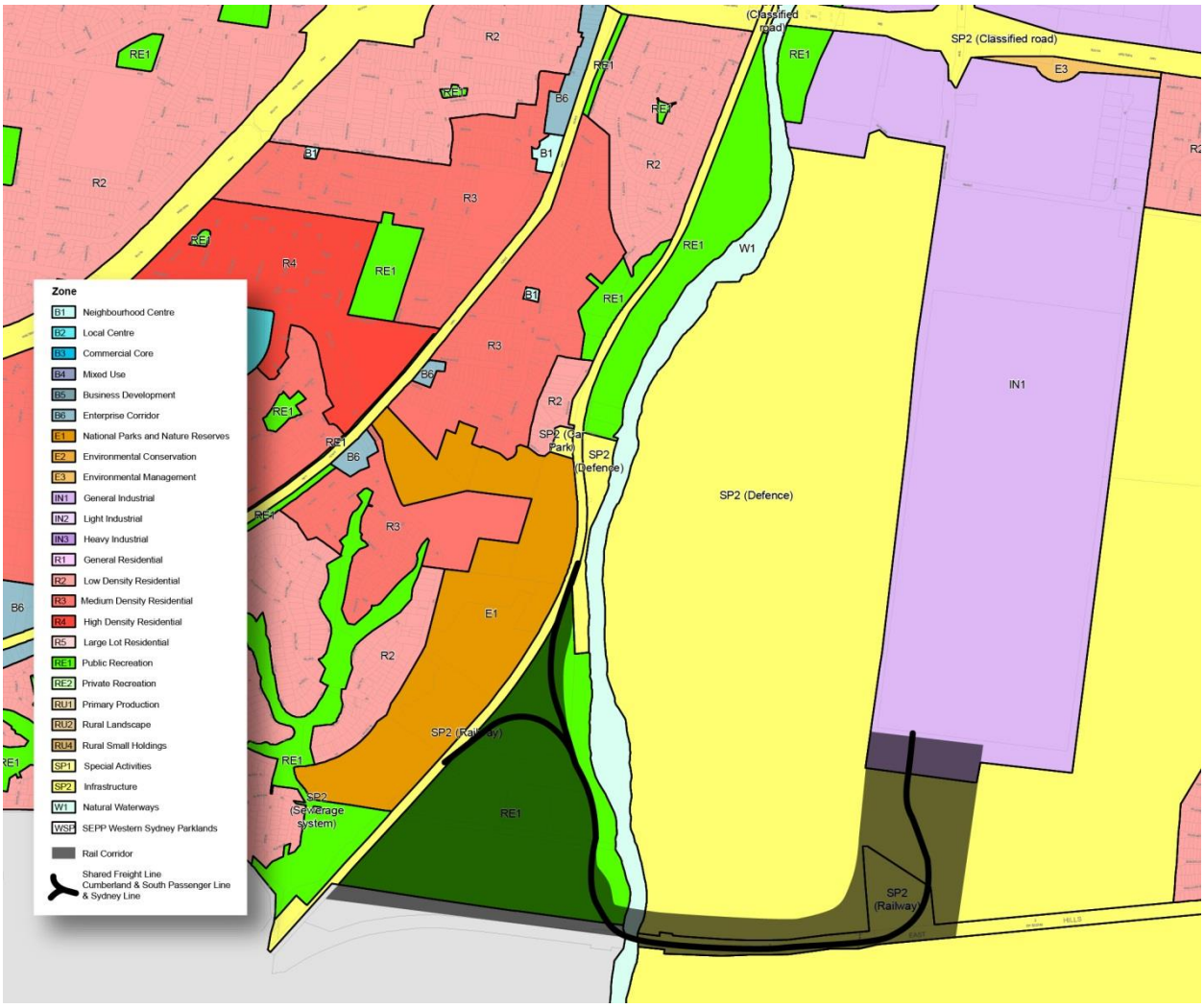
assessed, having regard to the appropriateness of the proposed development with the existing and likely future development on the surrounding land.

- **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).

FIGURE 9 – LIVERPOOL LOCAL ENVIRONMENTAL PLAN 2008 - LAND USE ZONING MAP EXTRACT



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 transitional Part 3A project provisions within the EP&A Act and ISEPP as previously discussed within **Section 2.4.2** and **Section 2.4.4**.

- **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 with a maximum height of 40 metres (nb to be reduced where appropriate and feasible – refer to **Section 13**) and warehouse buildings with a height of approximately 21 metres from the finished level of hardstand. Section 75O(3) of the now repealed Part 3A provisions state 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 13**.

- **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 7**.

- **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**.

- **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.

- **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 *Traffic and Transport 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 LEP that would generally apply except for Section 75O(3) of the former Part 3A provisions contained within the EPA Act 1979 (which continue to apply to Transitional Part 3A Projects). However, the proposal is considered to be entirely appropriate taking into account the visual impacts of the proposal.

2.4.8 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 detailed planning 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**.

2.5 PROJECT COMPONENTS, OPERATIONS AND DESIGN ELEMENTS

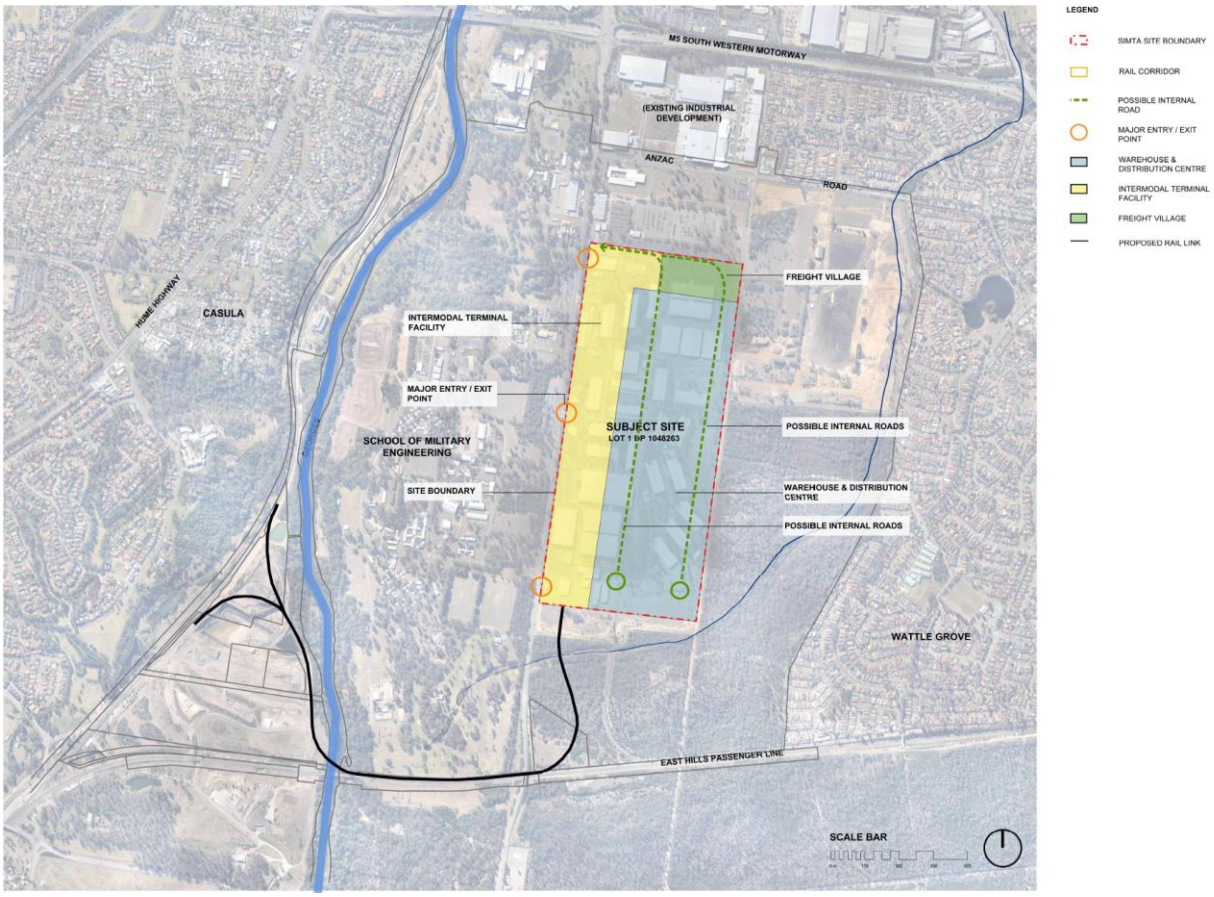
2.5.1 SITE LAYOUT AND LAND USES

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 10 – CONCEPT PLAN – LAND USES (REID CAMPBELL 2012)



2.5.1.1 RAIL CORRIDOR

The Concept Plan application includes a proposed rail corridor of 20 metres and variable width which will accommodate a rail connection between the SIMTA Intermodal Terminal Facility and the Southern Sydney Freight Line (**SSFL**), approximately 500 metres south of Casula Railway Station. The exact location and design of the rail spur connection will be resolved as part of the future detailed planning approval application, however, it is anticipated that the rail infrastructure will include:

- Culvert crossing of Anzac Creek to allow for the 100 year average recurrence interval (ARI) surface water flows.

- A crossing under Moorebank Avenue in proximity to the existing grade-separated crossing which supports the existing East Hills Railway Corridor, avoiding impacts on traffic flows along Moorebank Avenue.

- Bridging the Georges River, with the piers aligned to the Georges River rail bridge and similarly oriented to minimise afflux.

- An access track to provide for ongoing maintenance of the rail link.

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

2.5.1.2 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:

- Five rail tracks of approximately 650 to 1,200 metres in length, including four permanent and one temporary siding, to accommodate local freight trains (shuttles) to/from Port Botany.

- Container hardstand of approximately 90,000m^2 located on both sides of the rail tracks to be used for container sorting and storage. Containerised import freight will arrive from Port Botany 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.

- 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 detailed planning 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.

2.5.1.3 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.

2.5.1.4 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.

2.5.2 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 detailed planning 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 future planning 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
  - Light Poles: maximum of 40 metres (nb to be reduced where appropriate and feasible – refer to **Section 13**).
  - 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**).

2.5.3 STAGING

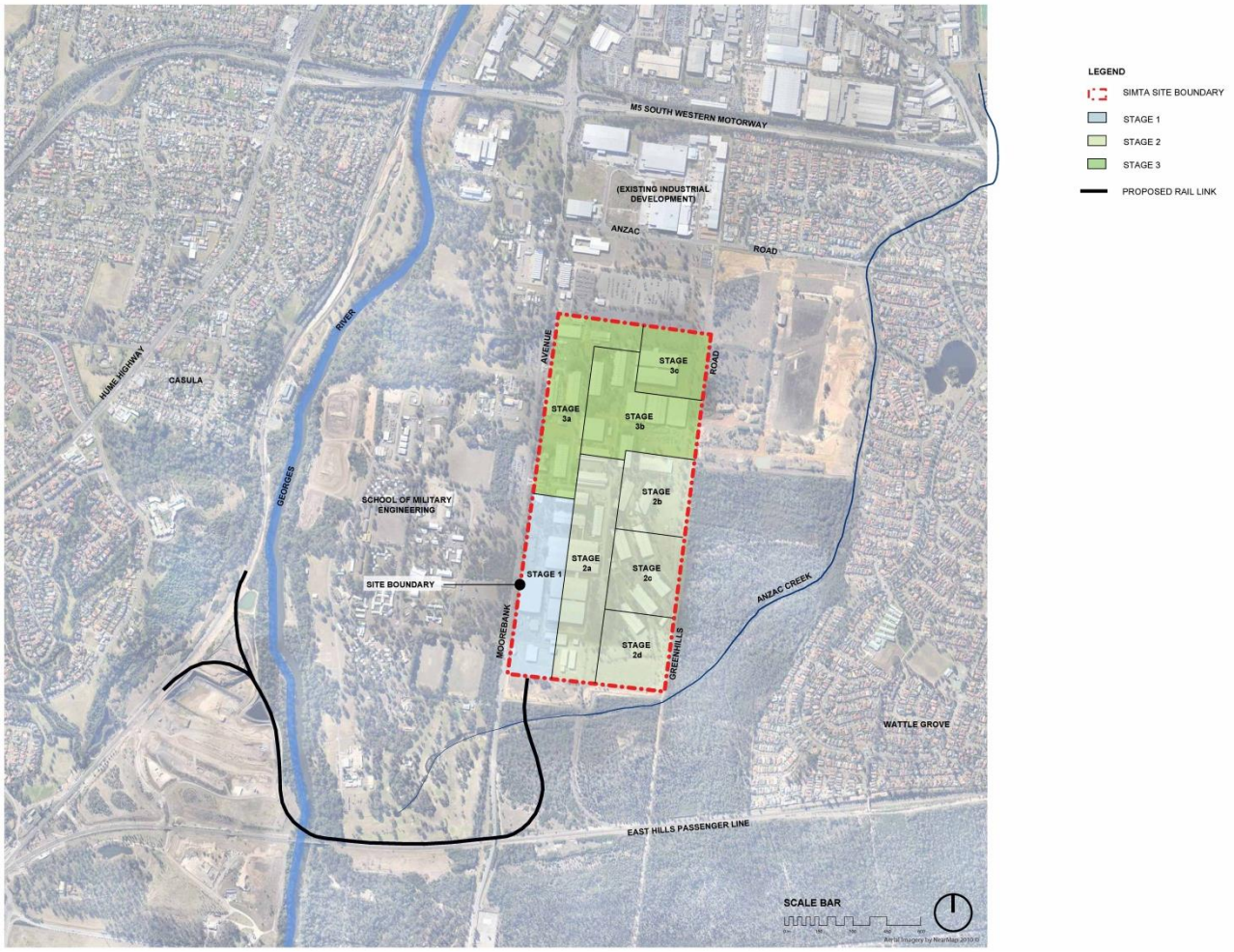
The SIMTA Moorebank Intermodal Terminal Facility is proposed to be constructed in three stages. The anticipated scope of works and timing for each stage is described below. An illustrative Indicative Staging Plan is provided as **Figure 11**. A full size copy of this plan is held as **Appendix D**.

TABLE 4 – INDICATIVE STAGING PLAN

STAGE	SCOPE	TIMING
Stage 1 – Construction of the Intermodal Terminal and Rail Link	Stage 1 shall include: ▪ Construction of the rail link between the SIMTA site and the SSFL. ▪ Establishment of hardstand for container storage. ▪ Construction of freight truck loading and circulating area. ▪ Construction of a control tower and maintenance shed. ▪ Construction of access driveways and internal circulation roads required to service the intermodal terminal. ▪ Provision/ upgrade of stormwater infrastructure and utility services required to service the intermodal terminal. ▪ Landscaping. Stage 1 may include construction of some warehousing, however, the volume will be dependent upon market demand.	Commencement: end 2014 Completion: Mid 2015
Stage 2 – Construction of Warehouse and Distribution Facilities	Stage 2 shall comprise 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: Mid 2019
Stage 3 – Extension of Intermodal Terminal and Completion of Warehouse and Distribution Facilities	Stage 3 (the final stage) shall 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	Completion: Mid 2022

STAGE	SCOPE	TIMING
	the additional warehouses. ▪ Completion of the landscaping treatments. ▪ Provision/upgrade of stormwater infrastructure and utility services required to service the additional warehouses.	

FIGURE 11 – CONCEPT PLAN – INDICATIVE STAGING (REID CAMPBELL 2012)



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 5 – 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 15** 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 3.5**. Further, the Economic Assessment undertaken by Urbis (and outlined in detail in **Section 15.3**) demonstrates that the proposal will have a number of positive economic impacts.

OBJECT	COMMENT
(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 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 and a range of on-site ancillary services will be provided to service intermodal terminal facility staff, as outlined in **Section 5**
(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* discussed in detail within **Section 7**.
(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 transitional Part 3A project provisions. 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 detailed planning 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**) 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 SSFL 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). An additional bridge crossing would be required over Moorebank Avenue to the north, impacting on traffic conditions. Further, such a proposal would be inconsistent with the proposed relocation of the DNSDC operations to the north of the site (as described further below).

- 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 3.2**, 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, it is noted that the current uses on the site involve various warehousing and administrative offices used by the Department of Defence (commonly known as the DNSDC). 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.

It is currently proposed to relocate the DNSDC to the Commonwealth owned land to the north of the SIMTA site. In the interim, the staged redevelopment of the SIMTA site has been planned to enable the ongoing DNSDC operations, including the provision of a fifth temporary siding as previously outlined within this EA.

Overall, it is concluded that the proposal will result in an increase in warehousing space within the local area, taking into account the replacement of the former DNSDC buildings on the SIMTA site and the relocated DNSDC operations to the north. The cumulative impact of these proposals is considered in detail within the assessment of key impacts in **Sections 4-15** of this EA.

3.3 NEED FOR AND THE OBJECTIVES OF THE PROJECT

3.3.1 INCREASING FREIGHT RAIL IN NSW

The NSW Government has an objective of achieving 28% of all freight movements being by rail. 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 target of container freight being transported by rail.

- Specifically service Sydney's Western and South Western catchments 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.

- Realise economic benefits through rail distribution – particularly to the western and south-western Sydney catchments.

- Provide 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 *Freight Demand Modelling* report undertaken by Hyder Consulting (as discussed in detail in **Section 5**) has identified the freight demand for the Western and South-Western Regions.

The Moorebank Catchment Area has been identified for both 2016 and 2025 as shown in **Figures 12-15**. The catchment demand has been based on the following key assumptions:

- Projected number of container movements at Port Botany.

- Estimating the destination of all important containers and conversion to truck movements.

- Capacity of current and known intermodal terminal and operation of an additional facility at Eastern Creek.

Results are provided for both an 'unconstrained' and 'constrained' scenario. The 'unconstrained option is considered to be the least cost option, however, it is not considered to be a realistic scenario. The freight catchment demand analysis confirms that the planned intermodal facility at Moorebank will need to service one million TEU by 2025. The potential impacts of the SIMTA terminal are listed below:

- *The natural cost-competitive catchments of the current system of IMTs far exceed their capacity. This results in a contraction of the catchment of each and a consequent forced use of truck haulage from Port Botany into western Sydney;*

- *In 2016, if SIMTA is not operational, direct trucking from Port Botany would deliver over 70 per cent of the market, largely as a result of inadequate IMT capacity, not because they are uncompetitive in terms of supply chain costs;*

- *With SIMTA in operation, it has the capability to attract a significant proportion of the TEU market (up to 35 per cent), thus reducing the trucking demand from Port Botany to as little as 40 per cent of the total import market;*

- *Even in 2016, when SIMTA would still be in start-up mode, it is sufficiently cost competitive to attract its long-term target throughput of 500,000 import TEUs per annum. The timing of the staged development of SIMTA may somewhat reduce its market capture in early years, but the latent demand nevertheless would still exist;*

- *By 2025, additional IMT capacity will be essential to deliver the forecast 4.6 million TEU through Port Botany. A location in west-northwest Sydney has been assumed;*

- *In 2025, SIMTA would attract containers from a reasonably clearly defined and localised catchment including Liverpool the South West and part of the Industrial West;*

- *Without SIMTA, much of Liverpool would be served by road direct from the Port;*

- *By 2025, the demand for containers in the South West would exceed the current capacity of Minto IMT. In the analysis it has been assumed that sufficient IMT facilities would be available to meet this demand, although none is currently being planned.*

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 Moorebank Intermodal Company Limited (**MICL**) is also pursuing the development of 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.

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.** The assessment of the potential impacts has been based on an assessment of the one million TEU demand capacity within the catchment. Accordingly, the cumulative impact of the SIMTA proposal and any other potential intermodal terminals within the Moorebank Catchment, including the proposal by the MICL 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 15**.

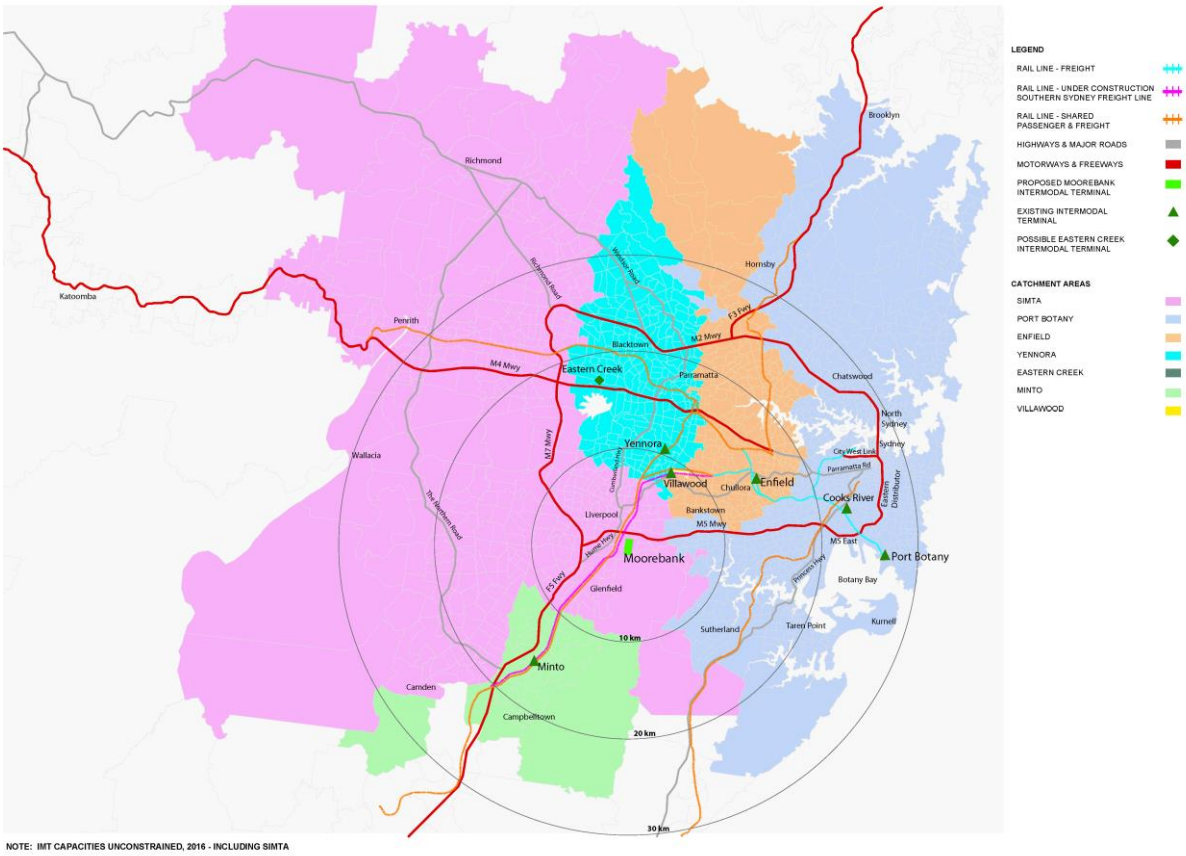
3.3.3.1 DURING CONSTRUCTION

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.

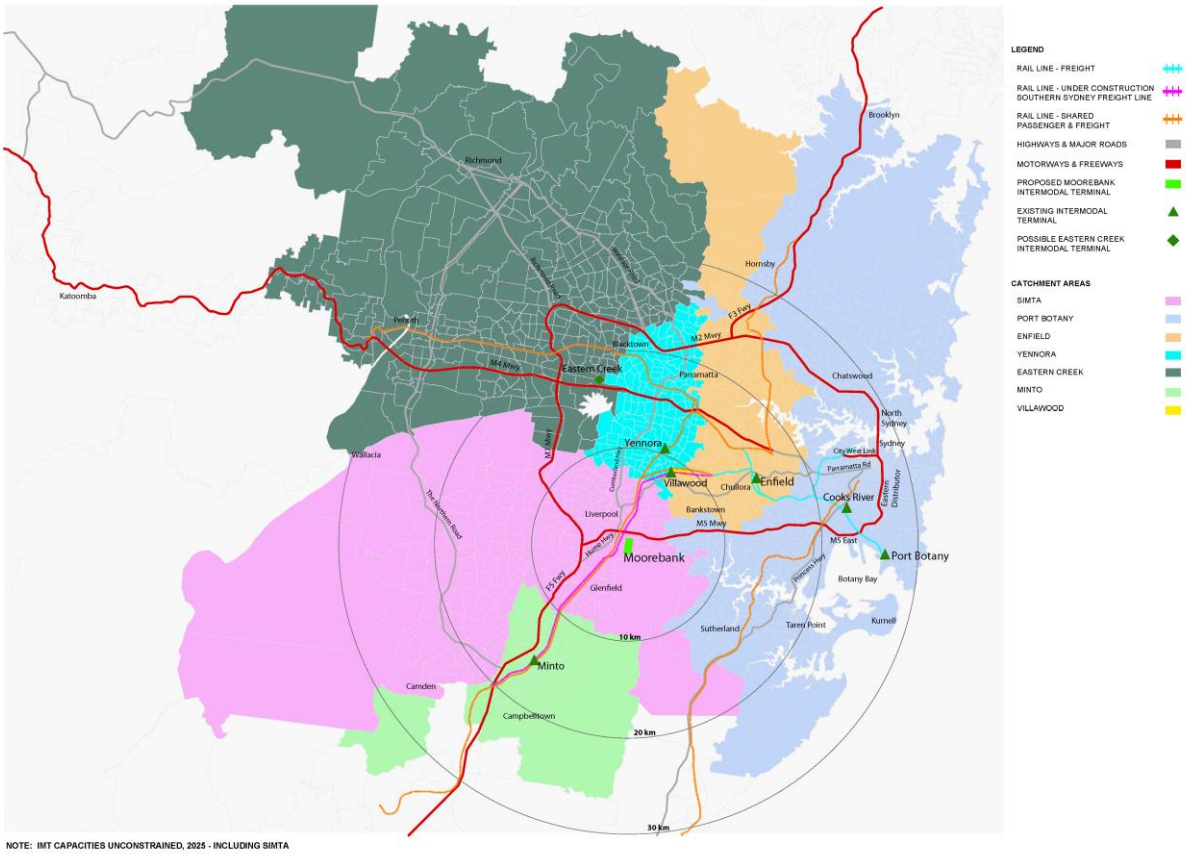
The mitigation measures proposed through this environmental assessment are intended to minimise impacts of each of the environmental aspects, both individually and cumulatively. For example, exposed soil surface areas can contribute to both sediment mobilisation and dust generation. The nominated controls 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.

FIGURE 12 – MOOREBANK FREIGHT CATCHMENT AREA – WITH SIMTA 2016 - UNCONSTRAINED (HYDER: 2013)



NOTE: IMT CAPACITIES UNCONSTRAINED, 2016 - INCLUDING SIMTA

FIGURE 13 – MOOREBANK FREIGHT CATCHMENT AREA – WITH SIMTA 2025 – UNCONSTRAINED (HYDER: 2013)



NOTE: IMT CAPACITIES UNCONSTRAINED, 2025 - INCLUDING SIMTA

FIGURE 14 – MOOREBANK FREIGHT CATCHMENT AREA – WITH SIMTA 2016 – CONSTRAINED (HYDER: 2013)

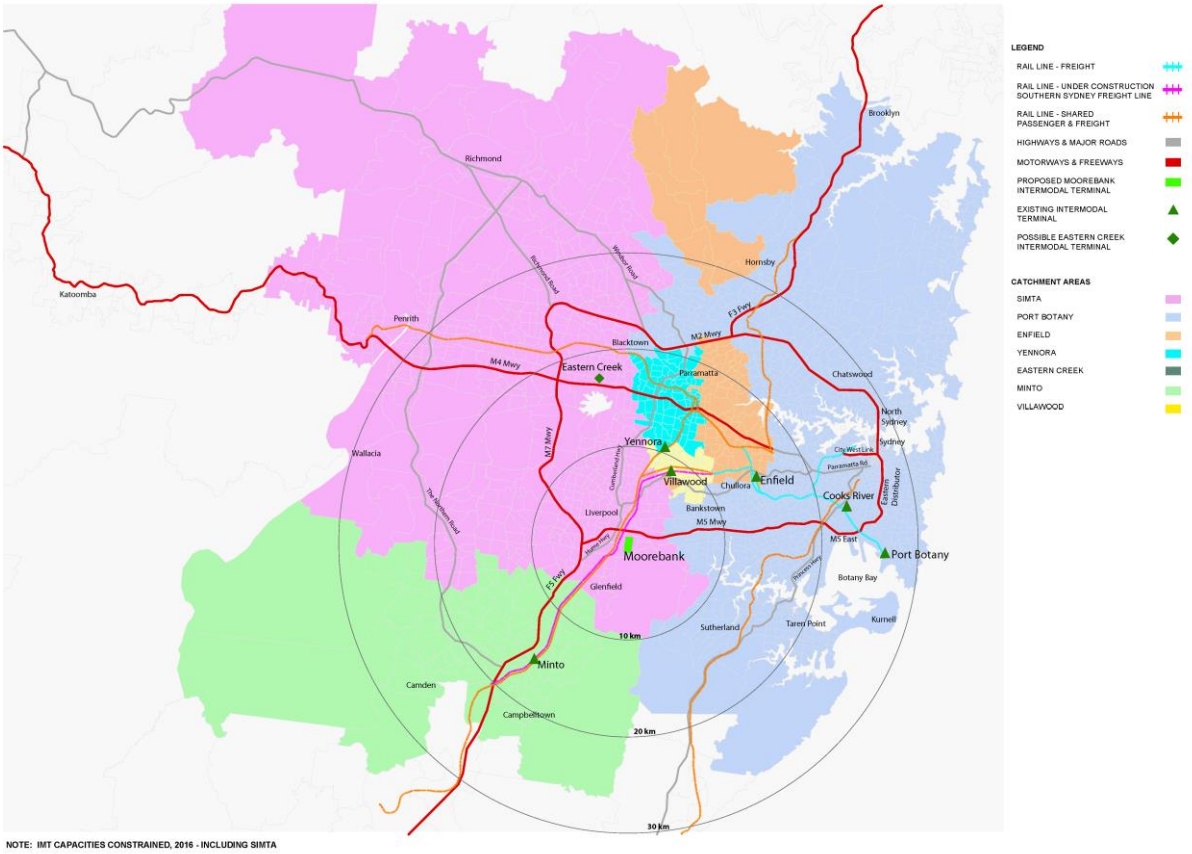
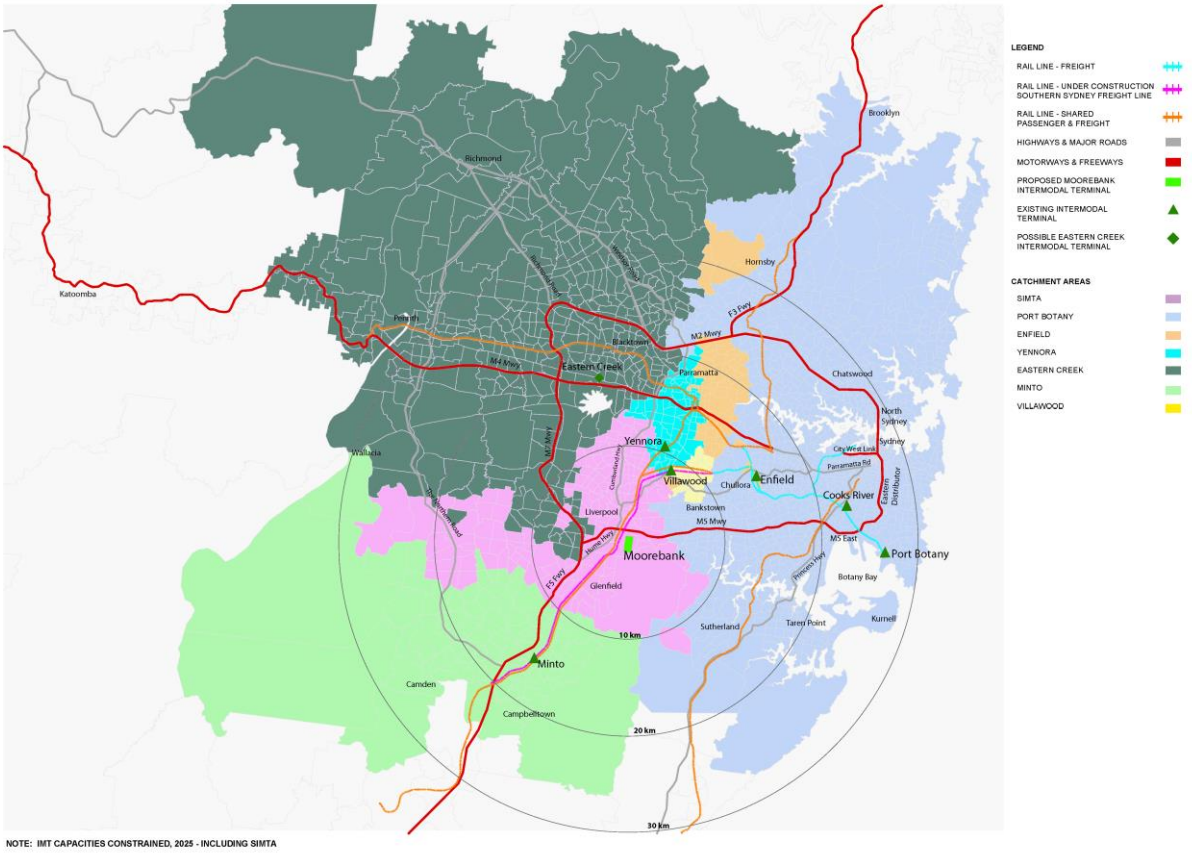


FIGURE 15 – MOOREBANK FREIGHT CATCHMENT AREA – WITH SIMTA 2025 – CONSTRAINED (HYDER: 2013)



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 *Environmental Protection and Biodiversity Conservation Act* Referrals List website indicated that the Department of Finance and Deregulation (**DoFD**) and Department of Defence (**DoD**) have submitted EPBC Referrals to the Department of Sustainability, Environment, Water, Population and Communities, including:

- *Moorebank Intermodal Terminal Project* (Reference Number 2011/6086) – this Referral comprises the redevelopment of the SME site to accommodate the MICL proposal for an intermodal terminal.

- *Moorebank Units Relocation Project* (Reference Number 2012/6462) – this Referral comprises the relocation of a number of Defence units and facilities from the SME site to Holsworthy Barracks. The proposed relocation aims to facilitate the construction of the intermodal terminal facility.

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

- *Moorebank Waste Facility* (Application Number: MP 05_0157). Moorebank Recyclers have proposed 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. The application was on public exhibition from 28 February 2013 to 5 April 2013. The proponent was reviewing the submissions at the time of preparation of this EA.

- *Moorebank Intermodal Facility* (Application No SSD-5066): DGRs have been issued for the construction and operation of the Moorebank Intermodal Terminal (referred to as the MICL Proposal throughout this EA) and associated commercial infrastructure, a rail spur connecting the site to the SSFL and one or more road entry points from Moorebank Avenue.

- *Goodman Fielder* (Application Number: MP11_0057). This former transitional Part 3A project was not proceeded with and has lapsed.

A review of the LEP Tracking System on the Department's website indicated that the MICL proposal also includes a proposed amendment to Liverpool Local Environmental Plan 2008. A search of the Planning Assessment Commission and Joint Regional Planning Panel websites did not identify any additional major developments that could be of relevance to a cumulative impact assessment.

Overall, it is considered that the location of the Moorebank Waste Facility proposal on the northern side of the South Western Motorway would mean that the cumulative impact of the developments would be negligible. The potential cumulative impacts of the SIMTA and MICL proposals are considered further in the following section and in detail throughout this EA.

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 Road 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 which is to be redeveloped to accommodate the relocated DNSDC operations. There is also an electricity substation on Anzac Road, near its intersection with Greenhills Avenue, while the balance of the land is undeveloped. The assessment of the key issues in **Sections 4 to 15** has given appropriate consideration to the adjoining land to the north, taking into account its existing and proposed future uses.

- **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 be determined based on further detailed design work, having regard to 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 immediate 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 15** 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, as well as its proposed future redevelopment for an intermodal terminal facility. The *Moorebank Intermodal Terminal Project - Detailed Business Case* was released by the Department of Finance and Deregulation in February 2012, providing a broad overview of the project, including indicative layout plan and timing.

  A State Significant Development (**SSD**) application and a Planning Proposal to amend the LEP have been submitted to the Department of Planning and Infrastructure. No details are currently available regarding the SSD and only limited information is available regarding the proposed rezoning. The Planning Proposal seeks to rezone land from SP2 Infrastructure (Defence) to part E3 Environmental Management and part IN1 General Industrial.

  The Detailed Business Case indicates that the design and construction program for Stage 1A of the Project, involving construction of the MICL proposal is estimated to commence in early 2015 and be completed in mid 2017. This compares with the indicative timing for the SIMTA proposal with commencement scheduled to occur in 2014 and be complied in mid 2015. Based on these indicative timeframes, it would appear that the potential cumulative construction impacts would be limited. Regardless, the potential impacts have been assessed in detail as part of the Environmental Assessment.

  The key physical difference between the SIMTA and MICL proposals is the location of the rail connection to the SSFL. The SIMTA proposal includes a bridge crossing to the south, adjacent to the existing rail bridge, while the MICL proposal has its rail connection from the northern end of the site. It is considered that the SIMTA river crossing is considered to be the most appropriate location having regard to the opportunities to reduce the potential cumulative impacts, including:

  - The piers of the Georges River rail bridge will be aligned to the existing rail bridge and similarly orientated to minimise afflux.

  - The sizing for the culverts under Anzac Creek will allow for the 100 year average recurrence interval (ARI) surface water flows.

- Design of onsite detention (OSD) structures to prevent flooding on adjacent lands during peak surface water flows.

The proposed location of the bridge associated with the SIMTA proposal is consistent with the location previously proposed by the State Government, is consistent with an immediately proximate use of the land (ie East Hills Railway Corridor) and would prevent the requirement for either a level crossing or overhead crossing of Moorebank Avenue. The latter two options would increase visual and noise impacts and would be detrimental to the continuous flow of existing and future traffic through the Moorebank precinct along Moorebank Avenue.

Regardless, the SIMTA proposal has been designed to be independent from the MICL proposal and 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 MICL proposal for the redevelopment of the SME site. It is considered appropriate to advance the assessment of the SIMTA proposal 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 existing and draft State and Commonwealth policies and plans, including the objective to double the rail modal share of freight movements to 28%.

3.5.1 NSW 2021: A PLAN TO MAKE NSW NUMBER ONE

NSW 2021 is a 10 year plan to rebuild the economy, return quality services, renovate infrastructure, restore accountability to government, and strengthen our local environment and communities. It replaced the State Plan as the NSW Government's strategic business plan and sets immediate priorities for action, guiding resource allocation in conjunction with the NSW Budget.

NSW 2021 includes the following target with regard to freight:

Enhance rail freight movement.

Double the proportion of container freight movement by rail through NSW ports by 2020.

The current rail mode share for container freight movement is 14% (Draft NSW Freight and Ports Strategy: 2012) and accordingly, the revised State government target for rail mode share has increased to 28%. It is expected that the SIMTA Moorebank Intermodal Terminal Facility will contribute to achieving the freight target 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 100,000 new jobs to be generated at an average growth of 1.25% per year. 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 *Long Term Transport Master Plan* which recognises the importance of the development of the Moorebank intermodal terminal precinct over the short to medium term (discussed further in **Section 3.5.4**).

- 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 3.5.11** below).

3.5.2 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, with a further 4,260 jobs generated indirectly[4]. These 7,100 jobs will be a significant contribution to the target for the South West subregion.

  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, as well as the Southern Sydney Freight Line, providing the opportunity to benefit from both existing and planned transport infrastructure.

- **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.

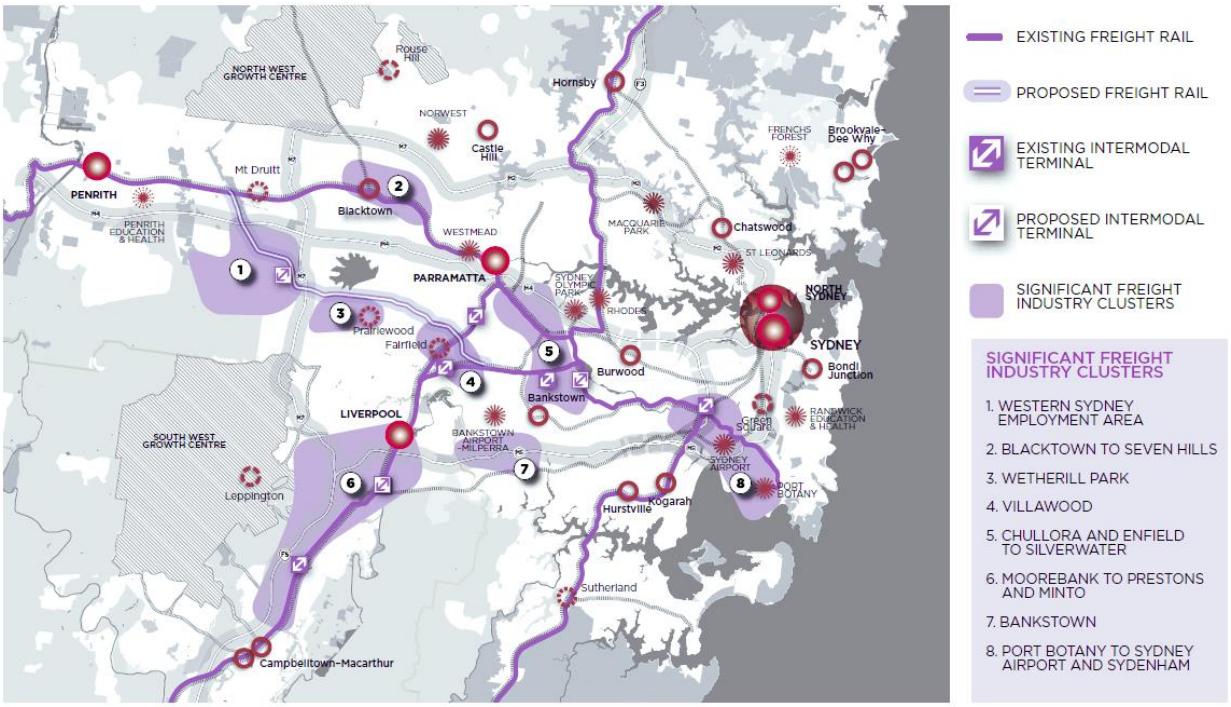
- **Transport Capacity** – the scale of the SIMTA site will enable it to accommodate a throughput of approximately one million TEU at full capacity, which will meet the forecast catchment demand and

[4] PricewaterhouseCoopers, *Needs Assessment*, June 2011.

work towards delivering the rail freight target from Port Botany. 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. 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*. This will in turn improve Sydney's competitiveness in attracting investment and growth, particularly in the freight and logistics industries.

FIGURE 16 – 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.

3.5.3 DRAFT METROPOLITAN STRATEGY FOR SYDNEY TO 2031

The *Draft Metropolitan Strategy for Sydney to 2031* (**the Draft Metro Strategy**) was released by the Department of Planning and Infrastructure in March 2013. The Draft Metro Strategy was placed on public exhibition with submissions closing on 28 June 2013.

The Draft Metro Strategy aims to provide for balanced and sustainable growth within the Sydney metropolitan area. The key projects and intended outcomes are consistent with the other strategic plans, including NSW 2021, the *Long Term Transport Master Plan* and the *State Infrastructure Strategy*. The SIMTA proposal will assist with realising a number of the key objectives of the Draft Metro Strategy, including:

- **Productivity and Prosperity** - the SIMTA proposal will make a significant contribution to the planned delivery of jobs within Western Sydney, including approximately 2,840 jobs once the terminal reaches its throughput capacity. The proposed development is also consistent with the objectives of the *Long Term Transport Master Plan*, the *State Infrastructure Strategy* and the *Draft NSW Freight and Ports*

Strategy which recognise the importance of the development of the intermodal terminal precinct at Moorebank over the short to medium term.

- **Healthy and Resilient Environment** – the specialist technical studies provided within the Environmental Assessment include comprehensive analysis of the potential impacts, including the identification of mitigation and management measures to minimise any potential environmental issues.

- **Accessibility and Connectivity** - the delivery of an intermodal terminal on land already zoned for industrial purposes and with future access to a dedicated freight line is considered to be consistent with the objectives for integrated land use and transport efficient freight connections.

- **Subregions** – the proposed intermodal terminal will help support and expand the existing wholesale/logistics industry within the South West Subregion and contribute to subregional employment objectives.

Overall, it is considered that the proposed SIMTA Intermodal Terminal Facility will meet the aims and objectives of the Draft Metro Strategy by providing for an intermodal terminal in a planned location and the delivery of a significant number of jobs within the transport and logistics industry.

3.5.4 NSW LONG TERM TRANSPORT MASTER PLAN

The final *NSW Long Term Transport Master Plan* (**the Transport Master Plan**) was released by Transport for NSW in December 2012 following 12 months of consultation and analysis. It aims to integrate transport strategy with land use planning and providing for integrated planning of freight and passenger movements.

The Transport Master Plan aims to deliver an effective and productive freight network by addressing the following challenges:

- *Increase network efficiency by fixing bottlenecks on road and rail networks, improving coordination, ensuring better regulation, better using the existing network and removing obstacles to improved freight productivity.*

- *Grow freight network capacity to meet the future freight task through targeted investment that expands road and rail capacity and supports economic growth.*

- *Manage the community and environmental impacts of freight to promote sustainability.*

One of the key actions associated with the growth of the freight network capacity in the short to medium term is to increase the share of freight that is transported by rail by developing an efficient and competitive network of intermodal terminals within Sydney. This includes working with both the Australian Government and industry on the development of the Moorebank terminal precinct to achieve a more competitive alternative to road freight. The Transport Master Plan recognises that the development of the intermodal container terminal precinct will impact on the local road network, requiring the NSW government to work with the Australian Government on a road access strategy for the intermodal terminal precinct.

Overall, it is considered that the SIMTA Intermodal Terminal Facility will enable the efficient and effective delivery of this important infrastructure, enabling the objectives of the Transport Master Plan to be met within a timely manner.

3.5.5 STATE INFRASTRUCTURE STRATEGY 2012-2032

The State Infrastructure Strategy 2012-2032 (**SIS**) was prepared by Infrastructure NSW (**INSW**) and released on 3 October 2012. The Strategy aims to provide a clear plan for the delivery of $30 billion worth of infrastructure within NSW over the next five, ten and 20 years.

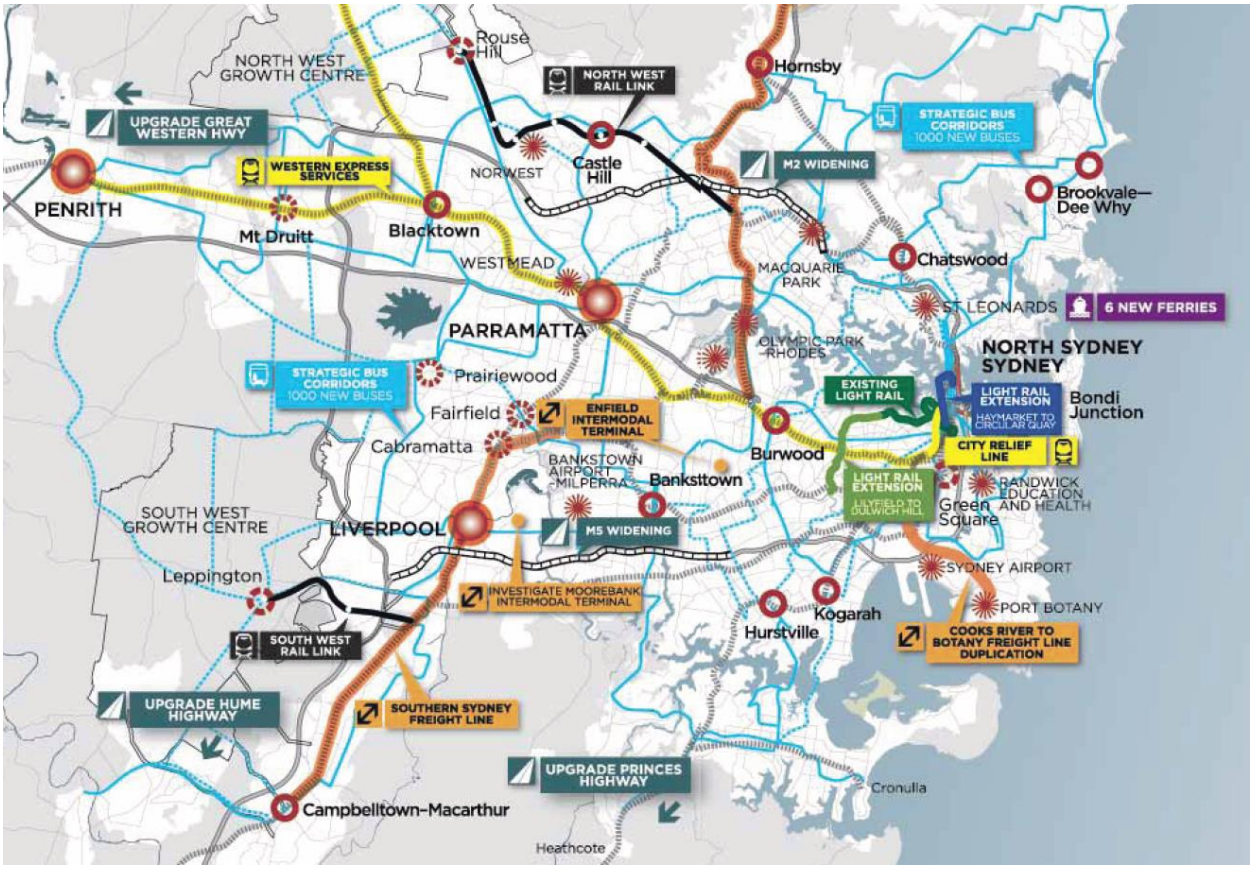
The Strategy includes a number of statements regarding the cost competitiveness of rail and road transport, including recent policy objectives to achieve an increased rail mode share. Overall, the report

concludes that both rail and road freight transport will need to substantially increase the volumes carried to ensure the efficiency of the port supply chain over the next 20 years (INSW, page 121).

The SIS recognises that there are two separate schemes being proposed at Moorebank, including a private sector (SIMTA) proposal and a Commonwealth Government (MICL) proposal. The SIS includes broad support of the intermodal concept, however, it recommends that State public funding for additional intermodal terminal capacity is minimised until there is greater clarity on whether the short-haul rail market is viable. Despite this recommendation, the Strategy supports the completion of the Southern Sydney Freight Line in order to deliver a dedicated freight rail network between Port Botany and Macarthur (INSW, p124). It also recommends that action be taken in the short term to identify and preserve a rail corridor for the Western Sydney Freight Line and land for the terminal at Eastern Creek (INSW, p125).

Overall, it is considered that the SIMTA proposal is appropriate as it will provide for private investment in the rail freight market, reduce heavy vehicle movements along the M5 and support the NSW Government investment in the delivery of the Southern Sydney Freight Line.

FIGURE 17 – SUBREGIONAL TRANSPORT RELATED INFRASTRUCTURE (EXTRACT, METROPOLITAN TRANSPORT PLAN 2036)



3.5.6 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. The Subregional Strategy acknowledges the need for new major intermodal terminals to service south-west Sydney in order to meet the goal of increasing rail freight movements from Port Botany. 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'* (p28). 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.

3.5.7 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* (now *NSW 2021: A Plan to Make NSW Number One*) 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 EA 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**. 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**. 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 Pacific Environment Limited (formerly PAE Holmes). This report is discussed in detail in **Section 11**. 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 regional impacts of the SIMTA proposal are expected to result in a net reduction in emissions for NOx and PM. The changes in emissions when considered at the regional level and impacts on regional air quality would be negligible.

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 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 40% rail share target listed in Recommendation 1 has been revised to 28% following the release of *NSW 2021* (the updated State Plan).

The SIMTA Intermodal Terminal Facility at will provide 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 Qube Holdings and Aurizon (formerly 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 future detailed planning approval applications.

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.

3.5.10 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'* (p2). The Discussion Paper included 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 was updated in June 2012 following review of over 70 submissions received from the freight industry, industry, business and infrastructure groups, local government and resident groups and further consultation with industry and government officials.

The original Discussion Paper acknowledged that one of the key methods of delivering freight infrastructure was through attracting private investment, enabling the freight network to expand more rapidly, in response to economic demands. The updated Discussion Paper sought to prioritise a formal trial of high productivity vehicles on key roads to ports and rail terminals, such as the Hume Highway, with incremental costs of infrastructure financed from industry beneficiaries.

The SIMTA Intermodal Terminal Facility will be delivered from a consortium of private investors, including Qube Holdings and Aurizon (formerly QR National). It will utilise the Southern Sydney Freight Line, taking advantage of the expanded national freight network. It will also deliver road infrastructure upgrades to accommodate the increased local traffic, addressing the provisions of the updated Discussion Paper.

3.5.11 DRAFT NSW FREIGHT AND PORTS STRATEGY

The *Draft NSW Freights and Ports Strategy* (**the Draft Strategy**) was released by Transport for NSW in November 2012. Public comment was sought by 15 March 2013 with the final strategy expected to be completed in mid-2013.

The Draft Strategy aims to support and promote the effective and efficient movement of freight, including by air, sea, rail and road. It also aims to guide investment and other decisions, within both government and private sectors.

The SIMTA proposal will contribute to achieving a number of the Strategic Action Areas, including:

- *Identify freight movements and network demand* – the Strategic Freight Demand study undertaken by Hyder Consulting has identified the catchment demand for the Western and South–Western Regions, as shown in **Figure 12** and **Figure 13**.

- *Foster intermodal terminal network development* – the proposal seeks to develop an intermodal terminal at Moorebank, consistent with the Draft Policy. The Environmental Assessment includes a review of the rail capacity as well as the road upgrade requirements necessary to support the proposed terminal.

- *Manage congestion, noise and emission impacts of freight transport* – the Environmental Assessment includes a comprehensive analysis of the potential impacts of the terminal operations, including mitigation and management measures to address potential issues.

- *Prioritise safety of freight transport* – the Environmental Assessment includes analysis of relevant hazards and risks associated with freight transport, including movement and storage of dangerous goods (refer to **Section 8**).

Overall, it is considered that the proposed SIMTA Intermodal Terminal Facility will meet the aims and objectives of the Draft Strategy. It will provide for the timely delivery of an intermodal terminal in a planned location to deliver economic and efficiency benefits in the movement of freight.

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 SSFL.

- The SIMTA Intermodal Terminal Facility 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 TEU annual throughput at full operation, which will increase the rail modal share of freight movements to assist in meeting Commonwealth and State policy targets.

- Based on demand modelling undertaken by Hyder[5], the SIMTA development has the potential to support NSW freight policy objectives, providing enough capacity to achieve the 28% rail freight target.

- Previous modelling of existing and approved intermodal terminal network capacity undertaken by PricewaterhouseCoopers[6] 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.

- The *Freight Demand Modelling* report 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

[5] Hyder, *Freight Demand Modelling*, 2013

[6] PricewaterhouseCoopers, *Needs Assessment*, 2011

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 2,735 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 of the SIMTA proposal have been clearly demonstrated within the *Social Impact Commentary* (as further discussed in **Section 17**), as well as the *Economic Assessment* (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 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 regard 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 future planning approval application for the relevant stage.

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*, *Freight Demand Modelling* and *Rail Access* reports (attached as **Appendix F** and **Appendix G**) need to be reviewed to fully understand the methodology for undertaking the transport and access 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 assessment report and as summarised below:

- **Existing Environment** – the 'core' area of the SIMTA development was modelled in Paramics to determine the road network impacts. The 'core area' was defined as being bound by the following roads:
  - *M5 Motorway between Hume Highway and Heathcote Road (east and west).*
  - *Hume Highway (north and south).*
  - *Moorebank Avenue between Newbridge Road and Cambridge Avenue (north and south).*
  - *Anzac Road (east).*

The report identified and described the following key roads within the 'core' area:

- *M5 Motorway (between Hume Highway and Moorebank Avenue) – The M5 Motorway is a principal arterial from Sydney CBD to the South-West and M7 Motorway. This motorway has up to four lanes in each direction between Moorebank Avenue and Hume Highway intersections.*

- *Hume Highway – Hume Highway is a main traffic route from the South-West to the North-East of Sydney. The core study area includes the Hume Highway interchange with the M5 motorway. This interchange provides access to M5 eastbound (on ramp) and can be accessed through M5 westbound (off ramp). The interchange does not provide access to the M5 westbound and cannot be accessed through the M5 eastbound.*

- *Moorebank Avenue – Moorebank Avenue is currently a two lane undivided road (one lane on each direction) between Cambridge Avenue and M5 and four lane undivided road (two lane on each direction) between M5 and Newbridge Road. This road provides a north-south link between Liverpool and Glenfield. It also forms a grade separated crossing (Single Point Diamond interchange) with M5. The core study area includes the section between Newbridge Road and Chatham Avenue.*

- *Heathcote Road – This road is generally a four-lane arterial road and runs north-south between Moorebank and Heathcote, where it links to the Southern Freeway (F6). The core area includes Heathcote Road intersection with Moorebank Avenue.*

- *Anzac Road – Anzac Road is an east-west local road that connects Moorebank Avenue and Heathcote Road. It provides access to Moorebank Business Park and the residential area of Wattle Grove. This is generally a two-lane undivided road. The core study area includes the section between Yulong Close and Moorebank Avenue.*

- **Potential Impacts** - the proposal will have a number of potential traffic and transport impacts, which are summarised below. Each of these impacts is as outlined in detail within the *Transport and Accessibility Impact Assessment* and discussed within **Section 5.3** of this report.

  - Proposed site access.

  - Trip-generation from on-site activity.

  - Freight generated traffic.

  - Employee traffic generation.

  - Impact on road network.

  - Regional impact from cumulative traffic.

  - Impact of SIMTA proposal on intersections.

  - Impact of SIMTA proposal outside Core Area.

  - Impact on crashes/accidents.

  The potential impacts arising from the rail link are addressed within the *Rail Access Report* and within **Section 5.3** of this report.

- **Management/Mitigation Measures** - management of traffic and access impacts of the SIMTA proposal are detailed in **Section 5.3**. 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 to the SIMTA site.*

- *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 from the SIMTA site to Moorebank Avenue.*

- *A new signalised intersection at the Southern SIMTA entry and egress from the SIMTA site to Moorebank Avenue.*

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

The recommendations also include a package of measures for the implementation of travel demand management over time, 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.*

- *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 F**. 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:

- Appendix A - Public Transport Assessment, prepared by Urbanhorizon Pty Ltd

- Appendix B - Technical Note 4: Existing Road Network Capacity

- Appendix C - Strategic Modelling Assumption, Calibration/Validation and Forecasting Results

- Appendix D - Technical Note 3: Traffic Generation

- Appendix E - Paramics (Traffic) Model Audit, Halcrow

- Appendix F - Sketch Plan of Proposed Upgrade

- Freight Demand Modelling Report (attached as **Appendix G**)

- Rail Access Report (separately attached as **Appendix H**)

The *Transport and Accessibility Impact Assessment* and supporting documents listed 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 in 2011 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 *Freight Demand Modelling* report prepared by Hyder in 2013 provides an updated assessment, taking into account updated data regarding the Port Botany operations, including total container trade movements, full container imports and export of empty containers. The assessment found that completion of Stage 1 of the proposed SIMTA proposal in 2015 would provide an initial capacity for 250,000 TEU, with 750,000 TEU in 2019 (Stage 2) and one million TEU in the final stage in 2022, bringing the total IMT capacity for the Sydney catchment to 1.62 million TEU. This would represent approximately 46% of the total projected TEU throughput of 3.5 million at Port Botany by 2022.

Accordingly, the SIMTA development has the potential to support NSW freight policy objectives, providing enough capacity to achieve the 28% rail freight target share.

The *Rail Access* report, also prepared by Hyder in 2013, provides a comprehensive assessment of the rail freight infrastructure requirements to support the proposed intermodal terminal facility. This issue is discussed in detail within **Section 5.3.2** of this report. However, it is noted that the proposed infrastructure requirements have been discussed at length with the relevant transport authorities and the SIMTA rail design has now been progressed to enable the project to proceed to the next level of design.

The Transport and Traffic Accessibility Impact Assessment provides a thorough assessment of the road infrastructure requirements. This issue is discussed in detail in the following sections of this EA.

5.3.1.2 IMPACTS TO LOCAL AND REGIONAL ROAD NETWORKS

The key findings of the *Transport and Accessibility Impact Assessment* with regard to the local and regional road networks are summarised below:

- **Proposed site access** - three access points will be required to comply with emergency services requirements. The proposed access points have been designed to comply with RMS requirements.

- **Trip-generation from on-site activity** - the on-site activities include the unpacking of containers on-site and the distribution of their contents. These activities will generate truck trips and employee trips, each of which are considered further below.

- **Freight generated traffic -** the proposal will generate approximately 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 one million TEU throughput capacity.

- **Employee traffic generation** - the site will generate about 3,600 daily car movements to the site across a 24 hour average week day.

- **Impact on road network** - the SIMTA development is forecast to increase the traffic growth on Moorebank Avenue up to 3.1% per annum. Anzac Road will not carry trucks generated by the SIMTA proposal but is expected to carry small employee related traffic to SIMTA.

- **Regional impact from cumulative traffic** - 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 2,735 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.

- **Impact of SIMTA proposal on intersections** - SIMTA generated traffic is forecast to further contribute to poor LoS F (either AM or PM peaks) for the following roads and intersections:
  - Moorebank Avenue between M5/Moorebank Avenue interchange and the SIMTA access. Capacity problem is forecast for both northbound and southbound movements on the Moorebank Avenue. The analysis suggested that Moorebank Avenue would require upgrading to four lanes when SIMTA site is fully developed.
  - Concurrent with four lane widening on Moorebank Avenue, the Moorebank Avenue/Anzac Road intersection would require widening at approach roads.
  - A new traffic signal at SIMTA's northern access with the Moorebank Avenue.
  - A new traffic signal at SIMTA's southern access with the Moorebank Avenue.
  - M5 Motorway/Moorebank Avenue interchange. The analysis 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.
- **Impact of SIMTA proposal outside Core Area** - the analysis found low impact to roads and intersections outside the core area attributable to the SIMTA development. Regardless of SIMTA, eight assessed intersections outside the core area would operate with a poor level of service either in the AM or PM peak period.
- **Impact on crashes/accidents** – analysis of five years of crash data has indicated that the SIMTA proposal would not substantially increase the likelihood of crashes/accidents in the longer term, having regard to the proposed road network (and safety) improvements associated with the project.

Each of the identified impacts has been addressed by way of mitigation and management measures which are discussed further 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 rail connection from the SIMTA Intermodal Terminal Facility to the Southern Sydney Freight Line. The key objectives underpinning the reference design general layout plans are outlined within the *Rail Access* Report prepared by Hyder (attached as **Appendix H**) and as listed below:
  - *Minimise the impact to the existing SSFL within relevant rail corridors.*
  - *Minimise the impact on the operational waste facilities within the Glenfield Waste Facility.*
  - *Comply with ARTC Code of Practice and guidance.*
  - *Minimise impact on the Passenger Train line within the East Hills Line Corridor.*

- *Minimise land acquisition costs.*
- *Comply with operational requirements.*

Based on the ongoing stakeholder consultation, ARTC have provided no objections to the project definition design developed by SIMTA. The proposed rail alignment to the south of the SIMTA site and connection to the SSFL is described below:

- *Construction of a bridge over the Georges River.*
- *Construction of a culvert style railway bridge over Anzac Creek.*
- *Modification of the Moorebank Avenue overbridge at the East Hills rail corridor.*
- *Placement and compaction of sub-grade and blanket.*
- *Placement of ballast and sleepers.*
- *Placement of rail and connection to sleepers.*

The following upgrades would be required to facilitate the proposal:

- *South of the tie in from the southbound loop to the SSFL.*
- *North of the tie in from the northbound loop to the SSFL.*
- *Between the southern and northern connections to the SSFL.*
- *Along the East Hills corridor, with potential to go outside the project boundaries in both the West and East direction along the existing East Hills line.*

The proposed rail link to the SIMTA site is also considered appropriate to support a 'whole-of-precinct approach', with both the SIMTA site and the MICL site capable of using the same connection point to the SSFL. The benefits of providing a single connection point to the SSFL that would service both sites, and follows the proposed SIMTA rail link alignment, are considered to be of great value, in particular the reduction in impact on the surrounding communities, as well as the reduction in capital costs of work.

Detailed consideration has been given to the potential engineering considerations, environmental impacts and construction requirements for the proposed rail link. The proposed rail access requirements have also been discussed at length with the relevant transport authorities. It is considered that the SIMTA rail design has now been progressed to enable the project to proceed to the next level of design.

- **Road Access** – the future detailed planning approval applications will include the proposed access points to the SIMTA site. The following access points are proposed in the Concept Plan application:
  - **Northern Access** – will provide an entry and an exit by way of a signalised intersection, with full access for vehicles to turn left and right in and out of the SIMTA site. There may be opportunity to share the new traffic signal the relocated DNSDC facility to the north 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.
  - **Central Access –** will provide entry and exit by way of the existing signalised access to the site. It will provide full access permitting all movements, servicing mainly trucks to the terminal. It may also be used for trucks and cars accessing the central warehouses and distributions areas.
  - **Southern Access –** will provide exit to articulated trucks departing the terminal via Moorebank Avenue to the north. Egress will be provided by way of a new traffic signal approximately 750 metres south of the Central Access.

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

- **Rail** – the *Rail Access Report* identifies the following enabling works that would be required within the East Hills railway and Main Southern railway corridors, including:
  - *Relocation of services, including potable water, sewer, telecommunications and gas.*
  - *Relocation of signalling cables within the East Hills Railway corridor and Main Southern Railway corridor.*
  - *Relocation of a signalling hut within the East Hills Railway corridor.*
  - *Modifications to the existing ARTC Glenfield SSFL passing loop.*
  - *Establishment of a protection barrier within the East Hills Railway corridor and Main Southern Railway corridor to allow for the concurrent construction of the rail link and operation of the Main Southern Railway corridor and East Hills Railway corridor.*

  The report also identifies that major consideration needed to be given to the location of the SIMTA alignment within the existing Main Southern corridor and the East Hills railway corridor, including:
  - *Accommodating modifications to SSFL to suit ARTC operational requirements.*
  - *Enabling works including services and signalling modifications.*
  - *Two existing bridges, Georges River bridge and Moorebank Avenue overbridge.*
  - *Requirements for Maintenance Access roads.*
  - *Existing signalling hut at approximately 30.25km within the East Hills Railway corridor.*
  - *Accommodating land allowance for possible quadruplication of Railcorp's existing East Hills Railway line. In undertaking this assessment we have allowed for the new rail line servicing the SIMTA site to be placed in the land directly north of the East Hills line and provided concept sketches (Appendix B) to satisfy that the quadruplication can be catered for to the south of the current East Hills line.*
  - *Possible future Moorebank Railway station at Lot 1 DP825352.*
- **Road** - the following key drivers were considered in association with the existing and future traffic conditions likely to impact (or be impacted by) the SIMTA proposal:
  - Residential and employment targets within strategic planning policies.
  - Existing and future regional traffic and its impacts on the M5 Motorway, its ramps and signalised intersections/interchanges.
  - Impacts arising from the proposed M5 West Widening to three lanes each way between Camden Valley Way, Casula and King Georges Road, Beverly Hills.

It was found that 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 (including the West Wattle Grove site). In 2010 Moorebank Avenue carried about 17,500 vehicles per day in a weekday traffic condition. By 2031, the background growth of 1.6% and 1.8% per annum will increase about 6,000 vehicles on Moorebank Avenue. Of that 6,000 vehicles increase, about 1,000 vehicles (16%) would be contributed by Defence's proposed West Wattle Grove site. This means in the context of overall growth (1.6% to 1.8%), Wattle Grove site would contribute in the order of 0.3% growth. The remaining growth of 1.3% to 1.5% per annum would be largely driven by the background traffic growth that uses the Moorebank Avenue.

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

The *Rail Access Report* states that 21 round-trip train paths will be required to service the SIMTA intermodal terminal facility at full capacity. Consultation with ARTC and preliminary modelling has indicated that the SSFL will be able to support these train movements with appropriate investment.

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. However, the rail design has been progressed to enable a reference design to be completed that is considered to be a compliant design.

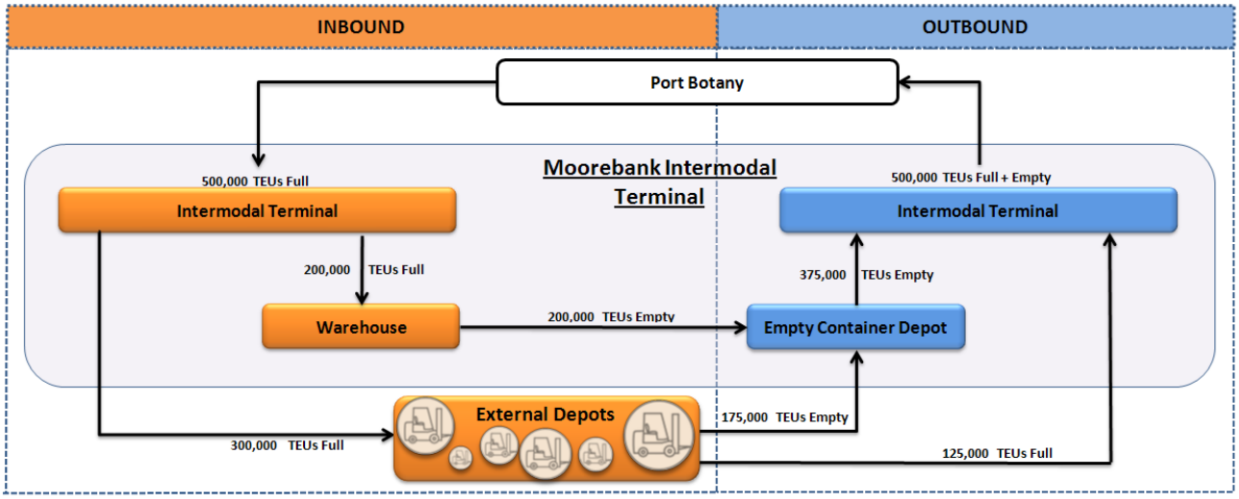
5.3.2.4 INTERNAL TRANSPORT AND LOGISTIC REQUIREMENTS

The movement of containers and freight is described within Section 6.3.1 of the *Transport and Accessibility Impact Assessment* as follows:

> *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.*
>
> *An annual operating capacity of one million TEU is anticipated in the ultimate stage.*
>
> *SIMTA have provided the following breakdown of site operations for the full development "business as usual" scenario:*
>
> - *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 off-site (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 (125,000TEU) 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.*
>
> *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.*

Figure 18 depicts the movement of containers between Port Botany to and within the SIMTA intermodal terminal facility. 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.

FIGURE 18 – CONTAINER MOVEMENT THROUGH SIMTA PROPOSAL (HYDER: 2013)



5.3.3 VEHICLE MOVEMENTS

5.3.3.1 TRAIN MOVEMENTS

Subject to agreement with relevant stakeholders, the initial operation modelling anticipates the following train paths as the project develops.

FIGURE 19 – PROJECT TRAIN PATHS (HYDER: 2013)

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

These train paths assume 650 metre long port shuttle trains (inclusive of locomotives), operating 24 hours per day, 365 days of the year on reasonably regular headways. It is considered feasible for trains to be loaded and unloaded within an hour, based on the following:

- *Each train would carry 73 TEU (based on 80% utilisation of 600m train).*
- *Each Rail Mounted Gantry Crane (RMG) has capacity to undertake 30 moves per hour; equating to 49.5 TEU movements per hour (allowing for 20/40 ft split).*
- *With two RMGs operational and dedicated to clearing trains it is therefore possible to achieve the 1 hour turn around, leaving 26% redundancy in the system.*

It is also noted that the SIMTA proposal will incorporate more than two RMGs (or similar) and as such, the one hour turnaround of each train is not considered to be an issue.

Recent discussions with ARTC identified they have a designated train path model that indicates there are 24 train paths available each way. As the SIMTA proposal requires 21-22 paths (per direction per day) at its peak, this may severely limit train paths to other users if no improvements were carried out to the SSFL to alleviate this limitation in the next 10 years. It could also restrict the opportunities to meet the State government's objective to achieve '28% of containers by rail'.

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.

5.3.3.2 TRUCK MOVEMENTS

The *Transport and Accessibility Impact Assessment* assumes a total of 600,000 TEU will be transported to and from the SIMTA site by articulated trucks. 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 (HYDER: 2013)

TYPE OF TRUCK	NUMBER OF TRUCK MOVEMENTS PER WEEKDAY
Articulated Truck	1,603
Rigid Truck	1,035
Total	2,638

The report states the following with regard to peak hour truck generation:

- B-double, semi-trailer and rigid truck movements pick up in the morning from approximately 5:00am and remain fairly consistent throughout the day.
- Semi-trailer and B-double movements continue into the evening with reasonable volumes, however the number of rigid truck trips drop off significantly in the evening from about 5.00pm.
- It is assumed that site maintenance activities will be carried out between 3.00am and 5.00am based on typical intermodal terminal operation. Consequently, traffic generation over these two hours is expected to be low.
- The AM and PM peak hour for truck movements will occur at 7.00-8.00am with 204 trucks per hour and 2:00-3:00pm with 245 trucks per hour respectively. AM and PM peak hour truck movements will represent 7.7% and 9.3% of total daily truck movements respectively.

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[7] estimates a maximum of 2,840 employees on the SIMTA site, generating approximately 4,544 car movements per weekday. The higher figure has been used in the sensitivity testing of the potential impacts.

It was assumed that approximately 80% of employee trips would be made by private vehicle (car driver, car passenger) when the SIMTA site is fully developed. Based on assumptions around the individual daily shift patterns for warehousing and ancillary freight village (office, retail and train terminal operations), the total daily car trips were distributed throughout the day.

The profile shows that the AM and PM peak periods for private car movements occur at 7.00-9.00am and 4.00-6.00pm. At the request of the RMS, Hyder provided further clarification on peak hour employee trip generation assumptions as follows.

- Approximately 922 private cars are forecast to travel to and from site during AM peak period between 7.00am and 9:00am (2 hours).
- As per shift assumptions for the warehouse and terminal, a majority of employees would travel between 7.00am and 8.00am.

[7] PricewaterhouseCoopers, *Needs Assessment*, 2011

- About 75% of total AM peak 2 hours car trips (about 692 cars movements) are assumed to travel in peak one hour between 7.00am and 8.00am prior to the morning shift start at 8.00am.

- About 230 car movements (about 25% of total AM peak 2 hours car trips) are assumed to travel between 8.00am and 9.00am.

- AM peak one hour car movements represent about 19.1% of total daily car movements (692 AM peak hour /3613 daily volume = 19.1%).

During the PM peak period between 4.00pm and 6.00pm (2 hours), the shift assumptions for the warehouse and terminal assumes 50:50 splits in the 2 hours period. About 1,260 private car movements are forecast in PM peak 2 hours. 630 cars (50%) are assumed to travel between 4.00pm and 5.00pm, while a similar number would travel between 5.00pm and 6.00pm. The PM peak one hour car movement represents about 17.4% of total daily car movements (630 PM peak hour /3613 daily volume = 17.4%).

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**.

5.3.4 CUMULATIVE IMPACTS AND MITIGATION MEASURES

5.3.4.1 FREIGHT DEMAND AND CUMULATIVE TRAFFIC IMPACTS

The future traffic projections for 2031 included a range of inputs to assist with the traffic modelling, including:

- Land use forecasts.

- Growth in Bureau of Transport Statistics Trip Table.

- Future Base Case Network.

- Future Background Traffic Growth.

The key findings of the assessment are summarised below:

- Background growth by 2031 is expected to reduce the level of service (LoS) on intersections currently being identified as problematic.

- The proposed M5 South West Motorway widening is forecast to redistribute traffic on key alternative routes including the Hume Highway and Newbridge Road. Near Moorebank, the proposed M5 widening is expected to reduce peak hour traffic volumes on both Hume Highway and Newbridge

Road. However, the projected population and employment growth by 2031 in South-West Subregion including Liverpool are expected to offset the positive effect from M5 widening on these alternative roads.

- The model forecasts low level of service for critical movements at the following key intersections including:
  - M5 Motorway/Hume Highway
  - Moorebank Avenue/Heathcote Road
  - Moorebank Avenue/ Newbridge Road
- The results show that background growth in traffic to 2031 would result in the above three intersections operating at poor LoS F either in the AM or PM peak hours, regardless of SIMTA. The M5 Motorway/Moorebank Avenue interchange is forecast to be operating with LoS D in the PM peak. The southbound right turn movement out of Moorebank Avenue into M5 Motorway in the westbound direction is forecast poor LoS F.
- In the future, background traffic growth alone is expected to deteriorate the weaving and merging problem on the M5 Motorway/Moorebank Avenue interchange for eastbound and westbound traffic.
- The southbound right-turn movement out of Moorebank Avenue (M5 westbound) would continue to have the potential to adversely impact other nearby intersections with Moorebank Avenue at Helles Ave and Church Road regardless of SIMTA.
- In 2031, the following three intersections would require upgrading regardless of the SIMTA development.
  - Moorebank Avenue/Heathcote Road
  - Moorebank Avenue/Newbridge Road
  - M5 Motorway/Hume Highway
- 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.

The *Freight Demand Modelling* report prepared by Hyder Consulting (**Appendix G**) identified a catchment demand for freight arriving in Moorebank of one million TEU by 2025. If additional intermodal capacity is delivered by way of the MICL proposal, both terminals would operate below their maximum capacity and the volume of rail and road vehicles would be consistent with the SIMTA operating at maximum capacity. The impacts arising from these volumes have been fully assessed within this Concept Plan application. Accordingly, the traffic impacts outlined in this Environmental Assessment reflect the cumulative traffic and transport impacts which could be generated by intermodal terminals servicing the Moorebank catchment.

Specific consideration was given to the potential impact of the DNSDC relocation to the north of the SIMTA site. The *Transport and Accessibility Impact Assessment* included the new access associated with the DNSDC site. The traffic model confirmed that the proposed signalised intersection would not change the intersection level of service results.

5.3.4.2 MITIGATION MEASURES

The direct and cumulative impact measures are described in the following section of the report, including sensitivity testing and staging.

The *Transport and Accessibility Impact Assessment* identified the road capacity improvements required to cater for the traffic demands from both background growth and additional traffic generated by SIMTA when the site is fully developed.

FIGURE 20 – PROPOSED UPGRADING WORKS AT M5 MOTORWAY/MOOREBANK AVENUE INTERCHANGE (HYDER: 2013)

Location	Potential Upgrade Works	Assessments
M5 westbound off-ramp	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. The improvement is shown by number 1 in Figure 9-1.
M5 westbound on-ramp	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. The improvement is shown by number 2 in Figure 9-1
M5 eastbound off-ramp	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. The improvement is shown by number 3 in Figure 9-1
Moorebank Avenue northern approach	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. The improvement is shown by number 5 in Figure 9-1

The proposed upgrades will deliver adequate capacity to road network until 2031, however, the measures have a finite capacity and all reasonable steps will need to be taken to ensure that new developments provide walk, cycle and public transport use. The timing of the individual road and intersection capacity improvements would primarily depend on the rate of development within the SIMTA site. A staged approach would be required as development progresses across the site.

At the request of RMS, Hyder prepared sketch plans of the proposed upgrades at the following locations:

- M5 Motorway/Moorebank Avenue surface road intersection
- Moorebank Avenue/Anzac Road intersection
- Moorebank Avenue/Northern SIMTA Access

- Moorebank Avenue/Central SIMTA Access
- Moorebank Avenue/Southern SIMTA Access

The upgrading works on Moorebank Avenue at M5 Motorway and Anzac Road intersections would improve the LoS in 2031. The Anzac Road intersection would provide LoS C and D and the proposed improvement at the Moorebank Avenue interchange would provide LoS C in AM peak and LoS E in PM peak in 2031. The improvements in LoS results, from the modelled LoS of F in 2031 during either AM or PM peaks, are attributable to the proposed upgrade.

The high traffic growth predicted on M5 Motorway after widening has the potential to offset the improvement at the Moorebank Avenue interchange, particularly in the PM peak. However, additional testing has concluded that should traffic growth be less than anticipated, the proposed improvements in 2031 would provide better level of service than predicted by the traffic model. As such, the RMS should monitor actual traffic growth on M5 Motorway after widening is complete.

The proposed traffic signals on Moorebank Avenue with the SIMTA access points would provide LoS A and C in 2031. It has been demonstrated that the four lane upgrade on Moorebank Avenue and associated turning bays would provide acceptable level of service.

The sensitivity testing undertaken in association with the transport assessment has recommended that an actual truck trip generation survey from SIMTA site is undertaken after 24 months of operation and then progressively as the SIMTA site is developed.

It is proposed to stage the implementation of the mitigation works, taking into account the staging of the SIMTA development and TEU thresholds as outlined in the following table.

FIGURE 21 – INDICATIVE STAGING PROGRAMME AND TEU THRESHOLDS (HYDER: 2013)

Item No	Description	Indicative TEU Thresholds
1	Central Access traffic signal. SIMTA will retain existing traffic signal at current DNSDC site. The existing traffic signal would provide central access terminal entry and exit. In conjunction with that, a left in only access will be constructed on Moorebank Avenue for truck entry immediately (about 20 metres) south of Central access,	Prior to Stage 1 development. Approximately 250,000 TEUs.
2	Terminal Exit Point (southern access). Provide a new traffic signal approximately 750 metres south of SIMTA Central access.	Prior to Stage 1 development. Approximately 250,000 TEUs.
3	As part of the DNSDC relocation (Defence Logistics Transformation Program works in Moorebank[2]), there will be a new traffic signal on Moorebank Avenue approximately 300 metres south of the existing traffic signal at Anzac Road. SIMTA proposes to share the traffic signal with DNSDC. The new traffic signals would also provide northern access (entry/exit) to the warehousing and distribution areas.	Further discussion will be held with DNSDC to determine access sharing arrangement of the northern access.
4	Widen Moorebank Avenue to four lanes (2/2).	Between 250,000 and 500,000 TEUs during Stage 2 developments.
5	Upgrade Moorebank Avenue/Anzac Road traffic	Concurrent with Moorebank Avenue widening

	signals.	(item 4).
6	Potential upgrade works at the M5 Motorway/Moorebank Avenue grade separated interchange.	Following the completion of Stage 2. Between 500,000 and 1 million TEUs subject to further investigation after M5 West Widening Project is complete[1].

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 summarised in the following table.

FIGURE 22 – SUGGESTED PACKAGE OF PUBLIC TRANSPORT MITIGATION MEASURES (HYDER: 2013)

Mitigation Measures	Summary
Measure 1 – Travel behaviour change program	Various measures including marketing, promotion campaigns, events and Workplace Travel Plans designed to influence the mode choice of individuals by better understanding their travel needs.
Measure 2 – Reduce On-Site Car Parking Supply	Reduce proposed on-site employee parking by up to 680 spaces.
Measure 3 – Liverpool Station Express Bus Services	Provision of a peak and shift change over time express bus service to and from Liverpool Station via Moorebank Avenue and Newbridge Road.
Measure 4 – Holsworthy Station Express Bus Services	Provision of a peak and shift change over time express bus service to and from Holsworthy Station via Anzac and Heathcote Roads.
Measure 5 – Bus Interchange/Waiting Area	Provide an employee bus interchange/waiting areas within the site.
Measure 6 – Bus Priority Works	Bus priority measures at key intersections as required.
Measure 7 – Walking and Cycleways	Shared or separate walking and cycle paths connecting the warehousing areas to the employee bus interchange/waiting areas and to the Moorebank Avenue bus stops.
Measure 8 – Extend Route 901 Bus	Extend Route 901 bus services to traverse at least the northern sector of the site.
Measure 9 – Glenfield Station to Liverpool Station Shuttle Bus through Moorebank Avenue	When the demand called for this mitigation measure. Operate a Glenfield Station to Liverpool Station Shuttle Bus through Moorebank Avenue serving the development.
Measure 10 – Rationalise Route 870, 871 and 872 bus	Subject to funding and contribution, rationalise routes 870, 871 and 872 (all travelling Campbelltown to Liverpool via Glenfield and Cross Roads). This could potentially involve discontinuing the 871 service, increasing the frequency of the 872 service and rerouting the 870 service to operate via Moorebank Avenue.

Similar to the infrastructure-related measures, the traffic management measures will deliver adequate capacity until 2031. The measures have a finite capacity and all reasonable steps will need to be taken to ensure that new developments provide walk, cycle and public transport use.

5.4 LEGISLATIVE REQUIREMENTS

The Hyder report includes consideration of a range of strategic transport policies, plans and other relevant documentation including each of the policies listed within **Section 3.5** of this report.

5.5 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. 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 2,735 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 Wilkinson Murray (attached as **Appendix I**) 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. Four residential 'receiver' catchments and several non-residential receivers were identified, including:
  - R1 – 500m to the east, in Wattle Grove
  - R2 – 500m to the north, in Moorebank
  - R3 – 900m to the west, in Casula
  - R4 – 1,600m to the south-west, in Glenfield
  - All Saints Senior College (S1)
  - Casula Powerhouse (S2)
  - DNSDC Relocation Site

  Unattended background noise monitoring was undertaken at the residential locations between Tuesday 31 July and Wednesday 8 August 2012 and between Wednesday 15 May and Wednesday 22 May 2013.

- **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 EA. The operational noise criteria were established using the 'intrusiveness' and 'amenity' criteria in the *NSW Industrial Noise Policy.* The sleep disturbance criteria and road traffic noise criteria were established using the EPA's

Noise Guide for Local Government and EPA's *NSW Road Noise Policy*. The rail traffic noise criteria were established using the EPA's *Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects* and *Rail Infrastructure Noise Guideline*. Construction noise criteria were established using the EPA's *Interim Construction Noise Guidelines*. The construction vibration criteria were established using the EPA's *Assessing Vibration: A Technical Guideline*.

- **Statutory Assessment Considerations** – the key legislation that has been reviewed in the preparation of the noise and vibration assessment is listed in the NIA and **Section 6.4** of this report.

- **Management/Mitigation Measures** – the proposed mitigation measures are fully detailed within the NIA and **Section 6.3** of this report. Each of the required mitigation measures has been incorporated into the Draft Statement of Environmental Effects.

6.3 ASSESSMENT OF KEY ISSUES

6.3.1 NOISE AND VIBRATION IMPACT ASSESSMENT

The sensitive receivers were identified to establish background noise levels and assess any potential noise impacts arising from the proposed operational or construction activities of the SIMTA proposal. Four residential 'receiver' catchments and several non-residential receivers were identified, including:

- R1 – 500m to the east, in Wattle Grove
- R2 – 500m to the north, in Moorebank
- R3 – 900m to the west, in Casula
- R4 – 1,600m to the south-west, in Glenfield
- All Saints Senior College (S1)
- Casula Powerhouse (S2)
- DNSDC Relocation Site

Each of these locations is identified in **Figure 23**. Unattended background noise monitoring was undertaken at the residential locations between Tuesday 31 July and Wednesday 8 August 2012 and between Wednesday 15 May and Wednesday 22 May 2013.

6.3.1.1 NOISE AND VIBRATION ASSESSMENT CRITERIA

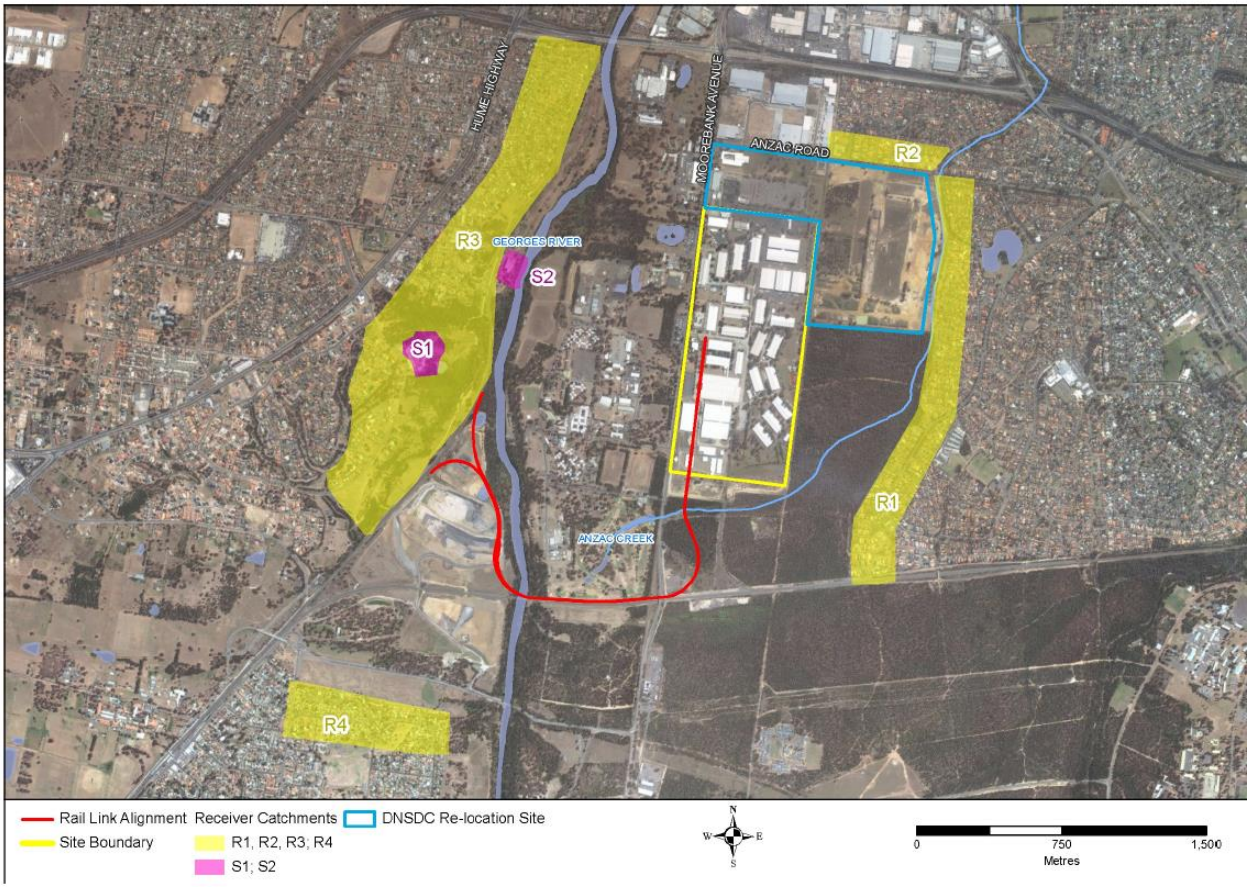
The existing noise levels were measured at these locations using 24-hour unattended Environmental Noise Loggers between Tuesday 31 July and 8 August 2012 and between Wednesday 15 May and Wednesday 22 May 2013. Noise assessment was undertaken using the following policy criteria:

- Operational noise criteria were established using the 'intrusiveness' and 'amenity' criteria in the *NSW Industrial Noise Policy*.
- Sleep disturbance criteria were established using the EPA's *Noise Guide for Local Government*.
- Road traffic noise criteria were established using the EPA's *NSW Road Noise Policy*.
- Rail traffic noise criteria were established using the EPA's *Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects* and *Rail Infrastructure Noise Guideline*. Sections of the rail link on private land were assessed against the criteria established under the Industrial Noise Policy (INP) for operational noise.
- Construction noise criteria were established using the EPA's *Interim Construction Noise Guidelines*.

- Construction vibration criteria were established using the EPA's *Assessing Vibration: A Technical Guideline*.

The noise modelling assumed a 'worst case' 15 minute operational scenario, allowing for four trains idling on the site, mobile container handling machinery and trucks idling on the site. The model outcomes were compared to the intrusiveness and amenity criteria established in accordance with the Industrial Noise Policy (INP) which provides for a 15 minute monitoring period. The absolute worst case scenario considers the potential impacts arising from four trains (equal to the number of sidings) operating on the site for the full 15 minute period.

FIGURE 23 – SENSITIVE RECEIVERS (WILKINSON MURRAY: 2013)



6.3.1.2 NOISE AND VIBRATION IMPACTS

The Wilkinson Murray report identifies the following potential impacts from the SIMTA proposal:

- **Operational Noise Sources** – the proposed machinery to be used in association with the intermodal terminal and within the warehouses has been considered based on a 'worst case' scenario and taking into account the potential operation of the facility 24 hours per day, seven days per week. Consideration has been given to the potential built form, machinery location, container storage and temperature inversions.

  The assessment concludes that the whole-of-site operation noise levels may exceed the criteria at one of the residential receivers. As such, a noise barrier may be required to mitigate the impact of truck movements along the western boundary of the site. The need for the barrier should be assessed when approval is sought for Stage 3 (ie full capacity), taking into account any subsequent development of adjoining sites (and associated potential noise shielding).

- **Sleep Disturbance** – the transient noise events with the potential to cause sleep disturbance include rail shunting, horns, tonal reversing alarms and containers banging. The predicted levels at all receivers are less than the criteria and as such, no further assessment is required.

- **Road Traffic Noise** – the existing levels of traffic noise along Moorebank Avenue are above the RNP assessment levels and as such, any increase in traffic noise levels should not exceed 2dBA. The predicted levels at all receivers are less than 2dBA and as such, no further assessment is required.

- **Rail Noise** – the rail noise emissions are required to comply with the IGANRIP. The predicted levels at all receivers are more than 10dBA below the criteria and as such, no further assessment is required.

- **Construction Noise** – the potential construction scenarios and noise sources are documented in detail within the *Noise Assessment* report. The predicted levels are less than the ICNG noise criteria at most of the receivers. The resultant noise levels at receiver catchment R3 could be up to 9dBA over the NML and as such, a Construction Noise and Vibration Management Plan will be required to minimise impact on nearby residents during construction. The construction noise levels at the non-residential receivers are predicted to comply.

- **Construction Vibration** – there are no human comfort or building damage impacts likely to occur as a result of construction vibration. If it is necessary to operate a vibratory roller within 20 metres of the DNSDC buildings, vibration levels should be monitored for compliance with the relevant criteria.

The following general recommendations are made taking into account the noise assessment:

- *Further detailed assessments to be undertaken at each development application stage after the Concept Plan Approval to provide input to planning and confirm the need for and degree of noise mitigation if required. This should be undertaken based on the most detailed information available at that stage of works.*

- *These subsequent assessments should address the DGR requirements for the SIMTA proposal as a minimum.*

- *Detailed assessments carried out when the SIMTA proposal is operational should include monitoring of operational noise levels at nearby receivers. The monitoring data should be used to validate noise models used in these assessments.*

- *During the planning process, consideration should be given to locating buildings at or near the north-eastern and south-eastern boundaries of the site. This would provide beneficial acoustic shielding to the nearest residences.*

- *During the planning process, 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.*

- *Provision should be made for the establishment of a noise barrier along the western boundary of the SIMTA site. The requirement for the barrier should be determined during detailed assessments at each development application stage after the Concept Plan Approval.*

- *Detailed assessments carried out for the subsequent development application stages and when the SIMTA proposal is operational should include monitoring of operational noise levels at nearby receivers. The monitoring data should be used to validate noise models used in these assessments. The subsequent assessments should address the environmental assessment requirements, as determined by the approval authority, as a minimum.*

- *Prior to undertaking demolition and construction on site, 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 (such as those identified in this report) that may be implemented to minimise any potential impacts, including engineering and management controls*

Overall, the report concludes the following:

- The predicted levels of operational, road traffic and rail traffic noise are all within the established criteria at nearby receivers.

- The predicted operational noise levels comply with INP noise criteria at all receivers apart from receiver catchment R3 when the terminal is operating at a throughput of 1,000,000 TEU. A noise barrier has been modelled and shown to reduce operational noise levels by 4dBA, should it be required to facilitate compliance with the noise criteria.

- At full-capacity operations, with the appropriate mitigation measures applied, the SIMTA proposal is predicted to comply with all relevant noise and vibration criteria.

- It is unlikely that any direct negative health impacts will arise from the noise emissions as the criteria for operational, road traffic and rail traffic noise are predicted to be met.

- Construction noise levels are predicted to meet the established noise management levels, except for some residences within R3 where noise levels due to the construction of the rail link. A construction noise management plan should be developed to identify and apply all reasonable and feasible construction noise mitigation measures. The construction noise management plan should include recommendations for monitoring of construction noise at regular intervals.

- Vibration levels due to the operation of vibratory rollers during the construction phase have been assessed against building damage criteria. An appropriate exclusion zone has been recommended for the case where rollers are expected to be operated in close proximity to sensitive buildings.

- An assessment has been carried out on the cumulative impact of the concurrent operation of the SIMTA proposal and the Moorebank IMT, handling a total intermodal throughput of 1,000,000 TEU. The predicted cumulative noise levels at nearby receivers comply with the INP amenity criteria.

6.3.2 POTENTIAL CUMULATIVE IMPACTS

A cumulative impact assessment has been undertaken of the SIMTA and MICL proposals based on the assumptions outlined within Section 7 of the *Noise Assessment* report. The predicted cumulative noise levels will comply with the INP amenity criteria.

6.4 LEGISLATIVE REQUIREMENTS

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*

- *Noise Guide for Local Government*

- *NSW Road Noise Policy*

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

- *Rail Infrastructure Noise Guideline*

- *Interim Construction Noise Guidelines*

- *Assessing Vibration: A Technical Guideline*

6.5 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 planning approval 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 J**) 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*. Hyder prepared a separate *Riparian* Assessment (attached as **Appendix K**) 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:
  - 310 flora species, comprising 213 local native species, eight non-local native and 89 exotic species.
  - 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).
  - Four 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.
  - Four threatened mammal species listed under *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *Threatened Species Conservation Act 1995* (TSC Act).
  - Five 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).

The *Riparian Assessment* identifies the key features of the SIMTA site and the proposed rail corridor, as follows:

- There are a number of man-made channels draining the north-east and south-sections of the SIMTA site into Anzac Creek, which is located outside of the SIMTA site boundaries.

- The rail corridor includes sections of the Georges River and Anzac Creek. At the survey site, the Georges River was 40 to 60 metres wide, with soft substrate pool habitat, large woody debris and extensive macrophyte cover. Anzac Creek had limited aquatic habitat with no open or running water.

- **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. The assessment concludes that the four Endangered Ecological Communities, three threatened fauna and one aquatic fauna species would not be significantly impacted by the SIMTA proposal. Impacts on these threatened species and communities can be adequately managed through the mitigation measures proposed in this report do not require further consideration.

  However, the *Persoonia nutans* would be significantly impacted as a result of the SIMTA proposal. The population of this species in the study area is considered highly significant due to its size and location in the southern part of the species' distribution. The proposed rail link would require the clearing of a 20 metre wide alignment that will bisect the area of occupied habitat of *P. nutans* and require the removal of 14 per cent of recorded individuals in the population. The remaining plants would be fragmented by a 20 metre wide, fenced gap and subject to associated edge impacts.

  The *Riparian Assessment* found that neither of the channel systems on the SIMTA site is classified as a stream, nor does the riparian corridor of Anzac Creek intrude into the site. However, the proposed rail link will require works in the riparian corridor, which may result in construction and operational impacts. These impacts will need to be further assessed once the siting of the crossing is determined.

- **Statutory Assessment Considerations** – the relevant planning, land use and development matters, including strategic and statutory matters are 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). SIMTA has referred its proposed action to the Commonwealth Minister and is seeking approval to carry out its approved action under the EPBC Act.

  - The SIMTA proposal was declared a state significant development under Part 3A (now repealed) of the *Environmental Planning and Assessment Act 1979* (EP&A Act), which provides the framework for assessing developments in NSW. A Concept Plan approval is being sought under the transitional provisions relating to Part 3A assessments under the Environmental Planning and Assessment Act 1979 (EP&A Act) for the SIMTA proposal (Schedule 6A, EP&A Act).

  - 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.

The relevant riparian zone management requirements are presented within Section 2 of the *Riparian Assessment* and as summarised below:

- The need to obtain controlled water activity approvals and water management works approvals under Section 90 and 91 of the *Water Management Act 2000* is not relevant to a transitional Part 3A project, however, the principle and guidance documents published by the NSW Office of Water (NOW) have been considered within the riparian assessment.

- The *Liverpool Development Control Plan* has been reviewed with regard to its requirements for development near creeks and rivers. However, Section 75O(3) of the EP&A Act allows the Minister to set aside the DCP requirements in determining the Concept Plan.

- The *Greater Metropolitan Regional Environmental Plan No 2 - Georges River Catchment* establishes a series of planning controls to achieve the aims and objectives of the REP which have been considered in the riparian assessment.

- The need to obtain approval for in stream works under the *Fisheries Management Act 1994* is not relevant to a transitional Part 3A project. However, the objectives and guidelines will be considered in the detailed design of the rail link to minimise the potential impacts on fisheries resources and riparian areas.

- **Management/Mitigation Measures** – the *Flora and Fauna Impact Assessment* states that the identified ecological values should be avoided as far as practicable. Where impacts cannot be avoided, a range of mitigation measures have been recommended to ameliorate impacts on the biodiversity values during and following construction. Specific management measures are identified for conservation of threatened plant species in retained habitat adjoining the rail link.

  Section 5 of the *Riparian Assessment* includes a range of construction phase and operational controls and mitigations. Approval will be sought to undertake works within the riparian corridors, with appropriate setbacks. Mitigation strategies will be adopted in the project design, as well as the construction and operational phases, so that ecological values of the creek and riparian vegetation are protected.

7.3 ASSESSMENT OF KEY ISSUES

7.3.1 FLORA AND FAUNA

7.3.1.1 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 from Tuesday 2 May 2011 to Wednesday 25 May 2011 and 30 May 2012 to 31 May 2012 and targeted threatened species surveys from 10 July 2012 to 18 July 2012.

- Detailed flora surveys including six quadrats, random meanders, tree assessment and targeted threatened species searches recorded a total of 269 vascular plant species, comprising 193 local native species, eight non-local native species (mainly planted trees) and 68 exotic species.

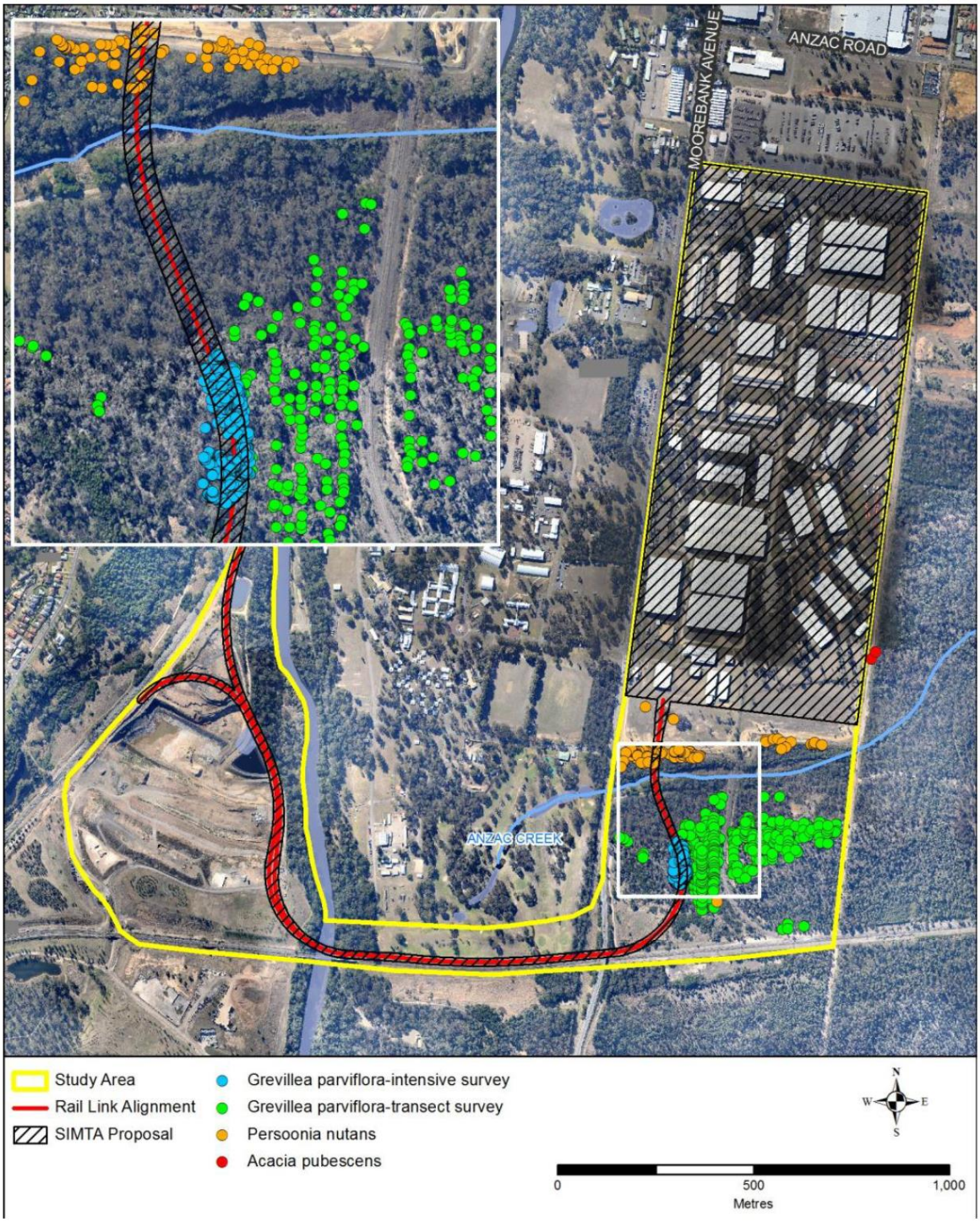
- Two threatened plant species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *Threatened Species Conservation Act 1995* (TSC Act) were identified in the Rail Corridor land, being:

  - *Persoonia nutans* (endangered species).

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

The location of these threatened plant species are illustrated in the figure below. Their populations are considered to be of significant conservation value. A referral under the EPBC Act has been made by SIMTA to the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities.

FIGURE 24 – LOCATION OF THREATENED FLORA SPECIES RECORDED IN STUDY AREA (HYDER: 2013)



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

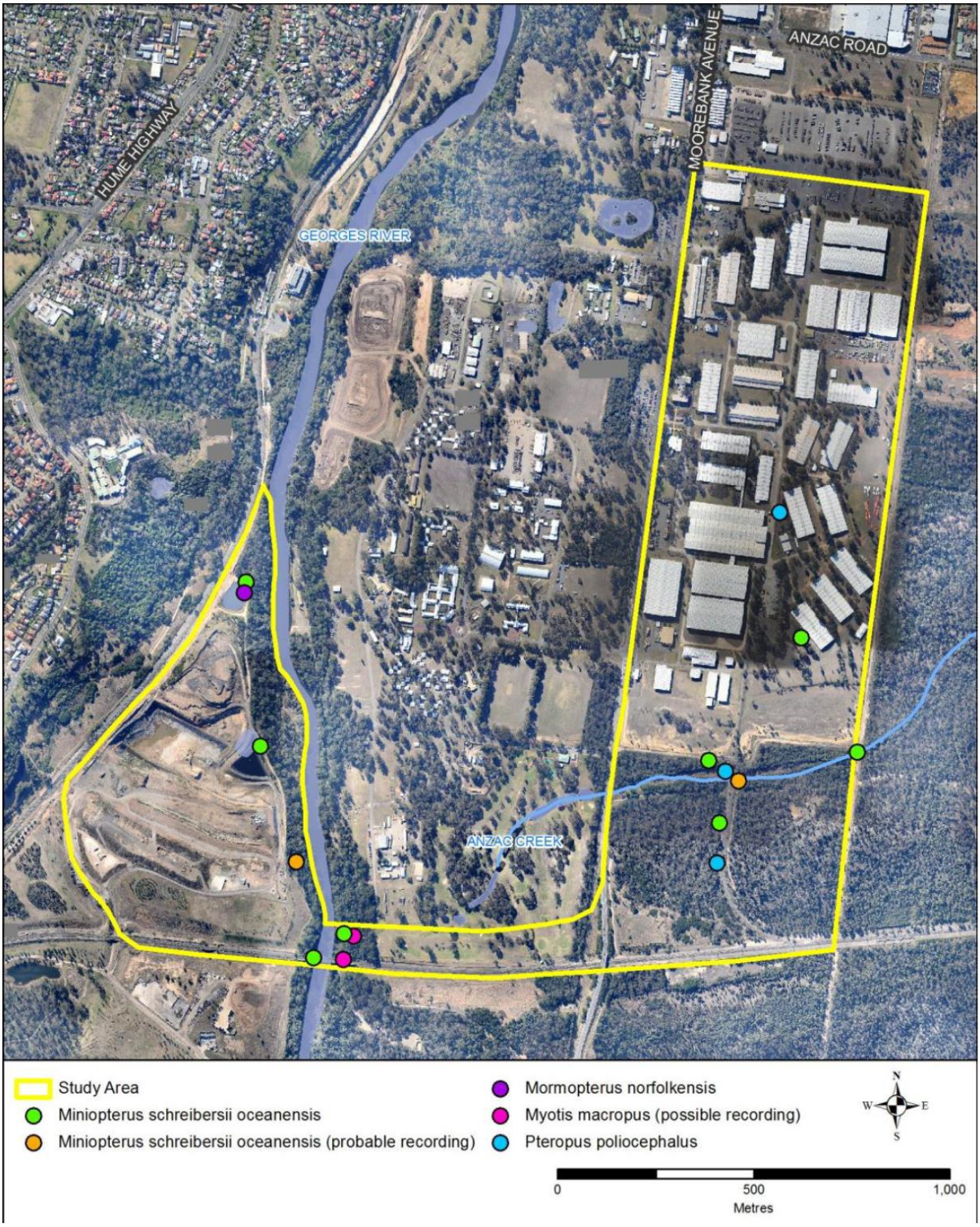
- Four threatened ecological communities listed under the TSC Act were identified in the study area, all within the Rail Corridor lands, being:

  – 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
- Freshwater Wetlands on Coastal Floodplains of the NSW North Coast, Sydney Basis and South-East Corner bioregions

- Four threatened fauna species listed under the TSC Act and EPBC Act were recorded within the study area (refer below).

FIGURE 25 – LOCATION OF THREATENED FAUNA SPECIES RECORDED IN STUDY AREA (HYDER: 2013)



The four threatened fauna species are:

- Eastern Bent-wing Bat (*Miniopterus schreibersii oceanensis*)
- Southern Myotis (*Myotis macropus*)
- Eastern Free-tail Bat (*mormopterus norfolensis*)
- Grey-headed Flying-Fox (*Pteropus poliocephalus*)

- Other species of concern included:
  - Green and Golden Bell Frog (*Litoria aurea*)
  - Spotted-tail Quoll (*Dasyurus maculates*)
  - Macquarie Perch (*Macquaria australasica*)

- Five broad habitat types were identified within the study area - remnant vegetation, riparian habitats landscaped areas and cleared and disturbed areas. Potential shelter and foraging resources to fauna include flowering trees and shrubs, hollow-bearing trees, rough-barked eucalypts with exfoliating bark, ground timber and well-developed leaf litter in places. Georges River, Anzac Creek and damp areas offer habitat to a variety of fish and amphibian species. However, there is an absence of other important features such as large hollow-bearing trees, rocky features and hollow logs across the site. Aquatic habitats in both the Georges River and Anzac Creek are considered to be poor quality.

- 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 limit movement of 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.

- The assessment concludes the following:

  Assessments of Significance have been prepared for the threatened species and ecological communities listed under the TSC Act known or likely to be impacted by the SIMTA proposal. These assessments concluded that the three endangered ecological communities, four threatened terrestrial fauna species and one aquatic fauna species assessed would not be significantly impacted by the SIMTA proposal. The threatened plant species Grevillea parviflora subsp. parviflora was also considered unlikely to be significantly impacted by the SIMTA proposal.

  The Assessment of Significance for Persoonia nutans concluded that this Endangered species will be significantly impacted as a result of the SIMTA proposal. The population of this species in the study area is considered highly significant due to its size and location in the southern part of the species' distribution. The proposed rail link will require the clearing of a 20 metre wide alignment (at the area of impact on P. nutans) that will bisect the area of occupied habitat of P.nutans and require the removal of 14% of recorded individuals in the population. The remaining plants will be fragmented by a 20 metre wide, fenced gap and subject to associated edge impacts. Specific management measures are identified for conservation of threatened plant species in retained habitat adjoining the rail link.

  It is recommended that a Vegetation Management Plan be prepared for management of native vegetation in the study area during and following construction. The Vegetation Management Plan should include a Threatened Species Management Plan to be prepared in consultation with DESWPC and OEH. The plan should include measures for management of impacts, maintenance and monitoring of populations and details of any offsetting requirements.

  Offsetting of biodiversity losses on site may be achieved using a number of mechanisms including acquisition and conservation of land, restoration of habitat, retirement of

biodiversity credits through the NSW Biobanking scheme or contributions to research and educational programs. A Preliminary Biodiversity Offset Strategy has been prepared to demonstrate a commitment to offsetting the residual significant impacts on matters of national environmental significance resulting from the SIMTA proposal. The Strategy is a working document that will be developed and revised through the project approval processes and it provides the foundation for consultation with DSEWPC.

7.3.1.2 VEGETATION CLEARING AND OPERATIONAL IMPACTS

The potential construction impacts of the SIMTA proposal are identified within the *Flora and Fauna Assessment* 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.

- *Loss of native vegetation, including Endangered Ecological Communities*
- *Loss of threatened flora species and fragmentation of habitat*
- *Loss of fauna habitat including that of threatened and migratory species*
- *Habitat fragmentation/loss of fauna habitat connectivity*
- *Alteration and degradation of aquatic habitats*
- *Fauna mortality*
- *Edge effects and weed invasion*
- *Alteration to air quality and noise levels*

The SIMTA site will be cleared of existing vegetation to accommodate the proposed intermodal terminal facility. However, 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 20 metres (and variable) width between the SIMTA site and the SSFL is considered likely to have more of a significant impact, taking into account the extent of vegetation on the land to the south and west of the SIMTA site. The areas proposed to be affected by vegetation clearing are outlined in the following table (extracted from the *Flora and Fauna* Assessment), including a breakdown in the native vegetation communities and areas proposed to be cleared.

TABLE 7 – NATIVE VEGETATION WITHIN THE STUDY AREA AND SIMTA PROPOSAL (HYDER: 2013)

NATIVE VEGETATION COMMUNITY	AREA IN STUDY AREA (HA)	AREA TO BE CLEARED (HA)	PERCENTAGE
Castlereagh Scribbly Gum Woodland	18.93	0.76	4%
Castlereagh Swamp Woodland	4.37	0.05	1%
Freshwater Wetlands	0.66	0.03	5%
River Flat Eucalypt Forest	7.23	0.35	5%
TOTAL	31.19	1.19	4%

The 1.19 hectares of native vegetation communities to be cleared are primarily located within the rail corridor. The proposed rail link comprises an area of approximately six hectares, however, the majority is

comprised of cleared and disturbed areas within the Glenfield Waste Disposal site. The proposal will also result in the clearing of 9.44 hectares (or 69%) of the existing 13.64 hectares of urban/exotic vegetation.

The potential operational impacts of the SIMTA proposal identified within the *Flora and Fauna Assessment* include:

> *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:*
>
> - *Fauna mortality*
> - *Edge effects and weed invasion*
> - *Degradation of aquatic habitats*
> - *Alteration to air quality and noise environments*

The potential construction and operational impacts, including vegetation clearing, will be managed and/or mitigated by way of a Vegetation Management Plan and Threatened Species Management Plan, as well as the off-setting of biodiversity losses. These matters have been incorporated into the Draft Statement of Commitments.

7.3.2 RIPARIAN CORRIDORS

7.3.2.1 SITE INVESTIGATIONS AND PRELIMINARY FINDINGS

The investigations undertaken to inform the *Riparian Assessment* included:

- Review of riparian requirements under relevant legislation.
- Consideration of historic aerial photographs and the Liverpool 9030-2S 1:25 000 topographic map
- Consultation with the NSW Office of Water (NOW)

The review of these documents identified that:

- *Neither of the channel systems on the SIMTA site are classified as streams, nor does the riparian corridor of Anzac Creek intrude into the site.*
- *The proposed rail link (located within the rail corridor) will require works in the riparian corridor of both Anzac Creek and the Georges River. This approval will be provided on approval of the project application.*
- *The riparian setback for Anzac Creek, as specified by NOW, is 30 metres (20 metre CRZ and 10 metre VB). The riparian corridor for the Georges River is yet to be determined with NOW, however, based on the NOW guidelines the recommended setback is likely to be between 30-50 metres (20-40 metre CRZ and 10 metre VB).*

7.3.2.2 CONSTRUCTION AND OPERATIONAL IMPACTS

The potential impacts on the riparian corridors of Anzac Creek and the Georges River were considered with regard to both the construction and operational phases of the SIMTA project. These are listed as follows:

Construction Phase Impacts

- *The removal and/or disturbance of riparian vegetation in order to construct the rail crossing across Anzac Creek and Georges River. Vegetation removal can reduce bed and bank stability and lead to increased bank and channel erosion, as well as impact riparian and in stream habitat values and impair flood control functions of the riparian zone.*

- *Increased sediment load as a result of erosion from exposed surfaces into riparian zone. The source of the sediments may be from construction activities on the SIMTA site and those associated with the rail link in the rail corridor. Increased sediment has the potential to smother ground cover and low vegetation. The accumulation of water in sediments around the trunk of larger trees can also cause rot, leading to tree death.*

- *Decreased water quality as a result of runoff and erosion from exposed surfaces. This is particularly relevant if the runoff contains contaminants or nutrients in concentrations that are harmful to riparian vegetation.*

- *Decreased water quantity reaching the surface water runoff also has the potential to harm riparian vegetation, particularly during extended dry periods.*

Operation Phase Impacts

- *Increased surface water runoff due to impervious surface areas, particularly on the SIMTA site. This can lead to waterlogging of riparian zone vegetation resulting in a decline in condition and/or loss of vegetation if occurring over long periods of time.*

- *Decreased surface water runoff and quantity due to water retention and diversion/discharge structures on the SIMTA site.*

- *Decreased water quality due to surface water runoff of hardstand areas picking up contaminants from fuel spills, tyre wear, vehicle emissions and particulate deposition.*

7.3.2.3 MANAGEMENT CONTROLS AND MITIGATION MEASURES

Approval will be sought to undertake works within the riparian corridors, including the delivery of appropriate setbacks to each of the riparian corridors. Mitigation strategies will be adopted in the project design, as well as the construction and operational stages, so that ecological values of the creek and riparian vegetation are protected. These will include:

Construction Phase Controls and Mitigation

- *Revegetation of the riparian corridor to restore and/or maintain ecological, functional and habitat values and impede surface flows and drop sediment before it reaches the waterways. As riparian vegetation along both Anzac Creek and Georges River is currently highly degraded, the aim would be to improve the condition through the selection of local providence species.*

- *Best practice soil and water management techniques will be implemented. This will include the use of sediment fences, check dams, level spreaders and other devices to mitigate the export of soil from the site. This will be defined through the preparation of a CEMP for sedimentation and erosion control during construction. Control structures will be inspected daily to confirm they are functioning as intended and will be repaired/ maintained as required.*

- *The primary mitigation measure will be the progressive development of the site allowing for better management and reduced potential pollution through having less exposed material at any one time.*

- *Disturbed areas will be limited to only those areas which need to be worked on at that point in time, and areas would be rehabilitated and sealed as soon as possible following construction.*

- *Potentially hazardous activities will be conducted in accordance with best practice environmental protection measures and in areas isolated from stormwater drainage systems or natural watercourses.*

- *Contaminated materials which cannot be remediated and buried onsite, will be exported from the SIMTA site. These will be disposed at a suitably licensed disposal facility.*

Operation Controls and Mitigation

- *Revegetation in the riparian zone will be checked and maintained regularly. Plantings will be watered as required until established and weeds and pests will be managed. Plantings that have not survived will be replaced.*

- *Water Sensitive Urban Design (WSUD) measures such as rainwater tanks, grass filter strips, swales and bio retention will be incorporated within the site to meet the water quality treatment objectives in accordance with Liverpool City Council's DCP.*

- *Flows from the site will be managed through the incorporation of onsite detention into the drainage system design. The aim of these works would be to match post-development flows from the site with pre-development flow rates for a range of storm occurrence intervals and durations.*

- *Management of water quality impacts during operation will focus on the appropriate inspection and maintenance of sediment basins and the landscape treatments within the SIMTA site and railways corridor land. Adaptive management measures would be developed to confirm that the performance of the water quality treatment measures remain satisfactory in the event that future rainfall events increase in either frequency or intensity.*

- *Management plans for hazardous materials and spill response will be developed. It is anticipated that each operational section and building would have its own spill management system that will prevent ingress into the surface water drainage system. It is also anticipated that there will be a design response to manage potential spills, once the management and spill response has been adequately assessed. This response may include inline treatment, spill sumps or further options of detention on site or within the proposed drainage system.*

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 detailed planning approval applications.

7.3.3 POTENTIAL CUMULATIVE IMPACTS

The *Flora and Fauna Impact Assessment* includes a review of the MICL proposal and the proposed relocation of the DNSDC operations to the north of the site. The potential cumulative impacts of these proposals is summarised below:

MICL Proposal

The key impacts and findings associated with the cumulative impact of the MICL proposal are as follows:

- Three TSC Act listed Threatened Ecological Communities were identified from the MICL site that also occur within the SIMTA study area, including:
  - *River-flat Eucalypt Forest, listed as Endangered under the TSC Act (comprised of Riparian Forest located along the Cooks River, and Alluvial Woodland in the north-west of the site).*
  - *Castlereagh Swamp Woodland, listed as Endangered under the TSC Act, is found in small patches in low-lying areas in the east of the site.*
  - *Castlereagh Scribbly Gum Woodland, listed as Vulnerable under the TSC Act, is located primarily in the east of the site along Moorebank Avenue.*

- The two threatened plant species recorded on the SIMTA study area, *Persoonia nutans* and *Grevillea parviflora subsp. parviflora*, were also recorded on the MICL site.

- Approximately 6.5 hectares of habitat known to be occupied by *Grevillea parviflora subsp. parviflora*, including at least 16 individuals of the species, could be removed as a result of the MICL proposal. The habitat is in good to moderately degraded condition, however is isolated from other areas of habitat in the locality. This area has been estimated to comprise no more than 2% of the local habitat for the species.

- Approximately 6.5 hectares of habitat known to be occupied by *Persoonia nutans* may be removed for development of the IMT which includes at least 10 individuals of the species. This area of habitat has been estimated to comprise no more than 1.5% of the local habitat for the species.

- The preliminary significance assessment for the two threatened plant species on the MICL site by Parsons Brinckerhoff (2011) concluded that potential impact was not considered significant, as the populations are likely to make up a small proportion of the local populations under the EPBC Act definition.

- Fauna habitat features that may be removed include hollow-bearing trees, artificial ponds and wetlands, flowering trees and shrubs, groundlayer vegetation and dense weed thickets. Patches of habitat were predominantly classified as having poor to moderate ecological integrity.

- The development of the two adjoining sites will reduce or remove a diversity of biodiversity values, including available fauna habitat (including roosting, nesting and foraging habitat), potential threatened fauna habitat, threatened plant species, TSC Act listed TECs, local provenance plant species and potential seedbanks. Development of the SIMTA proposal and the MICL site together will result in a greater loss of biodiversity values from the locality. Concurrent construction of the two sites will also result in the loss of these values over a shorter temporal scale.

Relocated DNSDC

The key impacts and findings associated with the cumulative impact of the relocated DNSDC operations are as follows:

- The relocated DNSDC site consists largely of cleared and disturbed areas, with scattered trees across the site and some fragmented bushland in the centre. Anzac Creek traverses the eastern edge of the site. The EEC Shale Gravel Transition Forest was mapped on the site by DECCW (2009). It is not known whether the site supports threatened flora or fauna species. There is no publicly available flora and fauna assessment of this land at the date of the current report.

- Relocation of the DNSDC site will involve clearing of most of the vegetation on the site and construction of new facilities. It is proposed to regenerate the section of Anzac Creek which runs along the eastern boundary of the site. The regeneration works will include replanting and revegetation works along the western boundary.

- The impacts on biodiversity from the redevelopment of the DNSDC to the north and east of the SIMTA site are not known. The relocation of the DNSDC will require clearing of native vegetation that is likely to correspond with one or more EECs, and reduce and further fragment fauna habitat in the locality.

7.4 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*

Section 2 of the *Riparian Assessment* lists the riparian zone management requirements that have been considered, including

- *Water Management Act 2000*

- *Liverpool Development Control Plan*

- *Greater Metropolitan Regional Environmental Plan No 2 – Georges River Catchment*

- *Fisheries Management Act 1994*

7.5 SUMMARY AND CONCLUSION

The *Flora and Fauna Assessment* concludes that the SIMTA site will result in biodiversity impacts of varying significance across the SIMTA site and the rail corridor.

The report recommends that impact should be avoided as far as practicable and where such impacts cannot be avoided, mitigation measures should be implemented to ameliorate these impacts on biodiversity values during and following construction. Measures include the preparation of a Vegetation Management Plan and Threatened Species Management Plan, as well as offsetting of biodiversity losses. These measures have been included within the Draft Statement of Commitments.

The *Riparian Assessment* concludes that the likely potential impacts of the SIMTA proposal can be effectively managed and controlled so as to have a minimal impact on the riparian environments of Anzac Creek and Georges River. 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 L**) 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** 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
  - Asbestos
  - Bushfire risk

- **Statutory Assessment Considerations** - the assessment report has considered a wide range of documents and legislation, which will continue to be consulted during detailed design and incorporated into future planning approval applications. These include the legislation listed in **Section 8.4** and the guidelines and policies which sit within these legislative requirements:

- **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. Each of these measures has been incorporated into the Draft Statement of Commitments.

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 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 staged planning 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 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 Model Code of Practice – How to Manage and Control Asbestos in the Workplace (Safe Work Australia, 2011), including the development of an asbestos removal control plan and an emergency plan.*
- **Dangerous Goods**
  - *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. Should unacceptable levels of risk be identified during the 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 will handle dangerous goods will 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 change with the tenancies. The requirements in the Code of Practice for storage and handling of dangerous goods (Work Cover NSW, 2005) will be adopted in these plans as a minimum.*
  - *In line with international shipping legislation, it will be a requirement that all dangerous goods to be imported or exported through the facility must be notified in advance. The method of notification is to be determined under a Site Operational Management Plan. In line with local and international requirements, it is envisaged that terminal staff will be required to have successfully completed dangerous goods training in accordance with IMDG Code Chapter 1.3.*

- *Each person is to receive training in the contents of dangerous goods provisions commensurate with their roles and responsibilities. Training is to be provided for and records maintained in accordance with the appropriate competent authority (WorkCover NSW).*

- **Bushfire Management**

  - *SIMTA has committed to addressing the key objectives identified by the RFS, during 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 will also be developed for both the construction and operational phases of the SIMTA proposal. The following strategies may be adopted by the plan:*

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 as part of the staged planning approval applications 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 (ie. as part of the detailed planning approval 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.

8.4 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 the legislation listed below and the guidelines and policies which sit within these legislative requirements:

- *Work Health and Safety Act 2011*

- Safe Work Australia *Model Code of Practice – How to Manage and Control of Asbestos in the Workplace (2011*)
- Safe Work Australia *Model Code of Practice – How to Safely Remove Asbestos (2011)*
- *Code of Practice for the Storage and Handling of Dangerous Goods*
- *International Convention for the Safety of Life at Sea* (SOLAS), 1988
- *International Maritime Dangerous Goods Code* (IMDG) 2012
- Sydney Ports Corporation *Dangerous Goods Management Guidelines 2013*
- *Dangerous Goods (Road and Rail Transport) Act 2008*
- *Environmental Planning and Assessment Act 1979*
- *State Environmental Planning Policy No 33*
- *Rural Fires Act 1997* (RF Act)

8.5 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 as part of the future planning approval application stages, 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 future detailed planning 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 an assessment of potential contamination issues within the SIMTA site and the indicative rail corridor. A *Preliminary Environmental Site Assessment of the SIMTA Site and Rail Corridor Lands* and a *Phase 1 Environmental Site Assessment – Rail Corridor Land for SIMTA Moorebank Intermodal Terminal Facility* have been prepared (refer to **Appendix M** and **Appendix N**).

These reports 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 visual inspection of the DNSDC operations within the SIMTA site was undertaken on 25 July 2011. A review was also undertaken of reports of environmental investigations that were completed at the SIMTA site between 2000 and 2002. A visual inspection of the Glenfield Quarry and Waste Disposal Facility was undertaken on 15 November 2011, including viewing the active rail corridor from vantage points (ie without entering the active rail corridor) to understand the existing environmental conditions. A review of historical records, regulatory records, previous environmental investigations and current site activities was undertaken to identify potential contamination issues within the rail corridor.

- **Potential Impacts** – the potential contamination risks on land subject to the SIMTA proposal are identified within the Golder reports, including the potential areas of contamination and the potential contaminants of concern, taking into account the past uses of the areas of environmental interest.

- **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 has provided general recommendations for potential contamination management measures to address the potential contaminants of concern. Recommendations are also provided for further investigations to be completed in the areas of environmental concern that are likely to be impacted upon by the proposed development.

9.3 ASSESSMENT OF KEY ISSUES

9.3.1 CONTAMINATION ASSESSMENT AND REMEDIATION OPTIONS

The key findings arising from the *Preliminary Environmental Site Assessment of the SIMTA Site and Rail Corridor Lands* (Preliminary ESA) and a *Phase 1 Environmental Site Assessment – Rail Corridor Land for SIMTA Moorebank Intermodal Terminal Facility* (Phase 1 ESA) reports 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 Preliminary ESA included a review of the previous investigations undertaken for the SIMTA site. A summary of the key findings from this review is provided below:

- Eleven areas of environmental concern have previously been identified across the SIMTA site. The previous reports agreed these areas of environmental concern should be addressed through the implementation of a Site Management Plan (SMP), 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); and*
    - *Incorporate the findings and recommendations of the Ordnance Investigation report by Milsearch (2002) during future development of the site.*
- The earlier investigations concluded the site was considered suitable for continued commercial/ industrial use providing the elevated concentrations of chemicals of concern identified in groundwater and fill materials were addressed as part of the SMP. As a matter of priority, the south-eastern areas of the site, where grenade fragments were identified, also needed to be addressed.
- However, later reports indicated that it was unclear whether the areas of environmental concern had been addressed or if an SMP had been developed for the site.

The potential contamination management measures to address the areas of environmental concern for the current SIMTA proposal are identified as follows:

- *Underground tank installations: removal of tanks, removal of contaminated soil for land farming or off-site disposal to a licensed landfill, treatment of contaminated groundwater via in-situ (e.g. air sparge with vapour extraction, enhanced bioremediation, chemical oxidation or natural attenuation) or ex situ methods (e.g. pump and treat).*
- *Filled areas, including asbestos: excavation and removal of filled material and associated impacted soil and either placement and capping on-site (subject to regulatory approval) or off-site disposal at a*

licensed landfill. Contaminated groundwater could be treated via insitu (e.g. air sparge with vapour extraction, enhanced bioremediation, chemical oxidation or natural attenuation) or exsitu methods (e.g. pump and treat).

- *UXO materials: geophysical surveys to identify locations of UXOs, selective removal of UXOs for disposal by the military, scraping of soil and screening to separate residual exploded ordnance metal fragments for disposal at an appropriate on-site burial pit (subject to regulatory approval) or at an off-site disposal to a licensed landfill.*

The report states that the contamination risks may be managed via commercial available and well established remediation methods which can be tailored for site-specific circumstances and would not preclude the construction of the proposed railway or intermodal facility. The specific details of the remediation method adopted for the project will depend upon factors such as the contamination characteristics identified during the intrusive investigations, the detailed design of the construction works, cost and schedule.

Overall, the report concludes that the review and investigation undertaken by Golder have not identified significant environmental issues which would preclude the currently proposed development of the SIMTA site and associated rail corridor. However, a number of additional actions are required to facilitate the redevelopment of the site, including:

- It is recommended that confirmation should be sought in regards to what, if any, actions were taken in regards to the Milsearch (2002) recommendations and the associated low risk ordnance issues.

- It is recommended 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 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 design.

- A Contamination Management Plan is to be developed, 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.

Should a staged approach be adopted for the development of the site, a similar staged approach can be adopted for the additional investigations, and subsequent Contamination Management Plans. However, some areas of environmental concern may transverse proposed development stage boundaries, which may add complexity to the implementation of the Contamination Management Plan. As such, there may be benefit from addressing all contamination matters at the site in a single stage of investigations.

9.3.1.2 RAIL CORRIDOR LANDS

The additional investigations undertaken in association with the Phase 1 ESA for the rail corridor lands identified a number of areas of environmental interest where there is potential for subsurface contamination as a result of 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 industry and waste disposal is being undertaken in accordance with a current Environmental Protection Licence.
- **All areas of the site** - potential unidentified buried waste, as well as the use of pesticides and herbicides for pest and/or weed control.

Part of the SIMTA site (Lot 3001 DP1125930, Moorebank (Army) Avenue) 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

Potential contamination management measures were identified, taking into account the general procedure of managing contamination issues, including:

- Intrusive investigations prior to commencement of construction works.
- Identification of contamination issues.
- Remediation planning.
- Regulatory approval and site auditor review (if required).
- Implementation of remediation and validation.

It is anticipated that intrusive investigations would be undertaken during the detailed design of the project and prior to commencement of construction works. The results of these investigations would help refine the design and develop a contamination management plan to determine how either identified or unexpected contamination will be managed.

The potential sources of contamination along the corridor alignment are predominantly:

- Historical placements of fill material and dumping of building rubble and other waste materials;
- Historical use of pesticides and herbicides;

- Potential UXO associated with the former grenade ranges; and

- Operation of a landfill.

The general approach to remediation of physical contaminants and contaminated soil is likely to be selective excavation and disposal. With regards to remediation of areas impacted by UXOs, remediation works would focus on removal of explosive material (unexploded grenades) and grenade fragments. Excavated soil surfaces would be subject to validation sampling and analysis to assure that all of the contaminated soil had been removed. These approaches have been satisfactorily adopted on many contaminated sites in NSW with contamination risks similar to those identified in this Phase 1 ESA and are considered likely to be suitable options for the proposed railway corridor.

If groundwater extraction is required to enable excavation and construction works and the groundwater is contaminated, there are a number of treatment options which may be adopted to manage contamination risks, depending upon the characteristics of the contamination and the groundwater disposal methods.

The contamination risks of the landfill located in the Glenfield Quarry and Waste Disposal Facility would require consideration of physical contaminants, leachate and landfill gas. In the event that construction of the railway requires disturbance to a landfill cell, it is assumed that the disturbed material would be handled in the same manner as the current landfilled material. As the waste material is encapsulated within the landfill and the gas and leachate are collected within managed systems, it is considered that the landfill contamination would be isolated from the railway construction works.

In summary, it is considered that the contamination risks identified may be managed via commercially available and well established remediation methods which can be tailored for site-specific circumstances and would not preclude the construction of the railway. The specific details of the remediation method adopted for the project will depend upon factors such as the contamination characteristics identified during the intrusive investigations, the detailed design of the construction works, cost and schedule.

The report concludes that areas of environmental interest exist where soil and to a lesser extent groundwater contamination may have occurred. The investigation undertaken by Golder has not identified significant environmental issues which would preclude the currently proposed development of the site as a rail corridor. However, it is noted that the earlier recommendations in regards to the rail corridor lands from the earlier Concept Plan application are retained within the Preliminary ESA, including:

- *A Phase 2 ESA be completed 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 the 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 and landfill gas 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 Preliminary ESA noted the earlier site investigations indicated that the site lies in an area where there is no known occurrence of acid sulphate soils materials.

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 MICL proposal is anticipated to commence in 2015, 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.

9.4 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)*

9.5 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 detailed planning 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 detailed 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 O**) and a *Flood Study and Stormwater Management Report* (attached as **Appendix P**) 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.

- **Existing Environment** - the existing catchments and stormwater system servicing the SIMTA site were identified based on a desktop review of relevant information and an inspection of the site. The key features of the rail corridor land are based on the aquatic ecosystem assessment in the *Flora and Fauna Assessment* and *Riparian Assessment*. 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 were assessed, taking into account the demolition, construction and operational phases, including stormwater run-off (quantity and quality) and its associated impacts on riparian areas and soil and water management. The potential impacts are described in detail within Section 3 of the *Stormwater and Flooding Environmental Assessment* report and within **Section 10.3** of this report, including both the construction and on-going operation phases.

- **Statutory Assessment Considerations** – a range of information was considered in the flood assessment and stormwater management plan, as listed in the database within the *Flood Study and Stormwater Management Report* and as listed in **Section 10.4** of this report.

- **Management/Mitigation Measures** – temporary and permanent measures to mitigate the potential impacts will be implemented during the demolition, construction and on-going operation of the SITMA proposal. Each of these measures are detailed within **Section 10.3** and incorporated into the Draft Statement of Commitments.

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:

- **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 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. The potential environmental impacts associated with stormwater and flooding in relation to water quantity, water quality and fish passage and habitat are detailed below:

<u>Construction</u>

- Progressive demolition and removal of existing structures 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 could contribute to increased erosion, surface scouring and scouring of water channels, transportation of sand silt and clay off-site into adjacent vegetation and waterways and increased severity and impacts of flood events.

- 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.*

  Sedimentation impacts may result in increased turbidity, reduction in water body temperatures and reduction in dissolved oxygen, detrimentally impacting fish habitat in Georges River and Anzac Creek.

- Likely impacts resulting in the degradation of aquatic habitats and obstruction to fish passage could include:

  - *Diversion of flows and/or alteration to the natural flow conditions within the waterway.*

  - *Bed and bank erosion resulting from changes to stormwater flows.*

  - *Reduced water quality and light penetration due to erosion and run-off from the construction area.*

  - *The removal of shade trees.*

  - *The release of sediment into the stream resulting in damage to, or the removal of, bank vegetation, particularly vegetation that shades the low-flow channel.*

  - *Obstruction to fish passage as a result of inappropriate design and/or construction of watercourse crossings over Anzac Creek and Georges River.*

  These impacts could adversely affect breeding movements, restrict access to breeding sites, provide habitat for predatory and introduced fish species and result in localised extinctions of fish populations.

Operation

- 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.

- 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. Discharge of particulates from site during typical flow conditions is considered to be negligible.

- Potential spills of fuels, oils, lubricants or site goods could affect water quality. Potential impacts would be negligible due to the surface water detention structures and implementation of spill and emergency response procedures.

- Fish passage barriers during the operation and maintenance phase may result from debris blocking a culvert or a blockage as a result of an alteration to the natural flow conditions within the waterway caused by the construction of a waterway crossing. The detailed design of watercourse crossings will be completed as part of the future staged applications, including detailed consideration of fish passage impacts resulting from crossing structures for Anzac Creek and Georges River.

The proposed management and mitigation measures include:

Construction

- Adoption of an overall stormwater design that seeks to:

  - *Adopt national best practice stormwater standards for the proposed intermodal terminal facility.*

  - *Comply with recognised Australian Standards and Liverpool City Council Guidelines.*

  - *Provide site levels which are above localised flood levels but do not impact upon capacity of existing floodplains.*

  - *Providing adequate grades for surface drainage which do not impact on the operational requirements for the facility.*

  - *Provide drainage facilities which minimise requirements for in-ground pipework and provide facilities for stormwater detention and Water Sensitive Urban Design (WSUD).*

- Progressive development of the site to better manage and reduce sediment mobilisation by reducing the total surface area of exposed material at any one time. Works could also be scheduled to undertake the bulk of the early earthworks in the driest period of July to September, where practical.
- Use of sedimentation to capture all site surface waters for a 1 in 10 year storm event. Water would then be used on site or treated for sediment and particulate removal and discharged.
- Development of a Construction Environmental Management Plan (CEMP), Operational Environmental Management Plan (OEMP) and consideration of appropriate controls during the detailed design process.
- Adoption of the following principles to all areas and stages of the construction program:
  - Minimise extent of ground disturbance.
  - Control clean water onto and through the site.
  - Implement erosion and sediment control strategies.
  - Monitoring and evaluation.
- Implementation of erosion control measures to reduce potential soil loss by:
  - Protection of soil surface.
  - Reducing the length and steepness of slopes.
  - Increasing the time of concentration of overland flow.
  - Directing overland flow to a stable outlet point.
  - Progressive stabilisation following completion.
  - Monitoring of controls & strategies.

  A baseline monitoring program to capture seasonality in water quality conditions including the following physico-chemical and biological indicators:
  - pH
  - Temperature
  - Turbidity
  - Dissolved oxygen
  - Surface films and debris
  - Chemical contaminants (metals and hydrocarbons)
  - Total suspended solids
  - Visual clarity and colour

Establishing stormwater runoff quality objectives and treatment targets in accordance with Liverpool Development Control Plan 2008.

- Regular monitoring the installation and maintenance of all soil and water management works.

- ESCPs that detail the specific measures, locations and methods of construction based on the final construction specification.

- Management of chemical containment, spills and leaks through emergency response and spill response procedures included within the CEMP.

- Investigation and evaluation of site characteristics and constraints in the development of erosion and sediment control strategies, taking into account the detailed provisions of the *Stormwater and Flooding Assessment*.

- Implementation of erosion and sediment controls in accordance with the principles and examples identified in Section 1.4 of *Managing Urban Stormwater: Soils and Construction Volume 1 and Volumes 2E and 2D*.

- All design associated with flood and stormwater management and mitigation of pollution being in accordance with the requirements specified in Fairfull and Witheridge (2003) and Part 7 (Division 3) of the Fisheries Management Act 1994 (FM Act).

- Adoption of the following principles in the design of any bridge/arch crossing Georges River:

  - *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.*

- Adoption of the following principles in the culvert crossing design for Anzac Creek:

  - *Fish passage requirements would be considered when selecting the type of 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.*

- Designing the crossing with reference to the detailed engineering guidelines provided in Fairfull and Witheridge (2003).

- 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.*

Operation

- Designing stormwater detention facilities to limit peak discharges, for a range of storm durations, to no greater than under existing conditions.

- Providing a series of large channels and swales to receive surface flows from open pavements graded in an east-west direction thus negating the need for surface inlets with grates. Underground pipe work will generally only be used to capture and convey stormwater from building downpipes to the large channels.

- Use of rainwater tanks to collect roof water from warehouses and re-use for non-potable water demands for toilet flushing and for outdoor use. All rainwater tanks would have a first-flush device to capture gross pollutants and sediments accumulating on the roof.

- Detention of the stormwater in structures to match post-development flows from the site with pre-development flow rates for a range of storm occurrence intervals and durations.

- Use of water quality management 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.

- Consideration of the options identified in Table 6 of the *Stormwater and Flooding Assessment* during detailed design to mitigate the impacts on the quality of water leaving the site and entering Georges River and Anzac Creek.

- Adaptive management measures to maintain performance of water quality treatment measures in the event that future rainfall events increase in either frequency or intensity. Regular maintenance

inspections would be conducted (where practical), with appropriate recording to identify and rectify general performance risks, including:

  - *Areas of erosion, sediment deposition and/or poor vegetative cover.*
  - *Blocked drains and GPTs.*
  - *Slumped batters.*
  - *Sediment basins or other stormwater treatment measures requiring maintenance or repair.*

- Spill management systems within each operational section and building to prevent ingress into the surface water drainage system.
- Wherever possible, in-stream maintenance activities on the Georges River crossing would be programmed for times of the year that minimise overall environmental harm, giving appropriate consideration to anticipated critical periods of fish passage and seasonal high flows.
- Wherever possible, in-stream maintenance activities would be programmed for those times of the year that minimise overall environmental harm, giving appropriate consideration to anticipated critical periods of fish passage and seasonal high flows.

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.*
- *With respect to fish passage and fish habitat, all design associated with flood and stormwater management and mitigation of pollution and waterway crossings is to address Witheridge (2003) and Part 7 (Division 3) of the Fisheries Management Act 1994 (FM Act).*

10.3.2 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 Commonwealth 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.

Consideration has been given to the potential cumulative impacts of the two bridge crossings, being one crossing for the SIMTA proposal and a separate crossing for the MICL proposal. No details are currently available regarding the proposed design of the MICL crossing, however, it is anticipated that it could have an impact on flooding levels. These impacts must be quantified and assessed by the relevant authorities as part of the SSD application. At this stage, it is assumed that the MICL will follow similar design considerations and statutory process that have been applied to the SIMTA proposal.

10.4 LEGISLATIVE REQUIREMENTS

The *Stormwater and Flooding Environmental Assessment* assessed the construction and operational activities of the SIMTA proposal against the following legislation and guidelines:

- *Protection of the Environment and Operations Act 1997*
- *Fisheries Management Act 1994*
- *Fisheries Management (General) Regulation 2002*
- *Threatened Species Conservation Act 1995*
- *Water Act 1912*
- *Liverpool Development Control Plan 2008*
- *Managing Urban Stormwater: Soils and Construction*
- *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*
- *National Water Quality Management Strategy Australian Guidelines for Urban Stormwater Management*
- *Policy and Guidelines for Fish Friendly Water Crossings*
- *Fish Passage Requirements for Waterway Crossings*

10.5 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 applications 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).*

Pacific Environment Limited (formerly known as PAE Holmes) was engaged to prepare an *Air Quality Impact Assessment* (attached as **Appendix Q**) and Hyder was engaged to prepare *Greenhouse Gas Assessment* (attached as **Appendix R**) 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** 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** 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 tCO_2e 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 (tCO_2e) for a facility under a corporation and 50,000 tCO_2e 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 **Section 11.3** of this report.

11.3 ASSESSMENT OF KEY ISSUES

11.3.1 AIR QUALITY IMPACT ASSESSMENT

The Air Quality Impact Assessment was prepared by Pacific Environment Limited, based on the following scope of work:

- Detailed description of the ambient environment, including background pollutant concentrations, prevailing meteorological conditions and nearby sensitive receptors.
- Quantification of emissions to air for the operation of the SIMTA proposal for various activities and equipment.
- Assessment of the potential impacts associated with the operation of the SIMTA proposal based on regulatory dispersion model predictions and existing background pollutant concentrations.
- Qualitative assessment of the potential impacts associated with various stages of construction at the site.
- Consideration of the broader regional impacts of the SIMTA proposal, in terms of improved freight handling in Sydney.

The key pollutants associated with the proposed use were identified, taking into account both the construction and operations phases. Potential air pollution sources included:

- Particulate matter (PM)
- Oxides of NitrogenCarbon Monoxide
- Sulfur Dioxide (SO_2)
- Volatile Organic Compounds
- Lead
- Ozone

The air quality goals and dust criteria for the study were established taking into account EPA and OEH standards. Similarly, the existing environment and ambient air quality were established in accordance with EPA requirements. The key findings of this data provide the existing 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.
- 2007-2012 records of Nitrogen Dioxide (NO_2) indicate 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.

The potential air quality impacts were assessed at 16 sensitive receptor areas, taking into account the activities likely to result in air quality impacts during the staged demolition, construction and operational phases of the development. A worst- case scenario was modelled so all predictions should be viewed as conservatively high, with levels expected to be lower during normal operations of the SIMTA proposal. The key findings of the assessment are summarised below:

- Nitrogen Dioxide (NO_2) levels will not exceed criteria goal levels.

- Incremental 24-hour PM will not exceed the impact assessment criteria for all averaging periods and size fractions. Cumulatively, the SIMTA proposal would not result in any additional exceedances for PM_{10} or $PM_{2.5}$.

- Traffic related impacts on air quality as a result of additional traffic on the M5 will be negligible. Impacts along Moorebank Avenue are within 1% and 3% of the assessment criteria.

- The regional impacts of the SIMTA proposal are expected to result in a net reduction in emissions for NOx and PM. The changes in emissions would be negligible when considered at the regional level and accordingly, impacts on regional air quality would also be negligible.

While the results indicate there is a low risk of adverse air quality impacts on surrounding residential areas, it is proposed to undertake air quality monitoring during the initial phases of the construction and operation of the SIMTA site. This 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:

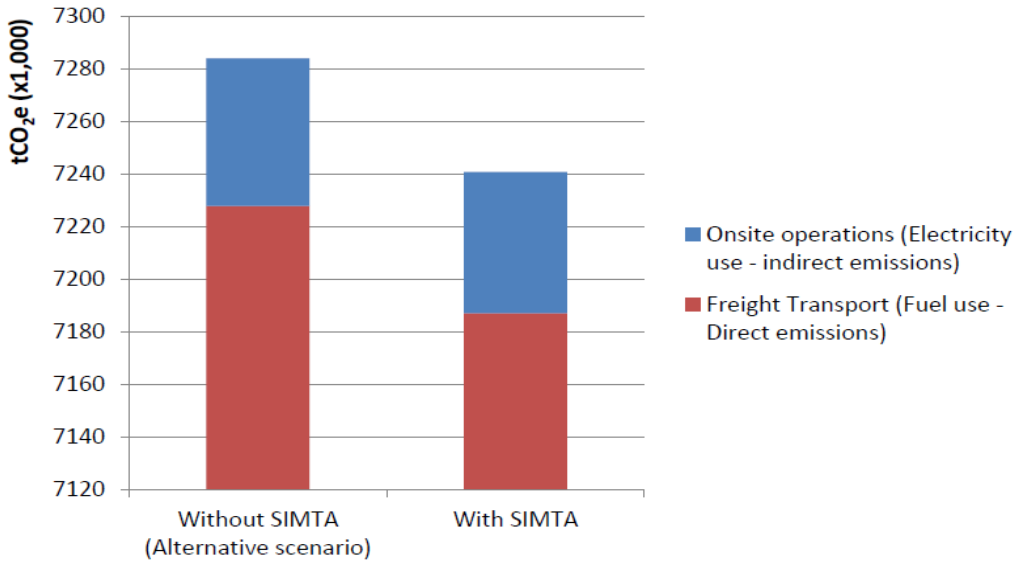
- **Site Preparation and Construction** - emissions from the construction phase were based on estimated machinery types, days used and fuel use and areas of clearing and construction required. Emissions from the transport of material to and from site were also included, based on truck fuel use and distances 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 Operations** – the SIMTA proposal is anticipated to reduce the amount of road traffic within the local Moorebank area and the surrounding region, with an associated reduction in transport related emissions as a result of a modal shift to a more efficient rail transport. The net emissions reduction from freight transport arising from the SIMTA proposal has been estimated at 40,820 tCO_2e, taking into account the use of rail transport, which is considered to be approximately 40 times more efficient than road transport.

- **Alternative Scenario** – 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. 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 26**. 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.

FIGURE 26 – GHG EMISSIONS SAVINGS (HYDER: 2012)



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:

- **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 (eg 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 (eg cogeneration/tri-generation on site);*
  - *Investigate the procurement of energy efficient equipment for the site (i.e. cranes, forklifts, street lighting);*
  - *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 (ie 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 cumulative impact of the full SIMTA site operations or combined operations with the proposed Moorebank Intermodal Company Ltd (MICL) Terminal Project has been assessed taking into account the freight catchment demand of one million TEU. The locations of the sources of emissions would change if the demand was shared between the two sites, however, the overall scale of impact would be the same.

Both the DNSDC and SME sites are expected to be vacated prior to full SIMTA operations, however the potential impacts on each site are considered in the event that either site has not vacated. The predicted incremental increases in ground-level concentrations at the two sites are comparable in magnitude to the predictions at the residential receptors, and are well below the relevant impact assessment criteria. Based on the cumulative analysis presented in the preceding sections, it is not expected that air quality goals would be exceeded across either the DNSDC or SME sites.

11.4 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.

11.5 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. The

regional impacts of the SIMTA proposal are expected to result in a net reduction in emissions for NOx and PM.

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 S**. 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 T**. 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 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.

  The existing development on the SIMTA site includes 20 timber post and beam buildings dating to World War II (WWII). 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 were built in the mid-1990s. These buildings are not considered to share the same high heritage value as the WWII 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, however, the significance of the School of Military Engineering site 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 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:

  - The SIMTA proposal is likely to involve the demolition or removal of some or all of the WWII buildings, 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 site

  - The construction of the intermodal terminal is expected to involve widespread subsurface impacts, which would affect known and potential archaeological resources on the SIMTA site.

  - 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 detailed planning application stage.

  - The rail link may result in potential impacts on Glenfield Farm, including impacts on views and setting and a possible increase in noise from activity along the rail link and SSFL.

- **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 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 the Part 3A transitional arrangements of the *Environmental Planning and Assessment Act 1979,* permits and consents from the Heritage Branch (under the NSW *Heritage Act 1977*) will not be required.