EIS Summary

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S.1 Introduction

This Environmental Impact Statement (EIS) Summary outlines the key points of the EIS prepared for the Moorebank Intermodal Terminal (IMT) Project (the Project) as detailed in Volumes 1 to Volume 9.

The EIS Summary includes details of the Project itself, including the Project background; the Project proponent and delivery entity; the Project need, objectives and benefits; the statutory and planning context; stakeholder and community consultation; the alternatives considered; and the proposed built form, phasing and construction approach (refer sections S.1 to S.9). Sections S.10 to S.13 summarise the impact assessment approach, key features of the existing environment, the predicted impacts of the Project on the environment, and the proposed management and mitigation measures detailed in this EIS. Section S.14 summarises the key steps in the planning approvals process following public display of this EIS.

S.1.1 Project overview

The Project involves the development of intermodal freight terminal facilities at Moorebank in south-west Sydney, linked to Port Botany and the interstate rail network (refer to Figure S.1). The Project includes associated commercial infrastructure (warehousing), a rail link connecting the Project site to the Southern Sydney Freight Line (SSFL) and road entry and exit points along Moorebank Avenue. The Project proponent is Moorebank Intermodal Company (MIC), a Government Business Enterprise (GBE) set up to facilitate the development of the Project.

An IMT is a location for the interchange of freight between one mode of transport and another. The Project is intended to interchange freight between road and rail, and service freight movements to and from Sydney's west and south-west. The Project would handle containerised cargo (cargo transported in shipping containers), through the initial development of an import/export (IMEX) freight facility, where international freight transiting through Port Botany would be handled. The IMEX facility would be supported by the development of warehousing along Moorebank Avenue. In the longer term, an interstate IMT and associated warehousing would be developed to handle containerised freight from interstate locations.

The Project site is centred on an approximately 220 hectare (ha) area of Commonwealth-owned land currently occupied by the Department of Defence (Defence) School of Military Engineering (SME) and other minor Defence units. The Project site is adjacent to the SSFL, the East Hills Rail Line, the M5 Motorway and Moorebank Avenue (refer to Figure S.1).

Further key features of the Project are summarised in sections S.8 and S.9.

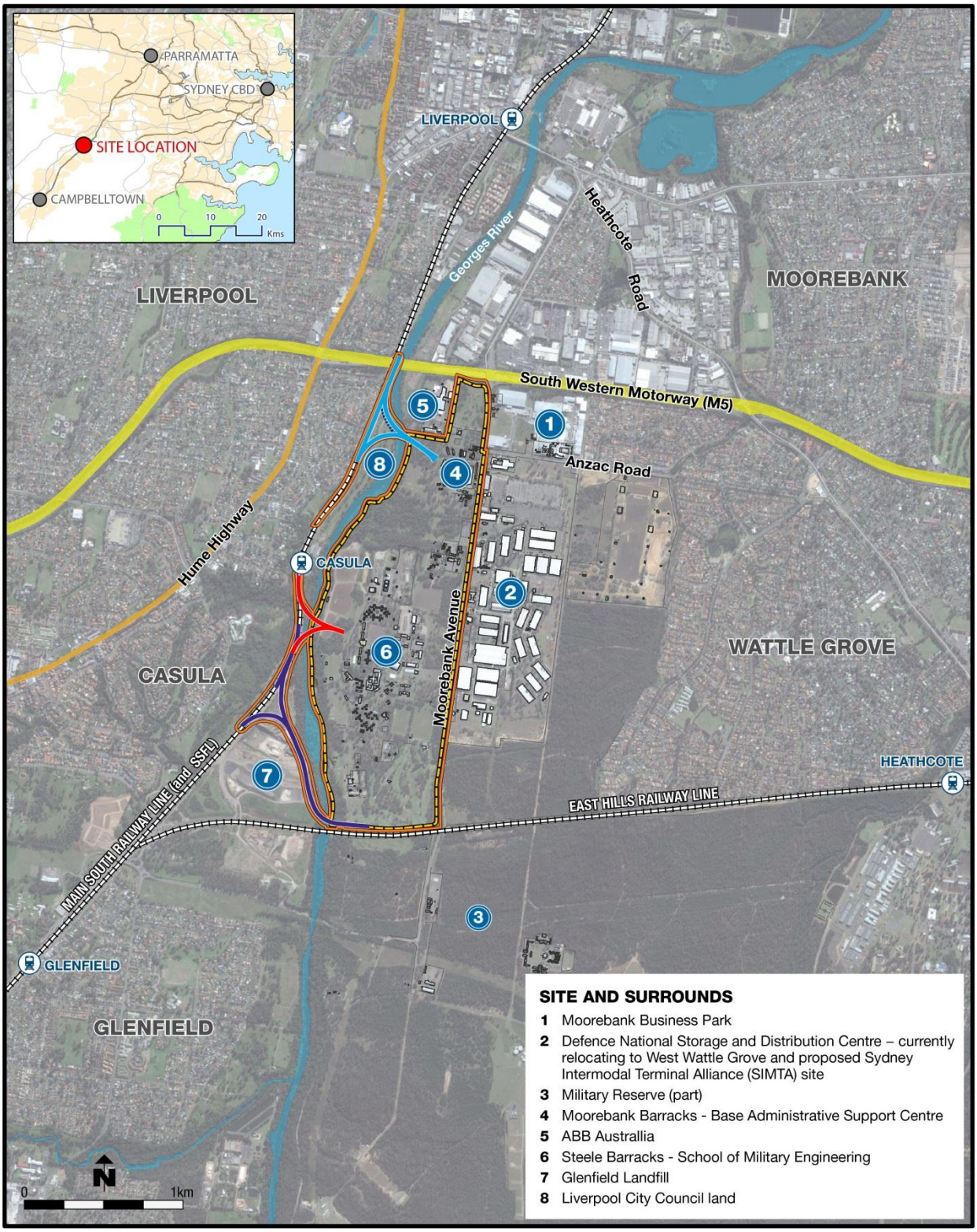

Figure S.1 Project site and context

S.1.2 This Environmental Impact Statement (EIS)

The following EIS, prepared by Parsons Brinckerhoff on behalf of MIC, provides a detailed description of the Project, including the need, background and alternatives considered. It also provides a detailed assessment of impacts of the Project on the environment and outlines measures to mitigate and manage those impacts.

The Project is subject to both Australian and NSW government approvals, and the EIS has been prepared to support applications for both approvals (EPBC number 2011/6086 and SSD-5066 under the Commonwealth and NSW approval processes respectively). The Project is a 'controlled action' under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) because:

- it is an action by the Commonwealth which would have a significant impact on the environment; and
- it is likely to have a significant impact on listed threatened species and communities.

Therefore, MIC is seeking approval for the construction and operation of the Project from the Commonwealth Department of the Environment (DoE) under Part 9 of the EPBC Act.

Under the *Environmental Planning and Assessment Act 1979* (EP&A Act) (NSW), MIC is seeking a staged development approval for the Project as State significant development (SSD). MIC is seeking Stage 1 SSD approval for the Project concept from the NSW DP&E under Part 4, Division 4.1 of the EP&A Act (hereafter referred to as the Stage 1 SSD approval). The Stage 1 SSD approval application also includes a package of 'Early Works' that comprises establishment of construction facilities, some demolition and relocation works, some contaminated land remediation, some utility terminations and diversions, establishment of the conservation area and heritage impact mitigation works. The Stage 1 SSD application is seeking approval for these Early Works without the need for any further approvals. Subject to Stage 1 SSD approval being received, the Project (with the exclusion of the Early Works) will be subject to further development applications and environmental assessment under the EP&A Act (hereafter referred to as the Stage 2 SSD approval).

The EIS addresses both the Commonwealth EIS Guidelines issued by DoE in July 2014 and the NSW Secretary's Environmental Assessment Requirements (NSW SEARs) issued by the NSW Department of Planning and Environment (NSW DP&E) in September 2014 (refer Appendix B in Volume 2 of this EIS).

The structure of the EIS is detailed in section 1.8 in Chapter 1 – *Introduction*.

S.2 Project proponent and delivery entity

MIC is the proponent for the Commonwealth EPBC Act approval and the NSW Stage 1 SSD approval.

MIC has been established under the Commonwealth *Corporations Act 2001*, and operates under the Commonwealth *Authorities and Companies Act 1997* to oversee the delivery of the Project. MIC is wholly owned by the Australian Government. The Minister for Infrastructure and Regional Development and the Minister for Finance are MIC's two shareholder ministers. More information on MIC is available at http://www.micl.com.au.

Prior to MIC being established in December 2012, the Department of Finance and Deregulation (now the Department of Finance (DoF)) was responsible for the Project and delivered the feasibility study for the Project, including a scoping study and business case, as discussed in section S.3.1.

At the time of publication of this EIS, an evaluation of interest from potential operators and developers of the terminal has been completed. MIC has commenced negotiations with the Sydney Intermodal Terminal Alliance (SIMTA) for a period of up to six months to determine whether suitable terms for the development and operations of the terminal can be agreed and whether a combined IMT precinct can be developed. The SIMTA site, located immediately east of the Project site (refer Figure S.1), is also subject to a proposal for the construction and operation of an IMT. This includes a proposed southern rail access connection to the SSFL across the Glenfield Landfill site. If negotiations are successful and MIC and SIMTA agree to develop a combined IMT precinct, then:

- only one IMEX terminal would be built; and
- a southern rail access connection to the SSFL would be constructed across the Glenfield Landfill for the IMT precinct.

If a detailed agreement with SIMTA cannot be reached within six months, MIC will consider other options.

S.3 Background and need for the Project

S.3.1 Background to development of the Project

In September 2004, the Australian Government announced it would consider the development of an IMT at Moorebank (Department of Transport and Regional Services 2006). In 2005, the independent Freight Infrastructure Advisory Board recommended the NSW Government act to ensure the Moorebank site is secured for the development of an IMT facility.

As part of the $3.4 billion Nation Building Program for road and rail infrastructure, the Australian Government allocated $300 million towards detailed planning for the development of an IMT at the Project site. In May 2009, Infrastructure Australia identified the IMT as part of its 'priority pipeline'. Subsequently, in the 2010–11 Budget, the Australian Government committed $70.7 million of the $300 million provision in the Nation Building Program towards the development of a business case, designs, approvals and an implementation strategy for an IMT at the Project site. The funding was also proposed to support the potential relocation of the SME and other Defence units (currently occupying the Project site) to the nearby Holsworthy Barracks to the south-east of the Project site. This is known as the Moorebank Units Relocation Project (MUR Project), which is currently underway and expected to be completed in mid-2015.

In September 2010, DoF commenced the Moorebank Intermodal Terminal Feasibility Study (the Feasibility Study). The Moorebank Project Office was established to conduct the Feasibility Study, with input from a team of advisers. The Feasibility Study included economic and financial analysis, technical feasibility and master planning for the facility.

A scoping study undertaken as part of the Feasibility Study indicated that an IMT at Moorebank would have a positive impact on national productivity and long-term public benefits associated with reducing road congestion from heavy vehicle freight transport, and the associated environmental and social impacts of this congestion. Following this, a business case was prepared. In April 2012, after reviewing the findings of the business case, the Australian Government committed to proceeding with the Project, subject to planning and environmental approvals.

In December 2012, the Australian Government created MIC to oversee the development of the Moorebank IMT and to work with industry to achieve the terminal's full potential.

Further detail on the development of the Project is provided in section S.7.

The Moorebank IMT Project is separate from, but has important inter-dependencies with, a number of major strategies and projects that are underway or planned by the Australian and NSW governments and private sector entities. Details of these projects are provided in section 3.5 of Chapter 3 – *Strategic context and need for the Project.*

S.3.2 Need for the Project

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

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

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

The Moorebank IMT would handle a significant proportion of the expected growth in containerised IMEX and interstate freight moving through Sydney. As the Project would enable more containerised freight to be moved by rail, it would respond to Sydney's need for more freight handling capacity without the limitations posed by Sydney's congested road network. The Project is one of a number of IMTs required to manage the increased number of containers expected to come through Port Botany in the long term.

The Project site is well located, considering two-thirds of the container freight arriving at Port Botany is bound for western Sydney. The railing in of containers from Port Botany to the Project site would assist in reducing regional Sydney traffic congestion, particularly along the M4 Motorway from Port Botany.

The Project would also take advantage of the substantial operating cost savings and environmental benefits that can be achieved through the greater use of rail for long distance freight transport; thereby leveraging the Australian Government's $4.8 billion investment towards improving the national rail freight network.

The Project includes development of warehousing facilities within the main IMT site. The warehousing component of the Project would enable deconsolidation and reconsolidation of freight (generally comprising packing and unpacking shipping containers) before it is loaded onto road vehicles, which would improve the efficiency of the logistics chain for locally destined goods. The warehousing would also provide efficient revenue streams for the Project, thereby supporting the cost competitiveness of rail against road.

Overall, it is envisaged the Project would boost the role of the national rail freight network's role in moving goods through the Sydney region, with potential to improve Australia's national productivity and better manage the rate of growth of traffic on the road network.

S.4 Project objectives and benefits

Table S.1 details the six long-term objectives established for the Project by the Australian Government in 2010, as well as MIC's constitutional objectives as established by the Australian Government in December 2012.

Table S.1 Commonwealth objectives for the Project (2010) and MIC constitutional objectives (2012)

Commonwealth (2010) objectives for the Project		
No.	**Objective**	**Relevance to this EIS**
1.	Boost national productivity over the long-term through improved freight network capacity and rail utilisation.	Underpinned the development of the Project concept and consideration of alternative sites and layouts up to end 2012 (refer Chapter 6 – *Project development and alternatives)*
2.	Create a flexible and commercially viable facility and enable open access for rail operators and other terminal users.	
3.	Minimise impact on Defence's operational capability during the relocation of Defence facilities from the Moorebank site.	
4.	Attract employment and investment to west and south-western Sydney.	
5.	Achieve sound environmental and social outcomes that are considerate of community views.	
6.	Optimise value for money for the Commonwealth having regard to the other stated Project objectives.	
MIC constitutional objectives (2012)		
No.	**Objective**	**Relevance to this EIS**
i)	To facilitate the development of an intermodal freight terminal at Moorebank, including an IMEX facility, an interstate freight terminal capable of catering for 1800 m trains and ancillary facilities by optimising private sector investment and innovation in the development, construction and operation of the intermodal terminal.	Underpinned the optimisation and further development of the Project concept from December 2012 up to finalisation of this EIS (refer Chapter 6 – *Project development and alternatives)*
ii)	To facilitate the operation of a flexible and commercially viable common user facility which shall be available on reasonably comparable terms to all rail operators and other terminal users.	
iii)	To ensure the intermodal terminal operates with the aim of improving national productivity through an efficient supply chain, increased freight capacity and better rail utilisation.	
iv)	To operate on commercially sound principles having regard to the Australian Government's long-term intention to sell its interest in the Company.	
In achieving the above objectives, MIC is tasked with delivering a value for money solution to the Australian Government and acting in an environmentally and socially responsible manner with due regard for local communities' views. This means that the IMT needs to be designed, developed and operated in a way that would minimise impacts on nearby residents and businesses.		

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

- *Economic benefits*: close to $9 billion in economic benefits (before costs and in net present value terms), over a 30-year operational period for the Project, including $120 million a year for the south-western Sydney economy, through improved productivity; reduced operating costs; reduced costs associated with road damage, congestion and accidents; and better environmental outcomes;
- *Job creation*: 1247 jobs (typical workforce) during construction of the IMEX terminal and warehousing and 275 jobs (typical workforce) during the construction of the interstate terminal, with operation of the Project expected to generate approximately 2174 jobs;
- *Better environment through reduced road congestion*: up to 3,000 fewer truck journeys every day (1,500 to and 1,500 from Port Botany) once the terminal is operating at capacity, equating to 1.05 million less truck journeys per year, As a result fewer greenhouse emissions released saving an estimated 7,300 tonnes of $C0_2$ per year once the terminal is fully operational in 2030;
- *Social benefits of reducing road traffic and associated noise* along key road freight routes between Moorebank and Port Botany and interstate;
- *Easing the Port Botany bottleneck* to enable the Port to cope with future growth and provide large-scale freight capacity; and
- *Enabling the movement of freight around Australia*, considering interstate freight is expected to grow by 3.6 % a year over the next 20 years.

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

S.5 Planning approvals process and statutory requirements

MIC is currently seeking approval for the Project concept (i.e. the broad parameters of the Project), sufficient to satisfy both:

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

Therefore, this EIS assesses the impacts of the identified IMT layouts, rail access options and indicative development phases to a concept level. The exception is the Early Works development phase, for which MIC is seeking approval to commence as part of the Stage 1 SSD approval application (with no further approval requirement).

As a separate project, MIC also proposes to undertake some site rehabilitation works on the Project site prior to commencement of the Moorebank IMT Project. This includes removal and/or demolition of some buildings containing asbestos, some spot remediation (including underground storage tank removal), and decontamination and site stabilisation of the plant and equipment operation training area on the western side of the Project site, known as the 'dust bowl'. These works are required to reduce environmental, health and safety risks on site before construction commences, and have been subject to a separate EPBC referral (EPBC 2014/7152). On 9 May 2014 the proposed site rehabilitation works were declared (under delegation from the Commonwealth Minister for the Environment) not to be a 'controlled action' and therefore not subject to further assessment under the EPBC Act. In addition, the site rehabilitation works are not subject to NSW planning approval as they occur entirely within Commonwealth land. The works would be undertaken in accordance with the environmental controls and safeguards set out in the referral. The site rehabilitation works referral can be viewed at: http://www.environment.gov.au/cgi-bin/epbc/epbc_ap.pl?name=referral_detail&proposal_id=7152.

S.6 Stakeholder and community consultation

As described in detail in Chapter 5 – *Stakeholder and community consultation*, a range of stakeholder consultation activities for the Project have been undertaken by the current and former Project proponent and the wider Project Team since the Project's inception.

To date, consultation has occurred with:

- the local community;
- those stakeholders with a role in representing a broader community (such as chambers of commerce and local councils);
- those agencies with infrastructure provision responsibilities affected by the Project (such as the transport agencies and power and water utilities); and
- those agencies with a direct or supporting environmental regulation or advisory role (such as the NSW Office of Environment and Heritage (OEH), and NSW Environmental Protection Authority (EPA)).

Government stakeholder consultation has included a range of one-on-one meetings with Australian, NSW and local government members and agencies with an interest in the Project. Key agencies and local councils have also had the opportunity to review and comment on the draft Commonwealth EIS Guidelines and NSW SEARs.

Meetings have been held with business organisations such as the Liverpool Chamber of Commerce, the Sydney Business Chamber, the NSW Business Chamber, Infrastructure Australia, Infrastructure NSW, Australian Logistics Council, the Australian Trucking Association and relevant unions.

Community consultation for the Project commenced in 2010. This included consultation with business owners and adjacent landholders and occupiers. The following consultation activities have been undertaken to date:

- establishing a Project website <http://www.micl.com.au/>, which is continually updated as the Project progresses;
- ongoing communication with community members who have contacted MIC through the Project website, through:
    - a series of personal briefings for residents; and

  - responses to enquiries made through the website;

- mailing of Community Update newsletters to all households in communities surrounding the Moorebank area (e.g. Casula, Wattle Grove, Holsworthy and Glenfield), to proactively keep the community up to date on Project milestones;

- community information sessions in the local area (during October 2011, and October and November 2013);

- stakeholder meetings with local community members in January and March 2014; and

- ongoing consultation with Aboriginal representatives with an interest in the Project.

Feedback received from the community and stakeholders has been provided to the Project team to assist with the development of the Project concept and this EIS.

Future consultation and community engagement activities associated with public exhibition of this EIS are detailed in section 5.4 of Chapter 5 – *Stakeholder and community consultation*. Community consultation will continue as part of the Project development process to ensure the views of people living in the surrounding area are clearly understood and that MIC can respond to these views to the greatest extent possible. MIC will consider feedback from the local community during the EIS exhibition, and will continue to consider feedback during the ongoing design development, construction and operation phases of the Project (if approved) to ensure all relevant issues are considered.

S.7 Project development and alternatives

As part of the development of the Project, feasible alternatives were considered, as detailed in Chapter 6 – *Project development and alternatives*. The assessment included:

- *Consideration of the 'no build' alternative*: This was rejected early on, due to the significant economic and social consequences of not proceeding with any project (as detailed in section 6.2).

- *Consideration of other IMT sites in Sydney at a strategic level, relative to the Project's need and objectives*: That assessment concluded that the proposed Project site at Moorebank best meets the need for additional IMT capacity in Sydney, and specifically in south-western Sydney. It is the only site of sufficient size to meet the identified demand for both IMEX and interstate IMT facilities, while also providing the benefits of a location close to the identified market and close to major road and rail corridors. It is also the site that meets all of the Commonwealth Project objectives and MIC's constitutional objectives.

- *A detailed analysis of site layout and functionality options for the Project site (technical options)* — This evaluation followed a six step process that included multi-criteria analysis (MCA) to rank and shortlist options. Various design layouts and functional options were developed for the Project site. The initial technical options focused on different markets (IMEX, interstate and bulk) or combinations of markets. The options also varied in regard to rail and road connections and the subsequent impacts of these connections. As the options needed to satisfy the Project objectives, some of the initial technical options were rejected because they were not commercially viable, they could potentially have significant impacts on surrounding Commonwealth-owned land or they did not achieve sound environmental and social outcomes.

Following the two-step MCA process, four technical site layout options were shortlisted and ranked in the following order (from most preferred to least preferred):

1. Option A2 – IMEX, interstate (with 1800 m trains) and warehousing (with interstate deferred until market conditions are suitable);

2. Option A1 – IMEX, interstate (with 1800 m trains) and warehousing (with no deferral of interstate);

3. Option C1 – IMEX only (with warehousing); and

4. Option B1 – interstate only (with warehousing).

These options were then subjected to a detailed comparative assessment relative to environmental, technical and economic criteria, which were developed considering the overall Project objectives. Two of the options (C1 and B1) were initially ruled out as they did not meet the Project or Commonwealth objectives.

Options A1 and A2 (IMEX plus interstate terminal) were selected as the preferred technical options, because by developing an IMEX IMT and an interstate IMT, they would share rail and road infrastructure and make the strongest contribution to improving national productivity and achieving a commercially viable outcome. These two options had identical site layouts, and only differed in the timing of the interstate IMT development. Although these options were identified as having environmental impacts, they would also generate substantial environmental benefits for the wider community (mainly associated with removing trucks from roads). Common to all options, they also included the establishment of a conservation area along the western boundary of the Project site. Furthermore, although the options would entail a high cost, they would be financially sustainable over the long term, with revenues forecast to be in excess of operating costs (due to the commercial benefits the options are expected to achieve).

For these reasons, Options A1 and A2 were selected as the preferred technical options and the layout for these options was subject to a detailed optimisation process. This optimisation process included concept master planning to develop the Project concept to a level that is sufficient for environmental assessment and approval; a further review of indicative site layouts based on feedback/responses from industry; and further consideration of the Project development phasing.

The result of this process was the selection of the Project concept detailed in Chapter 7 – *Project built form and operations* and Chapter 8 – *Project development phasing and construction* of this EIS. The concept is summarised in sections S.8 and S.9.

S.8 Project built form and operations

The final built form of the Project comprises the following key components:

- *an IMEX freight terminal* designed with a maximum capacity of 1.05 million twenty-foot equivalent units (TEU) a year (525,000 TEU inbound and 525,000 TEU outbound) servicing international IMEX freight movement between Port Botany and the Project site;

- *an interstate freight terminal* designed to handle up to 500,000 TEU a year (250,000 TEU inbound and 250,000 TEU outbound) of interstate freight, servicing trains travelling to, from and between Sydney and regional and interstate destinations;

- *warehousing facilities* with capacity for up to 300,000 square metres (sq. m) gross floor area to provide an interface between the IMEX and interstate terminals and commercial users of the facilities such as freight forwarders, logistics facilities and retail distribution centres;

- *establishment of a conservation area* to maintain and enhance the riparian vegetation between the Georges River and the 1% annual exceedance probability (AEP) flood level;

- *an upgrade of Moorebank Avenue* including widening of the road to a four-lane carriageway between the M5 Motorway and the East Hills Railway Line, upgrades to intersections to accommodate the widening and additional traffic, and traffic control measures; and

- *a rail access connection (rail link) between the main IMT site and the SSFL* via a bridge crossing the Georges River to the west of the main IMT site at either the northern, southern or central part of the Project site's western boundary.

Indicative site layouts for the Project at Full Build (in approximately 2030) are shown in Figures S.2 to S.4.

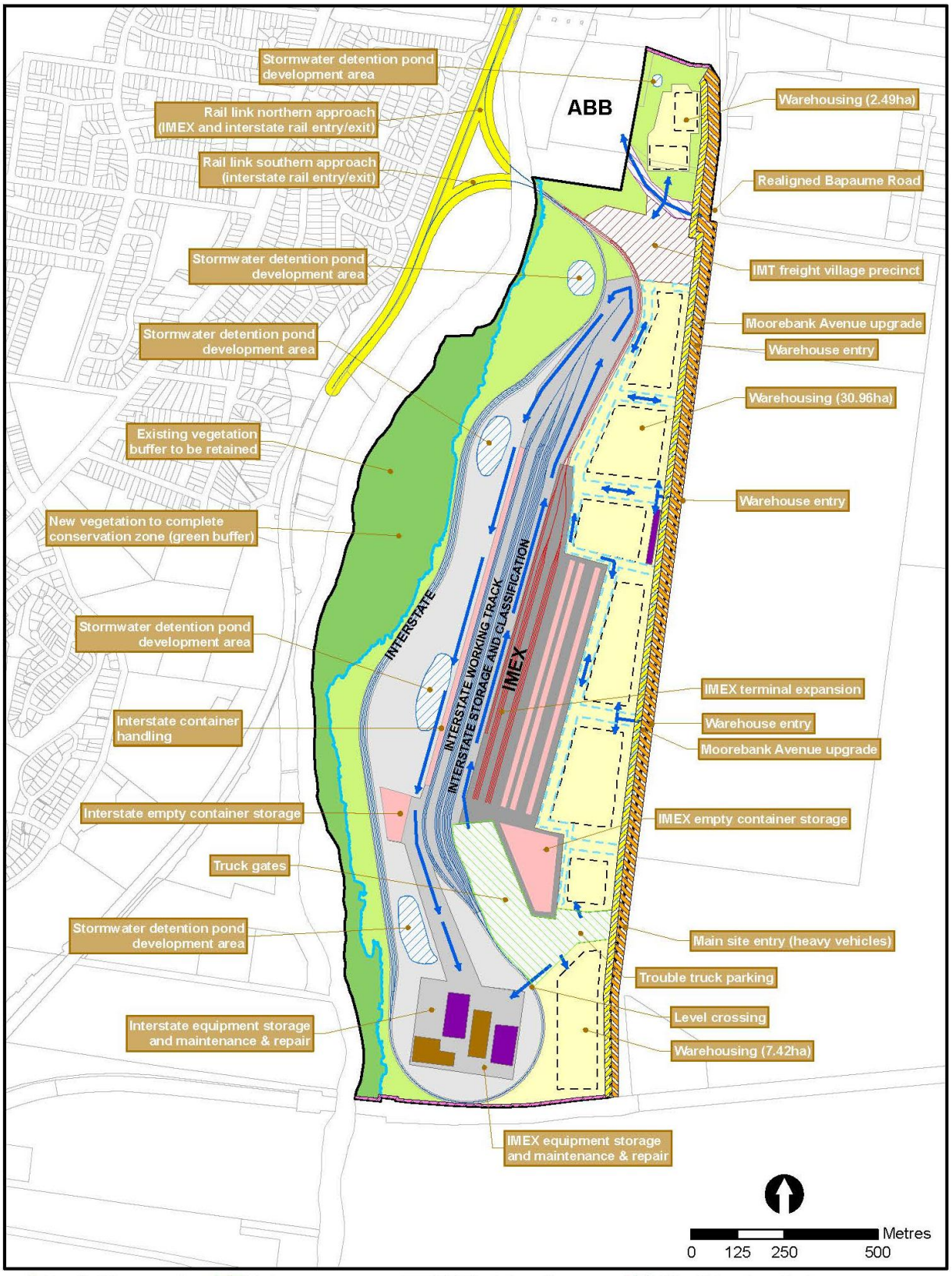

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Figure S.2 Indicative IMT layout associated with the northern rail access option at Full Build

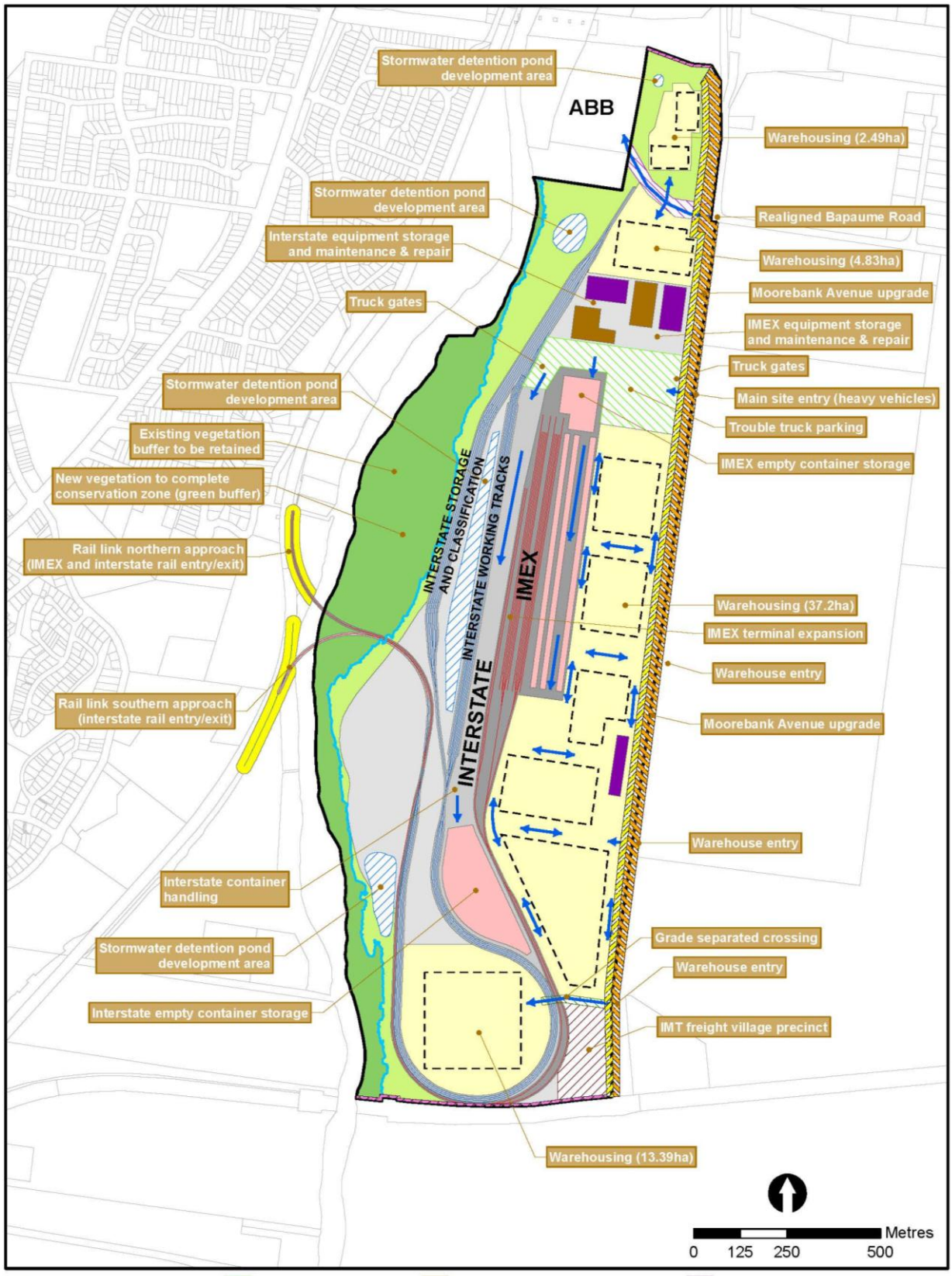

Figure S.3 Indicative IMT layout associated with the central rail access option at Full Build

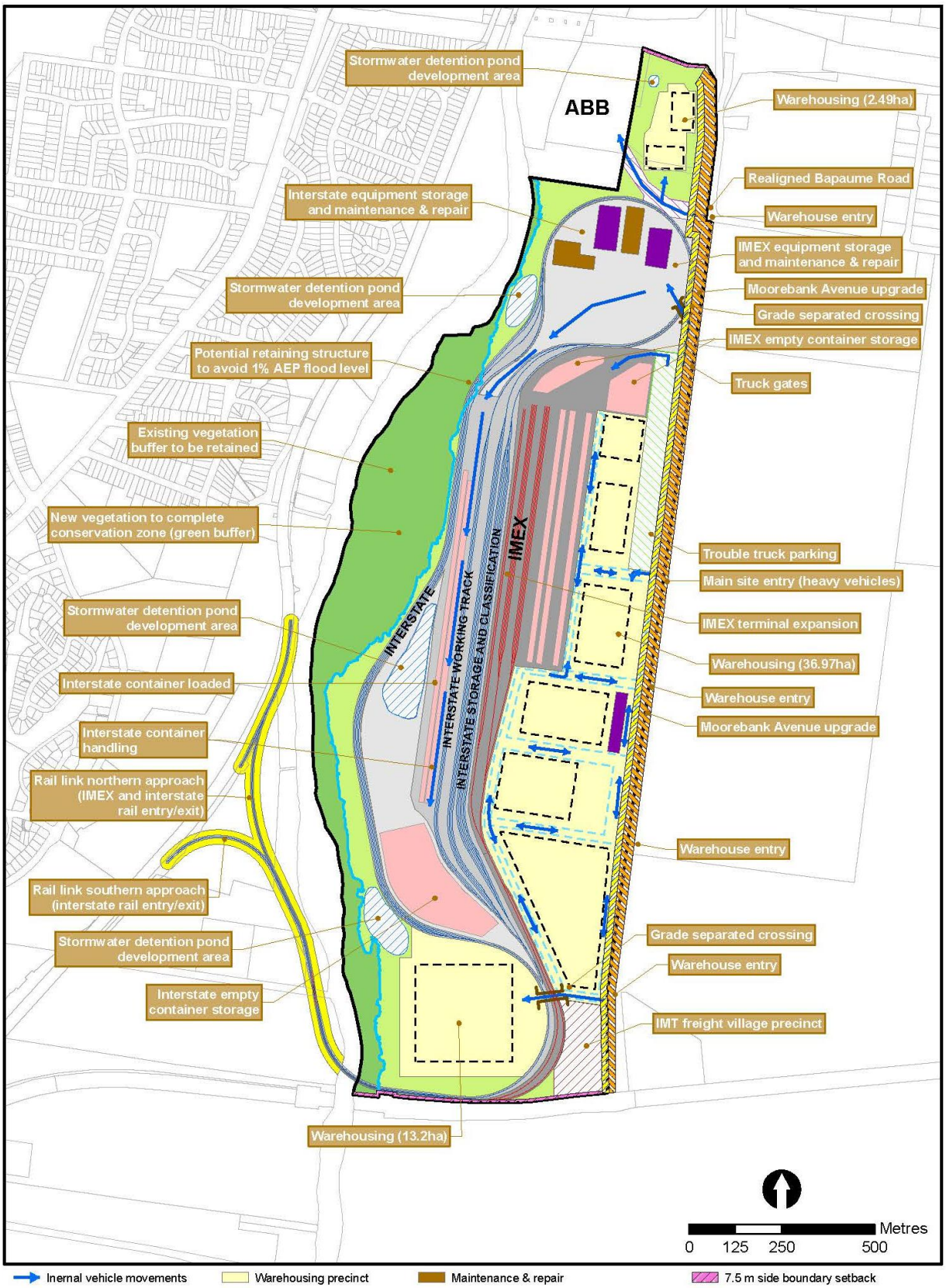

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Figure S.4 Indicative IMT layout associated with the southern rail access option at Full Build

Three indicative layouts are proposed and assessed in this EIS – one for each rail access option – referred to as the northern, southern and central rail access options respectively. The indicative layout of the IMT depends on the location of the selected rail access connection to the SSFL. The presentation of three options for approval is intended to allow flexibility for future developers and operators of the Project, so that the most efficient and effective layout can be developed for the Project. Once the contractor for the development and operation of the Project has been appointed, the Project would progress to the detailed design phase and one preferred location for the rail access would be confirmed. This selected option would then be subject to further Stage 2 SSD approval under the NSW EP&A Act.

Building heights across the developable area of the overall site (i.e. excluding the conservation area) would be restricted to a maximum of 21 m. In addition, a floor space ratio of 1:1 would apply to the developable part of the site. An 18 m building setback would apply along the Moorebank Avenue (eastern) boundary and a 7 m building setback along the other site boundaries.

Other key operational features of the Project (at Full Build) are summarised in Table S.2.

Table S.2 Key operational features of Project (at Full Build)

Operational feature	Details (indicative only)
Operational hours	At Full Build, all operations are proposed 24 hours a day, 7 days a week.
IMEX train movements	The proposed throughput capacity of IMEX operations of up to 1.05 million TEU a year equates to approximately 137 trains (or 273 train movements) a week. IMEX trains would enter and depart the IMT by the northbound rail connection (via either the northern, southern or central rail access option) to the SSFL, at a maximum speed of 60 kilometres per hour (km/h). Much of the IMEX trade would be full containers into the Project site and empty containers out. When fully developed, the IMEX terminal would include eight working tracks, each capable of accommodating 650 m trains. The rail speed within the terminal would be regulated at 25 km/h. Up to five IMEX trains could be processed concurrently on site based on the proposed track layout. Once on the SSFL, the IMEX trains would travel to and from Port Botany. The Project has been designed to satisfy the forecast throughput that can be accommodated on the SSFL, with the assumption that identified potential upgrades to existing capacity will occur on the SSFL between Moorebank and Sefton Park Junction.
Interstate train movements	The proposed interstate throughput capacity of up to 500,000 TEU a year equates to approximately 12 interstate trains (or 24 train movements) a week at the Project site. It is expected that a further three interstate trains (six train movements) without cargo originating from or destined for Sydney may transit through the terminal. Interstate trains would enter and depart the IMT by either the northbound or the southbound rail connection (via either the northern, southern or central rail access option) to the SSFL, at a maximum speed of 60 km/h. The interstate terminal would include four interstate arrival and departure tracks within the Project site boundary, designed to accommodate trains up to 1800 m long, and four working tracks suitable for 900 m trains. The proposed track layouts would allow up to four interstate trains to be processed concurrently, depending on timing of the demand for interstate freight.
Vehicle movements	The traffic generated by the IMT would comprise both light and heavy vehicles. Trucks travelling to and from the IMT site would access it from Moorebank Avenue primarily via the M5 Motorway. Road access to the Project site to and from Moorebank Avenue would be at the main IMT access gate on Moorebank Avenue, and there would be a separate access off Moorebank Avenue for light vehicles. Heavy vehicle management would avoid the need for any heavy vehicle parking on Moorebank Avenue.

Operational feature	Details (indicative only)
Container handling and storage  *RMG cranes – working tracks*  *ITV– non-street-registered truck tractor*	The majority of loaded and empty containers stored at the IMEX terminal would be temporarily stored in a stack between trips by different transport modes (i.e. from truck to rail wagon, and vice versa). Loaded containers would be stacked up to a maximum height of 13 m or five containers (2.6 m high per container). Empty storage containers would be stacked up to a maximum height of 20.8 m or eight containers (2.6 m high per container). Trucks carrying containers would travel through the container storage area to pickup and/or drop off a container. Containers in the storage area would be handled by rail mounted gantry (RMG) cranes for loaded containers while empty handlers/side picks would be used for unloaded containers. The container storage areas would be located close to the working rail tracks to minimise the travelling distance of in-terminal vehicles (ITVs), which are non-street-registered truck tractors used for moving containers between the working tracks and the storage area.
Staff numbers	At Full Build, the IMEX terminal would provide approximately 35 full-time equivalent (FTE) administration positions, as well as 104 FTE operational and 9 FTE maintenance positions (per shift with three shifts a day). This equates to a total of approximately 374 FTE on site operational staff. At Full Build, the interstate terminal would provide approximately 35 FTE administration positions, as well as 78 FTE operations and 7 FTE maintenance positions (per shift with three shifts a day). This equates to a total of approximately 290 FTE on site operational staff. At Full Build, the warehousing precinct would provide approximately 22 FTE administration positions, as well as 248 FTE operations and 248 FTE maintenance positions (per shift with three shifts a day). This equates to a total of approximately 1,509 FTE on site operational staff.

S.9 Project development phasing and construction

The Project would involve the phased delivery of the IMEX and interstate terminals and warehousing capacity in line with the market demand for processing of containers through the IMT. To assess the impacts of the Project, this EIS identifies project development phases from site preparation through to the fully developed operation of the Project (i.e. the Full Build). These development phases, shown in Figure S.5, are indicative only, and would be confirmed by the contractor selected for the construction and operation of the Project.

Construction is proposed to commence in 2015 with the Early Works development phase. The IMEX facility and associated warehousing would then be developed in two main phases (Phases A and B), between approximately 2015 and 2025. At the commencement of Phase C in approximately 2025, the IMEX facility would be fully operating up to a capacity of 1.05 million TEU a year, along with up to 250,000 sq. m of warehousing. Finally, the interstate facility at a capacity of up to 500,000 TEU a year and an additional 50,000 sq. m of warehousing would be developed towards the end of Phase C (in approximately 2028 to 2030). Full Build of the Project, with operation at capacity, is expected in approximately 2030.

Key construction elements and indicative layouts for each Project development phase are detailed in Chapter 8 – *Project development phasing and construction.* This chapter also includes a number of construction method assumptions that were made as part of this EIS process. This represents an indicative construction method and program, which would be reviewed and developed by the selected developer and operator as the detailed design progresses.

The Project would generally be constructed during the standard construction hours of Monday to Friday (7 am to 6 pm), Saturday (8 am to 1 pm) and no work on Sundays or public holidays. However, some construction activities may be required outside these standard hours, including works on public infrastructure, such as connection of the rail link to the SSFL, some utility works, oversize deliveries and road closures. The local community would be adequately notified of any work outside the standard construction hours.

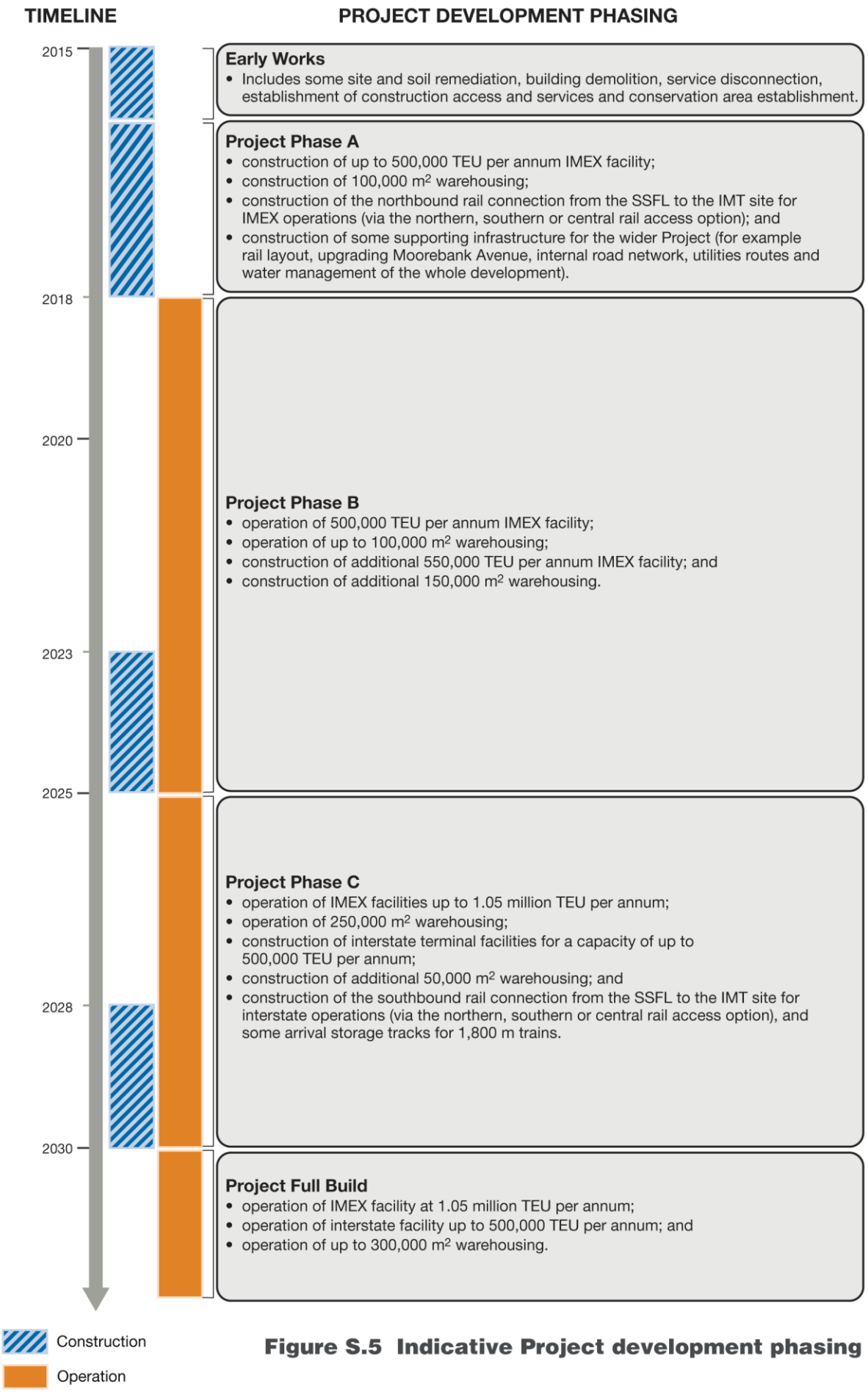

Figure S.5 Indicative Project development phasing

S.10 Overview of the existing environment

S.10.1 Regional and local context

The Project site is situated within the Liverpool local government area (LGA), approximately 30 km south-west of the Sydney CBD and 4 km south of the Liverpool CBD. The Project site is in the vicinity of key road and rail transport corridors including the M5 Motorway, M7 Motorway, Hume Highway and the SSFL, the Georges River and surrounding riparian ecosystems, and residential, commercial and industrial developments. The Project site is also located in the vicinity of the planned South West Growth Centre and a concentration of industrial and business centres in Sydney's west and south-west.

To the north of the Project site lie the M5 Motorway, the Moorebank Business Park and other commercial and industrial development. The Defence National Storage Distribution Centre (DNSDC) has occupied leased land to the east of Moorebank Avenue, but is currently in the process of relocating to West Wattle Grove. The DNSDC site is currently subject to a proposal for the construction and operation of an IMT by the SIMTA. The East Hills Railway Line and the Holsworthy Military Area (Holsworthy Barracks) are located to the south and south-east. To the west of the Project site is the Georges River and its vegetated riparian zone, as well as Leacock Regional Park. The Casula Powerhouse Arts Centre, within the suburb of Casula, is located on the west bank of the Georges River and is a former industrial facility converted to a multi-purpose contemporary arts facility in 1994.

To the south-west of the Project site is the Glenfield Landfill, a large waste handling facility and refuse disposal site. The areas west and north-west of the Georges River mark a transition to low-density residential development and associated commercial developments and community facilities within the suburbs of Casula and Liverpool. As well as Casula and Liverpool, nearby suburbs include Moorebank, Wattle Grove, Holsworthy, Glenfield and Lurnea. The nearest residences to the Project site are located approximately 200 m west of the Georges River's western bank, and west of the SSFL.

The following sub-sections summarise key features of the existing local and regional environment. Further details are provided in Chapters 11 to 26 of the EIS (refer Volumes 1A and 1B).

S.10.2 Land use and ownership of Project site

The main IMT site is mostly owned by the Australian Government and is used for military purposes by Defence as the SME, other Defence units, and the Royal Australian Engineers' (RAE) Golf Course and Club. A small piece of Liverpool City Council (LCC)-owned land adjacent to the Moorebank Avenue–M5 Motorway intersection also forms part of the main IMT development.

Depending on the rail access option selected, the rail access connection to the SSFL would also require the development of land outside of Commonwealth land. All three options would affect Crown land within the Georges River itself, and Sydney Trains (formerly RailCorp) land at the tie-in to the SSFL. In addition:

- The northern rail access option would permanently affect an area referred to as the 'Northern Powerhouse Land', which is currently owned by LCC, and would require temporary occupation of LCC and NSW Roads and Maritime Services (RMS) land during construction of the rail access connection.

- The central rail access option would permanently affect an area of Commonwealth land on the western bank of the Georges River, referred to as the 'hourglass land'; and may temporarily affect land within the Glenfield Landfill site, as well as LCC land adjacent to the Georges River during construction of the rail access connection.

- The southern rail access option would also cross the Glenfield Landfill site on the western side of the river. This site is split into lots owned by Figela Pty Ltd and JC & FW Kennett Pty Ltd. This option may require temporary occupation of Commonwealth land (the hourglass land) during construction of the rail access connection.

S.10.3 Existing topography

The Project site is largely flat, with the exception of the land in the vicinity of the Georges River, which slopes down towards the river. Most of the Project site sits at an approximate ground level of 15 m above Australian height datum (AHD). There is steep relief on either side of the floodplain. The nearest residences in Wattle Grove and Glenfield are generally at the same ground level height as the main IMT site, with some receptors up to 5 m above the residual level of the main IMT site. At Casula, the nearest receptors are approximately 10 m to 30 m above the residual ground level of the main IMT site.

S.10.4 Existing traffic and transport environment

The road network in the vicinity of the Project site comprises local roads (notably Moorebank Avenue, Anzac Road, Bapaume Road and Cambridge Avenue), as well as the Hume Highway (a National road) and the State-controlled M5 Motorway. The close proximity of the Project site to the M5 Motorway provides accessibility to other major transport routes in Sydney, including the M7 Motorway and regional and interstate routes. At present, a number of roads close to the Project site are known to experience congestion, particularly the M5 Motorway over the Georges River between Moorebank Avenue and the Hume Highway and various intersections along Moorebank Avenue (refer section 11.2 of Chapter 11 – *Traffic, transport and access*).

The majority of the traffic currently using Moorebank Avenue is through-traffic travelling between the Glenfield area and the Moorebank Avenue–M5 Motorway interchange. Intersection performance along Moorebank Avenue varies between 'good operation' (at the DNSDC accesses during the AM peak) and 'unsatisfactory with excessive queuing' (at Bapaume Road).

The SSFL – the main southbound rail freight line in Sydney – also runs parallel to the western border of the Project site, within the Main South Rail Line corridor. The East Hills passenger line runs west to east, to the south of the Project site.

S.10.5 Existing noise environment

The residential suburbs of Casula, Wattle Grove and North Glenfield are the closest communities and include residential receptors that are likely to have line of sight to the Project site (and therefore have the greatest potential to be affected by noise and vibration from the Project).

Daytime, evening and night-time noise levels have been monitored at a number of locations within surrounding suburbs to determine ambient noise levels. A continuous ambient noise monitoring program has been underway for the Project since July 2012. Monitoring activities established that existing noise levels at the nearest residential receivers in Wattle Grove, Casula and North Glenfield are between 48 and 62 $L_{Aeq,\ 15\ minute}$[1] dB(A) during the daytime and between 44 and 58 $L_{Aeq,\ 15\ minute}$ dB(A) during the night-time. Some receivers are also located close to the Main South or East Hills rail lines, and/or the M5 Motorway.

[1] L_{Aeq} noise levels are the constant sound pressure levels that exhibit the equivalent acoustic energy of a fluctuating noise level (the energy-averaged sound level)

S.10.6 Existing biodiversity

The Project site and the surrounding landscape is part of the Cumberland Plain Woodland of western Sydney. While much of the natural habitat and flora or fauna species on and surrounding the Project site have been disturbed or replaced by built features, a number of important biodiversity values remain, particularly in proximity to the Georges River. Intact riparian vegetation is largely limited to areas along the banks of the river, with some scattered remnant vegetation also remaining across the developed sections of the Project site. Four vegetation communities have been recorded on site, as described by Tozer (2003): Castlereagh Swamp Woodland, Castlereagh Scribbly Gum Woodland, Riparian Forest and Alluvial Woodland. Although none are listed under the EPBC Act, all form part of threat-listed ecological communities listed under the *Threatened Species Conservation Act 1995* (NSW) (TSC Act). Vegetation within and around the Project site is also important for habitat connectivity. Some threat-listed plant species have also been recorded or have potential to occur on the Project site. Spring surveys in September 2014 confirmed the presence of *Persoonia nutans* and *Grevillea parviflora* ssp. *Parviflora* the Project site, which are both threatened flora (plant) species listed under the EPBC and TSC Acts.

Faunal surveys detected the Grey-headed Flying-fox (listed as Vulnerable under the EPBC Act and TSC Act) flying over the Project site. An earlier fauna study (Lesry 2003) recorded the presence of two threat-listed microbat species, the Large-footed Myotis and Eastern Bent-wing Bat.

The Georges River is classified as a Class 1 waterway (Major Fish Habitat) by Fairfull and Witheridge (2003). However, aquatic biodiversity in the lower freshwater reaches of the Georges River is modified as a result of habitat degradation. The native species that exist comprise disturbance tolerant species. Within the Project site, some disturbed aquatic habitat exists, including Anzac Creek, which is identified as Class 3 (Minimal Fish Habitat) in accordance with Fairfull and Witheridge (2003). On site detention basins provide some foraging and breeding habitat for native frogs, reptiles and water birds.

Ten migratory species have been predicted to occur within the locality of the Project site but were not recorded during the surveys. Based on previous studies, the Regent Honeyeater (listed as Critically Endangered under the EPBC Act) has the potential to occur within the Project site, as do other migratory bird species.

There are no Threatened flora species present or with potential habitat west of the Georges River within the expected construction footprints of the rail access connection options.

S.10.7 Existing hydrology and water quality

The Project site is located within the Georges River Catchment, with the majority of the site draining into the Georges River itself, which flows north along the Project site's western border. A number of land areas to the east and north also partially drain into the Project site, including the M5 Motorway and the DNSDC site. A small portion of the south-eastern part of the Project site drains to Anzac Creek, which is a temporary tributary of the Georges River and flows in a north-easterly direction through the south of the Project site. The section of river is not subject to tidal influences because the Liverpool weir, which is located approximately 2 km downstream (to the north of the Project site), governs minimum water levels.

The area has historically been subject to flooding from the Georges River, and the Project site is most at risk of flooding in the lower terrace area of the river's eastern floodplain. This area (west of the 1% AEP flood level) aligns with the proposed conservation area. The Project site is subject to low or no flood hazard, based on LCC (2011) flood risk mapping.

Water quality in the Georges River middle reach is heavily influenced by stormwater runoff from urban development, incorporating residential, business and industrial land uses. A water quality monitoring program for the Georges River and Anzac Creek has been undertaken since July 2013; other datasets were also reviewed for this EIS. With respect to the Australian and New Zealand Environment and Conservation Council (ANZECC) guidelines (the relevant guidelines applicable to water quality), water quality for the Georges River is generally within the guidelines with some exceptions – namely, total nitrogen, total phosphorous and turbidity. Previous (Hyder 2011) sampling has found exceedances for pH and dissolved oxygen. This is consistent with the existing lower Georges River status as a deteriorated urban waterway.

S.10.8 Existing soils and contamination

The soil landscape on the Project site consists of Quaternary and Tertiary terraces of the Nepean River and the Georges River. The soils comprise poorly structured orange to red clay loams, clays and sands with the potential for the presence of ironstone nodules. Soils are saturated at depths of between 7 m and 15 m below AHD. Existing fill material onsite includes sands, gravels, clays, as well as building demolition materials such as concrete, bricks, metals and plastic.

The Project site also includes land with potential acid sulfate soils (ASS). These are soils that contain iron sulphides, which produce sulphuric acid when exposed to oxygen. Based on ASS mapping (CSIRO 2012), there is a high probability of ASS along the banks of the Georges River at the western edge of the Project site.

Due to past and current land use activities, notably those of Defence, site surveys have identified a number of existing sources of potential water and land contamination. Existing contamination includes residual contamination from the detonation of explosives used in military training operations, buried wastes from onsite demolition and development activities, leaks from stored/used hazardous chemicals and fuels, and asbestos-containing materials. Considering the historical and ongoing use of the Glenfield Landfill as a waste disposal facility, there is a high potential for contamination to exist on land affected by the southern rail access option. This includes contaminated fill, soils, groundwater, leachate and generation of landfill gases.

Remediation of the 'dust bowl' (a cleared military training area within the centre of the proposed conservation area) and removal of underground storage tanks would be undertaken before the start of the Project, as part of separate site rehabilitation works. These works are subject to a separate approval process and therefore have not been considered as part of this EIS.

S.10.9 Existing air quality

A number of existing industrial and non-industrial sources have the potential to influence local and regional air quality. Sources include emissions from major industries, the Glenfield Landfill, commercial operations and road and rail traffic. Key emissions likely to be generated by these sources include dust or particulate matter (notably total suspended particulates (TSPs), PM_{10} (typically dust particles) and $PM_{2.5}$ (fine particles)), nitrogen dioxide, sulfur dioxide, carbon monoxide, trace levels of volatile organic compounds, heavy metals and odour.

Ambient air quality monitoring equipment was established at the Project site in July 2012 and data from NSW EPA stations at Liverpool and Chullora has also been referenced in this EIS. Air quality monitoring has identified that the concentrations of these pollutants are generally within regulatory guidelines (OEH criteria); however, over recent years, limited and rare exceedances have been recorded in concentrations of PM_{10} and $PM_{2.5}$ during bushfire and dust storm events.

S.10.10 Existing Aboriginal and European heritage

The areas of greatest Aboriginal significance and archaeological research value are located in the riparian areas on the western edge of the Project site (particularly along the Georges River). The remainder of the Project site has been extensively developed for Defence purposes, and a large proportion is either of low or nil sensitivity due to the effects of European land use. The majority of Aboriginal sites identified are surface scatters of artefacts and/or areas of archaeological deposit. Of interest, three scarred trees of possible Aboriginal origin were identified, and three potential archaeological deposits (PADs) and three archaeologically sensitive landform types were also defined. One PAD was identified to the west of Georges River, on land affected by the northern rail access option. For land that would be affected by the central and southern rail access options, no surface evidence of Aboriginal occupation was found; however, areas of potentially intact deposits were identified along the banks of the Georges River that may contain archaeological evidence.

Items of European heritage significance are proposed to be relocated in part or in full to Holsworthy Barracks as part of Defence's MUR Project. These include parts of the RAE Chapel and fittings, parts of the RAE Museum sandstone wall, the RAE Museum Collections, and various other memorials. The relocation of these items would have a dual impact on the historical context of the items relocated and the residual Moorebank Cultural Landscape.

Following completion of the MUR Project, the residual Moorebank Cultural Landscape would be a fragmented one with the further loss of historical and social connection. While many of the intangible heritage values (e.g. associations with the memorials, chapel and museum) would be transferred to the new SME site at Holsworthy Barracks, there would be residual heritage values associated with the broader landscape setting, as well as more tangible elements of the landscape such as the archaeological deposits, the CUST Hut, the Royal Australian Air Force STRARCH Hangar, the dog cemetery and the commemorative garden. Two PADs also lie within the proposed construction footprint on the Project site.

There are no items of heritage significance that meet the local, State or Commonwealth heritage listing thresholds to the west of the Georges River, on land that would be affected by any of the three rail access connection options.

S.10.11 Existing socio-economic considerations

The Project site is located within an urban setting. Nearby surrounding land uses include residential suburbs, local business and industry, and a range of social and physical infrastructure (e.g. health and education services and facilities, childcare facilities, and road, rail, energy, and communications networks or systems). There are also various areas used for recreational purposes, including nearby parks, the Casula Powerhouse Arts Centre and the Georges River itself.

The key employment sectors in the Liverpool LGA are manufacturing (14%), retail trade (10.4%) and health care and social assistance (10.1%). Also, transport and storage account for nearly 8% of people employed in the LGA, based on the 2011 Census.

A number of demographic indicators suggest greater (than the Sydney and NSW average) levels of socio-economic disadvantage in the Liverpool LGA and potentially, a higher vulnerability to socio-economic impacts associated with the Project. For example, as compared to Sydney and NSW, residents within Liverpool demonstrate:

- relatively high proportions of overseas born residents and persons speaking a language other than English at home;
- higher levels of unemployment, mortgage stress, and single parent families; and

- lower median incomes.

The LGA also has a higher youth population (persons aged 0 to 19 years as a percentage of the total population), but a lower proportion of persons aged 65 years and over. There is considerable variation in key socioeconomic indicators between nearby suburbs, with some suburbs (such as Wattle Grove) tending to have comparatively lower levels of disadvantage and vulnerability compared to others (such as Liverpool).

S.10.12 Existing visual environment

The Project site is largely visible from high points along the M5 Motorway and along the length of Moorebank Avenue. Parks from which the Project site is visible include Carroll Park, St Andrews Park and Leacock Regional Park in Casula. The Project site is also visible from a number of residential properties backing onto the parks as well as the Main South Rail Line (and SSFL). Direct views north into the Project site are offered from the East Hills Rail Line.

The Project site and the surrounding area is characterised by four landscape character elements: fragmented vegetation, riparian corridor, residential development and commercial/light industrial. The SME grounds have largely been cleared of vegetation except for remnant vegetation located along the eastern bank of the Georges River. The landscape along Moorebank Avenue is well maintained with many mature trees in good condition and well-kept lawns and some footpaths.

In terms of the existing lighting environment, the neighbouring suburbs of Casula, Glenfield and Wattle Grove are characterised by relatively low lighting environments, and the Project site appears relatively dark from these locations. Moorebank Avenue is currently flanked by Defence facilities, which vary from very low to quite bright lighting environments.

S.10.13 Existing health considerations

General health indicators for the Liverpool District (which includes the Liverpool LGA, Campbelltown LGA, Camden LGA and Fairfield LGA) highlight that, while data for life expectancy is comparable to NSW, local residents have poorer outcomes for a range of other measures. These measures (sourced from the South West Sydney Local Health Network) include behaviours linked to poorer health status and chronic disease, such as cardiovascular and respiratory diseases, cancer, and other conditions considered to contribute considerably to morbidity and mortality in later life. Behaviours include current daily and occasional smoking, lower levels of physical activity, very high psychological distress and low vegetable consumption.

In terms of the youth population, incidences of asthma in south-west Sydney and Liverpool LGA are lower than the average for NSW; however, asthma is not as well managed in these areas compared to NSW.

S.11 Impact assessment approach

Due to the proposed phased (staged) development of the Project over a relatively long time period, the approach to the individual impact assessments required careful consideration of the most appropriate assessment approach. This was determined through consultation with relevant government agencies, in particular NSW DP&E and the Commonwealth DoE as the respective NSW and Commonwealth approval authorities.

A key approach of this EIS was that potential worst case environmental impacts were assessed.

S.11.1 Early Works assessment

The potential impacts of the Early Works development phase have been assessed for all environmental issues and have been considered separately to allow their impacts to be clearly understood by the community and approval authorities.

S.11.2 Environmental issues subject to construction and operation assessment

In addition to the impacts of the Early Works phase, a number of environmental impacts associated with the construction and operation of the Project have also been considered separately, as follows:

- a construction scenario comprising 'typical' construction impacts; and
- a worst case operational scenario representing the fully developed (i.e. Full Build) Project in terms of its footprint and other operational impacts.

This approach was applied to impact assessments for biodiversity, preliminary hazard assessment, contamination and soils, hydrology and water quality, Aboriginal and European heritage, light spill, property and infrastructure, and waste and resource management.

For the regional air quality impact assessment, the study assessed operational (Full Build) impacts only, as this represents the impacts from the most intensive period of transport activities (from freight and road transport), which would be the key contributor to regional air quality impacts. For the visual impact assessment, impacts were assessed for each proposed development phase of the Project (i.e. Early Works to Full Build). This included consideration of potential construction and operational impacts within each phase.

S.11.3 Environmental issues subject to multiple scenario-based assessments

As identified in Figure S.5, there would be periods of concurrent construction and operational activities on the Project site (i.e. the construction of future phases alongside operation of completed phases). The traffic and transport, noise and vibration, local air quality and human health impacts were identified as potentially the most significant and would also be heavily influenced by the Project phasing. Therefore, it was considered appropriate to assess the environmental impacts during the successive Project development phases, including periods of concurrent construction and operation.

To enable this assessment, 13 scenarios were identified and used as a basis for the impact assessments. The first scenario was the assessment of the Early Works, which is common to all three site layout options. Beyond that, for each of the three rail layout options, four points in time were assessed during the 15 years leading to full development of the Project (making up the remaining 12 scenarios). The 13 scenarios are discussed in further detail in Chapter 10 – *Impact assessment approach*.

This approach (i.e. the assessment of multiple scenarios) was applied to assessments of traffic, transport and access impacts; noise and vibration impacts; local air quality impacts; human health risk and human health impacts; greenhouse gas emissions; and social and economic impacts.

S.11.4 Cumulative assessment of the Project

The EIS includes an assessment of the potential impacts of the Project in combination with development of the SIMTA site and other planned developments within the surrounding region. As a consequence of rail network constraints, particularly on the SSFL, and even assuming that upgrades are made to the line (including additional passing loops and intermediate signalling), rail freight to Moorebank cannot exceed 1.7 million TEU a year. Freight demand analysis undertaken by Deloitte in 2013 concluded that the demand for IMEX contains through a terminal at Moorebank would be limited to approximately 1.05 million TEU a year. Accordingly, there is no prospect of both projects operating jointly in their current proposed forms.

In recognition of community and approval agencies' concerns about the prospect of both the Project site and the SIMTA site being developed in some way; three realistic scenarios have been developed for the cumulative impact assessment. These scenarios assume a combined IMT precinct across both sites, which is considered to be a likely outcome, given the need for an IMT facility at Moorebank that can efficiently service Sydney's west and south-west subregion.

- Cumulative impact scenario 1: Operation of the Moorebank IMT as described in this EIS, alongside development of the SIMTA site for up to 300,000 sq. m of warehousing;
- Cumulative impact scenario 2: Operation of the Moorebank IMT with an IMEX terminal at 500,000 TEU per year, an interstate terminal at 500,000 TEU per year and 300,000 sq. m warehousing alongside development of the SIMTA site with an IMEX terminal at 500,000 TEU per year and 300,000 sq. m of warehousing; and
- Cumulative impact scenario 3: Operation of the Moorebank IMT with a 500,000 TEU per year interstate terminal only and 300,000 sq. m of warehousing alongside the operation of the SIMTA site as currently proposed (1 million TEU per year and 300,000 sq. m of warehousing).

Further details on the scenarios and the assessment approach are provided in Chapter 27 – *Cumulative impacts*.

S.11.5 Further assessment and approval requirements

As part of the Stage 2 SSD approval process, additional air, noise and traffic assessments would be undertaken as well as more detailed assessment of individual development stages of the Project. These further assessments would be contained in a new EIS document (or similar) that would provide an updated description of the Project and the supplementary impact assessments prescribed by the NSW Minister for DP&E.

S.12 Impacts of the Project

The Project has the potential to adversely and/or positively affect a number of the key environmental values detailed in section S.10.

Section S.12.1 below presents an overview and general discussion of the impacts and mitigation measures identified in this EIS for some of the key environmental and social issues for the Project, i.e. traffic, transport and access, noise and vibration, local air quality and human health. These issues were identified early in the EIS process as key issues for assessment in the EIS and are also of key concern to the local community and stakeholders.

Section S.12.2 provides a summary of all other potential impacts of the Project, as identified through this EIS process. The table also summarises key design measures and other mitigation strategies proposed to avoid, remedy, mitigate or manage the identified impacts within acceptable limits and relevant guidelines.

S.12.1 Summary of key potential impacts

Traffic, transport and access impacts (refer Chapter 11 – *Traffic, transport and access*)

Traffic generated by the Project would include construction traffic (during Early Works and parts of Phases A to C), and operational traffic (during Phases B and C and Full Build). Operational traffic would include truck movements from the IMEX and interstate terminals and warehouse facilities, and light vehicle movements associated with administration, operations and maintenance staff. A summary of total daily vehicle trips predicted to be generated by the Project is outlined in Table S.3. These figures reflect one-way trip movements (i.e. 50 trips would involve 25 trips in and 25 trips out).

Table S.3 Summary of total daily weekday vehicle trips generated by the Project

	Early Works 2015		Phase A 2016		Phase B 2023		Phase C 2028		Full Build 2030	
	Cars	**HV**	**Cars**	**HV**	**Cars**	**HV**	**Cars**	**HV**	**Cars**	**HV**
Construction	810	64	2,906	1,930	3,337	1,944	1,280	394	0	0
IMEX	0	0	0	0	336	1,420	674	3,012	674	3,007
Interstate	0	0	0	0	0	0	0	0	522	1,155
Warehouse	0	0	0	0	1,510	774	3,774	1,644	4,528	3,998
Total trips	**810**	**64**	**2,906**	**1,930**	**5,183**	**4,138**	**5,728**	**5,050**	**5,724**	**8,160**

Source: Table 4.8, Technical Paper 1 – *Traffic, Transport and Accessibility Impact Assessment* (Volume 3)

Note: HV = heavy vehicles

During the construction of Phase A (2016), Moorebank Avenue would be upgraded to a four-lane divided roadway between the East Hills Rail Line and the M5 Motorway. The existing Moorebank Avenue is a two lane two-way road. It is proposed that this will become the ultimate southbound carriageway and a new northbound carriageway would be constructed on the western side of the existing road.

During the AM peak hour in 2030, approximately 84 cars and 169 trucks would travel into the IMT and 169 trucks would travel from the IMT. Importantly, truck movements from the IMEX and interstate operations are not new trips. Without the Project, these movements would be associated with trips taken to and from Port Botany and therefore, would already be on the highway network.

Construction traffic, transport and access impacts

Construction vehicle traffic is expected to be greatest during the main earthworks and civil construction in Phase A (in approximately 2016) due to an increase in vehicle movements and the physical disruption to the road network required to increase the capacity of Moorebank Avenue. Construction access to the main IMT site would be via Moorebank Avenue (north of the East Hills Railway Line) and the M5 Motorway.

Increased traffic volumes from construction activities would temporarily increase congestion at existing intersections along Moorebank Avenue. However, once Moorebank Avenue is upgraded as part of the Project in Phase A, SIDRA intersection modelling has confirmed that the upgraded intersections would operate better than the existing road network.

In regard to construction impacts on the M5 Motorway, the impact of the Project construction traffic on the operation of the M5 Motorway is expected to be negligible. During construction, existing accesses, public transport and pedestrian facilities would be retained at all times. Some partial and full road closures may be required during construction (most likely at night).

For the construction of the rail access connection from the SSFL to the Project site for the northern and central rail access options, it is likely that a proportion of construction traffic (around 25 heavy vehicles a day) would need to access the bridge construction area through Casula on the western bank of the Georges River. For the southern rail access option, haulage routes would be via Moorebank Avenue or Glenfield Road. Construction of the rail access connection to the operating SSFL would cause some temporary disruption to the operation of this freight corridor during rail closedown (possession) periods.

Key design and mitigation measures proposed to manage construction traffic, transport and access impacts include:

- ongoing community consultation;
- upgrade of Moorebank Avenue during Phase A;
- preparation of detailed construction traffic management plans for each construction phase (including Early Works) as part of the construction environmental management plans;
- minimising construction vehicle movements during peak periods;
- monitoring traffic in peak periods on Moorebank Avenue during Early Works and construction, to ensure queuing at intersections does not impact on other road users; and
- detailed staging and timing of any rail closedown works to be further developed in consultation with the Australian Rail Track Corporation (ARTC), and staged to ensure that impacts to regular rail operations are minimised.

Operational traffic, transport and access impacts

A strategic traffic network model was developed to assess the impact of the Project on the distribution of intermodal-related traffic within the Sydney region. During operation, the Project would save on road based freight trips. By transferring freight movements to the Project site by rail for distribution, the regional network would experience reductions of approximately 56,125 truck VKT a day and 1,265 truck vehicle hours travelled a day. This is also expected to contribute to reducing heavy vehicle-related crashes.

The majority of traffic generated by the Project would have been on the Sydney strategic highway network without the Project – but originating mostly at Port Botany. Some additional heavy and light vehicle trips would be generated by the Project, primarily along Moorebank Avenue, the M5 Motorway and local road intersections in the vicinity of the Project site. The increase in traffic as a result of the Project could slightly intensify any existing congestion along the M5 Motorway during peak hours; however, given the Project would contribute less than 3% of the total M5 Motorway traffic volume during the 2030 AM and PM peak hours, this impact is predicted to be negligible. Should congestion on the adjacent motorway network continue to be an issue, then the operator of the Project could consider scheduling more movements to occur outside peak periods when congestion is less likely to occur on the M5 Motorway. This will be further assessed as a part of future project approval stages.

The upgrade of Moorebank Avenue between the M5 Motorway and the southernmost IMT access would significantly improve intersection performance on this section of road and hence improve traffic congestion when compared with the existing network (no upgrade).

In 2030, at the highest forecast levels of activity on site, the Project operational traffic is not predicted to have a significant impact on most of the intersections in the vicinity of Moorebank. Any increase in congestion at these intersections is expected to be offset by the significant wider network benefits, especially around the Sydney Airport/Port Botany area, resulting from the diversion of container traffic from the roads in this area.

There would be no need for heavy vehicle parking on Moorebank Avenue associated with the Project. Key design and mitigation measures proposed to manage operational traffic, transport and access impacts include:

- the proposed upgrade to Moorebank Avenue as part of the Project (as summarised in section S.8);
- installing a permanent variable message system on Moorebank Avenue to manage traffic movement to and from the various areas of the IMT;
- provision of car parking on site to avoid the need for parking on local streets; and
- liaising with ARTC, Transport for NSW (TfNSW) and other stakeholders regarding the capacity of the network for the SSFL and beyond (including for interstate rail transport).

Rail access impacts

The IMEX operation would consist of freight trains travelling between the Project site and Port Botany via the SSFL and the Port Botany Rail Link. The interstate freight transport to and from the Project site would involve a number of major rail lines, including freight rail lines such as the Northern Sydney Freight Corridor (under construction) and major arterial roads.

Once the Project is fully operational, the rail link connecting the Project to the SSFL would transport approximately 317 train trips per week, or 45 train trips per day, in and out of the Project site. In its current configuration, the SSFL has capacity constraints that may impact on the projected IMEX and interstate train movements for the Project. As part of the Stage 2 SSD approval process, further analysis would be undertaken to determine likely demand distribution and capacity across the rail freight network. The Project would have no impact on the public passenger train system.

Noise and vibration impacts (refer Chapter 12 – *Noise and vibration*)

In summary, the key aspects of the Noise and Vibration Assessment are summarised below.

Existing noise levels at adjacent residential receivers, based on 20 months of continuous noise monitoring at these receivers, are summarised as follows:

- Casula, based on monitoring at L9, Buckland Road: a rating background noise level (RBL)[2] of 39 (daytime and evening) and 33 (night-time) $L_{A90,\ 15\ minute}$ dB(A); and ambient noise levels of 55 (daytime), 54 (evening) and 53 (night-time) $L_{Aeq,\ 15\ minute}$ dB(A);
- Wattle Grove, based on monitoring at L7, Corryton Court: RBL noise levels of 35 (daytime), 36 (evening) and 32 (night-time) $L_{A90,\ 15\ minute}$ dB(A); and ambient noise levels of 55 (daytime), 49 (evening) and 46 (night-time) $L_{Aeq,\ 15\ minute}$ dB(A); and
- Glenfield, based on monitoring at L8, Goodenough Street: RBL noise levels of 35 (daytime), 37 (evening) and 33 (night-time) $L_{A90,\ 15\ minute}$ dB(A); and ambient noise levels of 48 (daytime), 47 (evening) and 44 (night-time) $L_{Aeq,\ 15\ minute}$ dB(A).

[2] The RBL is the median of the LA90 noise levels in each measurement period, as referenced from the NSW Environment Protection Authority's (EPA's)'s (2000) *Industrial Noise Policy* (INP).

During construction (without mitigation):

- Noise levels at the assessed receivers were predicted to mostly comply with the adopted construction noise criteria, called noise management levels (NMLs). In particular, the majority of daytime construction works (including all daytime Early Works) are predicted to comply with the NMLs at all receptors and can be undertaken without the requirement for noise mitigation.

- At Casula, Wattle Grove and Glenfield, noise levels during piling and rail access connection construction works during the main construction phases are predicted to temporarily exceed the NMLs at certain times and under worst case conditions; and therefore trigger the need for reasonable and feasible noise mitigation measures.

- If all recommended construction noise management and mitigation measures are implemented, it is considered likely that the potential noise levels at the assessed receivers in Wattle Grove, Casula and North Glenfield would be sufficiently controlled to achieve the adopted NMLs.

- Construction equipment is expected to be operated within the recommended safe working distances for construction ground vibration. Furthermore, potential ground vibration levels should be within the human comfort criteria and nearby buildings are unlikely to suffer cosmetic damage.

During operation (without mitigation):

- At Full Build of the Project in approximately 2030, without any noise mitigation, under neutral metrological conditions, noise levels from operations at the main IMT site were predicted to occasionally exceed the noise assessment criteria at the nearest residential receivers in Casula and Wattle Grove, for all three layout options. Under neutral metrological conditions, operations were predicted to comply with the noise assessment criteria for residential receivers in Glenfield. During the early morning and night-time of the winter months, potential adverse meteorological (i.e. temperature inversion) conditions may occasionally enhance the propagation of noise by 1 to 3 dB(A) above the levels predicted for neutral meteorological conditions.

- For unmitigated rail operations on the rail access connection to the SSFL at Full Build in approximately 2030, daytime, evening and night-time noise levels at the nearest residential receivers in Casula were predicted to exceed the amenity noise criteria for the northern rail access option by up to 17 dB(A). No noise level exceedances were predicted for operational rail noise on the central and southern rail access connections.

- Operations on the main IMT site were predicted to comply with sleep disturbance objectives at the nearest receptors in Casula, Wattle Grove and Glenfield. Furthermore, IMEX and interstate train movements on the rail access connection to the SSFL are predicted to comply with sleep disturbance objectives for the central and southern rail access options. However, unmitigated noise levels from rail operations on the northern rail access connection were predicted to exceed sleep disturbance objectives in some locations in Casula.

- Noise levels at all non-residential receptors were predicted to comply with the amenity noise criteria for all layout and rail access connection options.

- Any potential ground vibration from operations on the Project site and the rail access connection are predicted to comply with the relevant vibration criteria for human comfort and cosmetic structural damage.

Proposed measures to manage and/or mitigate noise and vibration include:

- implementation of a detailed construction noise and vibration management plan;

- limiting construction works to standard daytime construction hours unless essential and approved (e.g. required for safety) or where they would not exceed acceptable noise levels; and implementing additional mitigation measures (e.g. localised acoustic screens) where noise-generating works must be undertaken outside standard hours;

- control of source noise emissions through measures such as the selection of operational plant and equipment with the lowest practicable noise emissions, the appropriate design of acoustic enclosures and insulation, and design and maintenance measures to control potential rail noise from 'wheel squeal';

- development of the Project design/layout to control noise propagation from the Project (such as the use of noise reduction barriers or earth mounding, restricting track turn radii, using TEU stacks or onsite buildings to block noise from onsite plant and equipment, etc.);

- an ongoing community consultation/complaints management system; and

- ongoing monitoring.

Modelling of a conceptual and hypothetical noise mitigation scenario, incorporating noise barriers and acoustic enclosures for the northern rail access option, confirmed that:

- The assumed noise mitigation reduced predicted operational noise levels from the main IMT site by up to 11 dB(A) at residential receptors and achieved compliance with the noise assessment criteria at the majority of assessed residences during neutral and adverse weather conditions. Mitigated (residual) noise levels at some of the nearest residences in Casula and Wattle Grove were 1 to 4 dB(A) above the relevant noise criteria, depending on meteorological conditions.

- For rail operations on the rail access connection, the proposed rail noise mitigation was predicted to reduce rail noise levels by up to 15 dB(A) (relative to the unmitigated scenario), such that rail noise levels comply with the noise assessment criteria at all assessed residences with the exception of marginal 2 dB(A) exceedance of the night-time noise criterion at Lakewood Crescent in Casula.

- Based on the predicted mitigated noise levels, where the Project adopts reasonable and practical noise control measures during the detailed design phase, the northern, central and southern rail access options would be expected to comply with the relevant NSW noise assessment criteria at the majority of the assessed residences.

Local air quality impacts (refer Chapter 17 – *Local air quality*)

Local air quality impacts were assessed in relation to both incremental air quality concentrations from the Project alone and 'cumulative' air quality, which means background (or 'existing') conditions plus the impact of the Project. Detailed local air quality modelling and assessment were undertaken in relation to both National Environmental Protection Measure (NEPM) air quality goals and NSW EPA standards and guidelines.

The key aspects of the Local Air Quality Assessment are summarised below:

- During the Early Works phase of the Project, the potential air emissions and related local air quality impacts are predicted to be negligible, given the expected low magnitude of the earthworks and the short-term nature of construction activities.

- During the main construction phases (Phases A, B and C), the potential air quality impacts would be localised and would occur over defined periods between 2015 and 2030. Emissions of particulate matter (PM_{10}, $PM_{2.5}$, TSP and deposited dust) and pollutants associated with combustion engines and plant machinery represent the greatest potential for air quality impacts during these phases.

- During operation of the Project, the greatest potential for air quality impacts would be associated with combustion engine emissions (i.e. oxides of nitrogen (NOx), carbon monoxide (CO), sulfur dioxide (SO_2), $PM_{2.5}$, PM_{10}, volatile organic compounds (VOCs) and polcyclic aromatic hydrocarbons PAHs)) from locomotives, mobile liquefied natural gas (LNG) equipment and heavy vehicles.

- Incremental (Project-only) air pollutant concentrations and dust deposition rates associated with all modelled scenarios were predicted to be within NSW EPA criteria and NEPM advisory reporting goals.

- When existing elevated background airborne PM concentrations were considered (including extensive bushfire activity in late 2013), the maximum cumulative 24 -hour average PM_{10} and $PM_{2.5}$ concentrations exceeded the applicable NSW EPA criteria and NEPM advisory reporting goals at one receptor (R33), located adjacent to the Project site on Moorebank Avenue. However, the peak ambient concentrations were already above the goals due to the influence of this bushfire activity. Importantly, the assessment predicted that no additional exceedance events would occur as a result of construction or operational emissions at the Project site.

- Overall, there is a low likelihood of adverse local air quality impacts in the surrounding environment arising from the construction and operation of the Project.

Key measures proposed to manage and/or mitigate local air quality impacts include:

- implementation of dust and air quality management plans;

- during Early Works and construction — best practice measures for dust management, including screening and watering processes (e.g. of stockpiles/exposed surfaces), avoidance of dust generating activities during dry and windy conditions, and monitoring; and

- during operation — maintenance and inspection program for all equipment, adoption of cleaner fuel technology when feasible, and ongoing monitoring of air quality.

Human health risks and impacts (refer Chapter 25 – *Human health risks and impacts*)

The health impact of the Project on the community was raised as an issue of concern during community consultation on the Project. To address this concern, two related studies were undertaken:

- *a human health risk assessment* (HHRA), which analysed both existing and likely future (or 'cumulative') air quality conditions, and investigated the link between these conditions and the future health outcomes of the community (in terms of medical health issues such as asthma and other respiratory diseases); and

- *a health impact assessment* (HIA), which took into account the findings from the above, but also investigated health impacts more broadly, and considered issues such as the impacts of noise, disturbance, light spill and other social impacts on the health of the community. In this context health is defined more broadly as including factors such as stress (as well as positive factors such as improved economic conditions).

The key aspects of the HHRA and the HIA are summarised below:

- The HIA screening assessment determined that three of the potential aspects relating to health issues and opportunities required a detailed HIA: traffic, transport and access; noise; and air quality.

- The detailed HIA identified the following:

    > Traffic congestion has the potential to contribute to health impacts such as stress and anxiety. This would affect users of Moorebank Avenue during construction; however, once proposed mitigation measures are implemented, the Project is anticipated to have net positive health outcomes in relation to traffic congestion.

    > The upgrade of Moorebank Avenue and a reduction in heavy vehicle traffic on roads within the wider network are anticipated to improve road safety.

    > Noise can have a range of health impacts such as sleep disturbance and cardiovascular health problems. Without mitigation, construction and operation of the Project would potentially lead to health concerns; however, provided that the proposed mitigation measures are implemented, then the noise levels should remain within the acceptable levels, with the likelihood of any health impact being negligible.

    > During both construction and operation, levels of oxides of nitrogen, sulfur dioxide, carbon monoxide, VOCs and PAHs were all estimated to be low and acceptable.

    > Larger particulates (PM_{10}) are anticipated to dominate PM emissions during early construction (e.g. earthworks), while smaller particles ($PM_{2.5}$) would increase as the use of diesel combustion sources increases over the Project's life. Exposure to PM is linked to various health impacts, such as respiratory illnesses and changes in cardiovascular risk factors. However, the HIA found that the Project's potential health risks or impacts are low.

    > Impacts on human health during Early Works would be negligible.

Based on these findings, the mitigation measures proposed for local air quality, noise and vibration and, traffic and access would ensure that any human health impacts remain within acceptable levels.

S.12.2 Other impacts and mitigation measures

Other potential impacts of the Project, and associated mitigation and management measures to minimise impacts, are presented in summary form in Table S.4 below. Detailed information on these impacts is contained in the main EIS (Volume 1A and 1B), and in the corresponding specialist studies contained in Volumes 3 to 9.

Table S.4 Summary of other potential impacts and mitigation measures

Impact issue (relevant EIS chapter)	Anticipated impact (assuming proposed mitigation)	Proposed design and mitigation measures
Biodiversity (Chapter 13)	During Early Works: • Early Works activities are unlikely to result in a significant adverse impact on biodiversity; however this phase is likely to involve the removal of scattered native and introduced trees and shrubs within the main IMT site. During construction: • Vegetation clearing would occur throughout the eastern part of the Project site, adjacent to Moorebank Avenue and would continue west to the edge of the conservation area along the Georges River. Approximately 44 to 53 ha of vegetation would be removed (depending on the rail access option selected), comprising three Threatened ecological communities listed under the TSC Act: Castlereagh Scribbly Gum Woodland in the Sydney Basin Bioregion; Castlereagh Swamp Woodland Community; and River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregion. None of these communities are listed under the EPBC Act. • The Project would result in the removal of 46 hollow-bearing trees that provide potential roosting and breeding habitat for Threatened species of birds and bats. • The Project would affect two Threatened species of plant, *Grevillea parviflora* subsp. *parviflora* and *Persoonia nutans,* which are listed under the EPBC Act and the TSC Act and recorded during field surveys for this study. Impacts on these species would include direct loss of individuals and loss of habitat. • Impacts were predicted to 25 Threatened fauna species known or likely to occur on the Project site. Impacts would include potential loss of habitat and breeding resources, noise and light disturbance, and potential for direct mortality (in some species only). However, no EPBC Act or TSC Act Threatened species population or ecological community is likely to be significantly affected by the Project, for either the main IMT development or the three rail access connection options. During operation: • Although the majority of the land disturbance and site clearance for the Project would occur during the construction phase, some biodiversity impacts would continue through the Project operation. Potential impacts during operation include fauna injury or mortality, disturbance to habitat and noise, light and dust disturbance.	• Substantial areas of vegetation would be retained and enhanced along the Georges River riparian corridor (including a permanent conservation area within the main IMT site). • A detailed biodiversity offsets strategy would be implemented in accordance with regulatory requirements to offset unavoidable residual impacts. MIC is committed to providing an offsets strategy that adequately meets the quantum of the offset requirements under the Framework for Biodiversity Assessment (FBA) and the NSW Offsets Policy 2014. • The Project would include long-term weed removal/riparian vegetation restoration in the Georges River corridor. • During Early Works and all construction phases of the Project, measures to minimise the likelihood of flora and fauna injury or death would be implemented as part of the construction environmental management plan (CEMP), including: identification of vegetation cleaning exclusion zones; pre-clearing surveys of hollow-bearing trees; and having a trained ecologist onsite to accompany clearing crews. • Further assessment of the potential impacts of the Project and more detailed development of mitigation measures would be conducted during the detailed design phase of the Project, and future Stage 2 SSD approval assessments.

Impact issue (relevant EIS chapter)	Anticipated impact (assuming proposed mitigation)	Proposed design and mitigation measures
Hazards and risks (Chapter 14)	• The Preliminary Risk Assessment (PRA) has determined that the key risks/hazards associated with the Project during the construction and operation phases include: gas leaks (natural gas, LNG and liquefied petroleum gas (LPG)); loss of containment of flammable/combustible or corrosive liquids; vehicle accidents; flooding as a result of extreme weather; and inappropriate waste disposal. • These hazards may arise from a number of activities including rail and road logistics, storage of hazardous materials, refuelling, waste disposal and equipment maintenance. • In terms of bushfire risks, the Project is proposed on bushfire prone land, with the key threats located in the south-eastern corner of the Project site. • Overall, the PRA concluded that there would be no significant increase in risk to the public and a result of the Project and, with the mitigation measures described above, the residual hazards and risks of the Project would be managed to an acceptable level.	• Design and site management measures relating to: storage, transport and venting of natural gas, LNG and LPG; storage of flammable/combustible liquids; design and construction of containment areas for storage; disposal of hazards wastes; and testing, alarm systems and occupational health and safety precautions. • In terms of bushfire risks, mitigation measures relating to site design and layout are proposed, including the development of landscaping/vegetation management and a fire safety evacuation plan. A bushfire management plan would also be prepared during detailed design to development the bushfire management measures in detail in consultation with the Rural Fire Service.

Impact issue (relevant EIS chapter)	Anticipated impact (assuming proposed mitigation)	Proposed design and mitigation measures
Contamination and soils (Chapter 15)	• Prior to the Project commencing, site rehabilitation works are to be undertaken and these are the subject of a separate EPBC referral (2014/7152). Therefore the assessment undertaken for this Project focused only on the contamination issues that would exist following completion of the site rehabilitation works. • The Phase 1 and Phase 2 Environmental Site Assessments (ESAs) prepared for the main IMT site and rail access connection options have identified potential sources of land/water contamination on the Project site, including buried/stockpiled wastes; leakages and loss of containment of hazardous materials/fuels; contamination from past land uses; and offsite contamination sources (ABB site, Glenfield Landfill, etc.). • Early Works and construction activities have the potential to release existing sources of contamination into the surrounding environment. Therefore, some site rehabilitation works are proposed prior to construction of the Project, as detailed in the Project's Remediation Action Plan (RAP). • While the removal of onsite contamination poses potential human health risks, these risks can be managed through the implementation of mitigation measures as detailed in the Project's CEMP. • Other construction activities, including earthworks, vegetation clearing, ground penetration and storage and usage of fuels, have the potential to result in liberation of existing sources of contamination, or generation of new contamination. • In terms of the rail access connection options, the ESAs have identified there is limited potential for contamination within the northern and the central rail access connection alignments. However, there is a high potential for contamination to exist in the southern rail access connection option alignment, including contaminated fill, soils, groundwater, leachate and generation of landfill gases. • During operation, potential activities that may give rise to contamination or opportunities for contamination include minor earthworks, storage and use of fuels, and maintenance of underground utilities.	Overall the Project site has been found to be suitable for industrial commercial use, subject to management and mitigation including: • remediation of contamination 'hotpots' as identified in the RAP; • further investigation of the depth and occurrence of ASS materials; • implementation of contamination contingency measures as detailed in the CEMP; • further contamination investigations for the selected rail access connection option, as part of the Stage 2 SSD approval; and • measures for storage/treatment/transportation of any hazardous materials, contaminated soil, and asbestos etc.

Impact issue (relevant EIS chapter)	Anticipated impact (assuming proposed mitigation)	Proposed design and mitigation measures
Hydrology, groundwater and water quality (Chapter 16)	• The Project would cause a substantial increase in the area of impervious surfaces, with subsequent risks for hydrology (flooding) and water quality. A drainage strategy has been developed to manage this issue, including provision of overland flow paths across the Project site to detention basins and biofiltration systems/wetlands, from which treated water would be discharged to the Georges River through upgraded stormwater channels. • There is potential for an increase in local flood levels upstream and/or release of debris, if a large flood occurred during construction of the Georges River bridge and rail access connection. • The central and northern rail access bridge options would present new hydraulic restrictions across the Georges River floodplain. The central option has the greatest potential for an increase in flood levels upstream. However, preliminary flood modelling indicates that none of the three bridge options would increase the flood risk to upstream properties during a 1% AEP event, and no significant increase in flood extent is predicted. Flow velocities in the river are also unlikely to be affected. • Climate change is an additional consideration that may exacerbate flooding risks. • During construction, the key activities that have the potential to affect stormwater quality and downstream waterbodies include the potential mobilisation and erosion of soils on the Project site due to land disturbance. Piling activities in the Georges River for the construction of the rail access bridges also have the potential to mobilise sediment on the river bed and expose potential acid sulfate soils (ASS). Accidental spills of chemicals and other hazardous construction materials, and uncontrolled discharge of contaminants to receiving waterways, could also have an adverse impact on water quality unless carefully managed. • Overall, the Project is expected to have water quality benefits for the Georges River, due to the proposed treatment of stormwater prior to discharge, which would lead to a reduction in the annual load of total suspended solids, hydrocarbons and total phosphorus discharged from the Project site. This is predicted to be consistent with the objectives of the ANZECC environmental values. • The Project works have the potential to interact with groundwater and lead to impacts such as lowering of the water table and contamination of groundwater. Potential impacts would be further considered during the development of the detailed design.	• Implementation of a stormwater treatment system and drainage strategy, incorporating sedimentation and bio-filtration basins upstream of stormwater detention basins. • Use of onsite infiltration through the distribution of swale drains and rain gardens across the Project site. • Specific treatment measures on the Glenfield Landfill site if landfill cells are to be affected. • Development of an erosion and sediment control plan. • Appropriate storage, use and disposal processes (e.g. use of impervious, bunded storage facilities for fuels and hazardous materials). • Establishment of a conservation zone in the Georges River riparian corridor (eastern side of the river) to avoid substantial development in the floodplain. • Design of Georges River bridge piers and bridge deck level to minimise flooding impacts.

Impact issue (relevant EIS chapter)	Anticipated impact (assuming proposed mitigation)	Proposed design and mitigation measures
Regional air quality (Chapter 18)	• The impacts of the Project on regional air quality in the Sydney basin would be insignificant. The largest calculated effect is predicted to be a 0.03 % reduction in NOx in the Sydney airshed, which would arise from the predicted reduction in heavy vehicle VKT. No net change was predicted for other pollutant emissions that are quantified for the whole of Sydney region. • All predictions are well within the applicable air quality criteria for the modelled pollutants. • The Project is predicted to slightly increase some concentrations of air pollutants along roads near Moorebank and the western part of the rail corridor from Port Botany to Moorebank. • Also, the Project is predicted to slightly reduce emissions on the eastern part of the Port Botany to Moorebank rail corridor and to decrease traffic emissions along the M5, M4 and M2 motorways, due to the anticipated shift in transport from road to rail. • However, the change in emissions on a regional level is likely to be small, and unlikely to be discernible relative to pollutant levels that would occur with or without the Project. • Early works and construction impacts are unlikely to generate air quality impacts that would be significant at a regional level and, therefore, these were examined in the local air quality assessment.	• As there are no substantial regional impacts predicted to result from the operation of the Project, no specific management or mitigation measures are proposed. • Management of local air quality is described in S.12.1.
Greenhouse gases (Chapter 19)	• The Project would result in the emission of greenhouse gases (GHG) during both the construction and operational phases of the Project. • The main emission sources during the construction phase would be associated with stationary energy (fuel use for equipment fleet and diesel power generation) and transport (light and heavy vehicles). • During the operational phases of the Project the main emission sources would be stationary energy (purchased electricity use) as well as stationary energy (fuel use for equipment fleet). • Due to the nature and extent of activities associated with the Early Works, this development phase is likely to have negligible impacts in terms of GHG emissions. • Once the Project is fully operational in 2030, the annual GHG emissions would represent only a very small proportion of national (approximately 0.02%) and NSW (approximately 0.09%) emissions. • The Project as a whole would result in reductions in freight transport emissions, as a result of the mode shift from trucks to trains for IMEX freight travelling between Port Botany and the Project site.	• Mitigation measures that improve and maintain operational efficiencies and reduce energy consumption and GHG emissions would be considered and implemented, where feasible, during the construction and operational phases. • This includes measures such as use of biofuels, establishing and maintain areas of native flora and fauna; and regular monitoring, auditing and reporting on energy, resource use and GHG emissions.

Impact issue (relevant EIS chapter)	Anticipated impact (assuming proposed mitigation)	Proposed design and mitigation measures
Aboriginal heritage (Chapter 20)	• The riparian corridor along the Georges River was assessed to be of moderate to high Aboriginal heritage significance at local and regional levels. Part of this area would be disturbed during Phases A and C, during construction of the rail access connection. However, the Project's main construction footprint is outside the boundary of this corridor. • The Project's main construction footprint (including for Early Works) is located in areas initially considered to be of low Aboriginal archaeological potential, which were subsequently assessed to be of no Aboriginal heritage significance. • While the majority of identified Aboriginal recordings within the Project footprint would be directly affected, the areas of highest sensitivity would be largely conserved. • The Project would affect less than a quarter of the Tertiary terraces that are identified to be archaeologically sensitive. Depending on the rail access option selected, the Project would directly affect between six and ten Aboriginal sites. All three options would also directly affect parts of the Georges River corridor west bank due to work for the proposed rail access connection to the SSFL. • Impacts to Aboriginal sites would occur from direct ground disturbance, indirect ground disturbance (e.g. vehicle movements) and removal of trees - and would mainly occur during Phase B and the Early Works.	• Avoiding the development of riparian land through establishment of the conservation area (predicted to be of high sensitivity for Aboriginal heritage). • Further exploring options to conserve moderate to high significance sites in situ. • Developing an Aboriginal heritage interpretation strategy in consultation with stakeholders, particularly registered Aboriginal parties. • Archaeological and surface salvage programs - to be undertaken during Early Works. • Application of an Unanticipated Discoveries Protocol during construction. ongoing consultation with registered Aboriginal parties over the life of the Project.

Impact issue (relevant EIS chapter)	Anticipated impact (assuming proposed mitigation)	Proposed design and mitigation measures
European (historic) heritage (Chapter 21)	• As part of Defence's MUR Project, the majority of existing heritage items would be relocated from the current SME site prior to construction of the Project. • While many of the intangible values (e.g. associations with the memorials, Chapel and Museum) would be transferred to the new SME site at Holsworthy as part of the MUR Project, there would be residual values associated with the broader landscape setting, as well as more tangible elements of the landscape such as the archaeological deposits, the CUST Hut, the Transport Compound Workshop (B99), the RAAF STRARCH Hangar, the dog cemetery and the commemorative garden. • Anticipated impacts within the residual landscape and its elements would include building, garden and memorial demolition, disturbance of archaeological deposits, destruction of the landscape setting and vistas, loss of and/or reduced historical associations, loss of existing internal street layouts and associated names, and loss of access to these items. • All remaining heritage items would be directly impacted by the Project, along with all remaining intangible heritage values. • All remaining buildings would be cleared as part of the Early Works development phase and therefore most impacts to heritage items and heritage sites would be associated with this phase. However, earthworks during Phases A to C may impact on any remaining sites including archaeological deposits. • Works within the main IMT site would result in the loss of all European heritage items and values, with similar impacts for all rail access options. The northern rail access connection to the SSFL could also disturb potential archaeological deposits (MAPAD2) and the central access connection would impact on areas of potential archaeological sensitivity on the western bank of the Georges River. The southern option would not directly affect any areas of archaeological sensitivity. • Any indirect impacts of the Project on adjacent European heritage items (i.e. impacts on the visual context and landscape setting) are considered to be negligible.	• Investigating, documenting and archiving those deposits identified as having the greatest research potential. • A European heritage interpretation strategy and a comprehensive salvage program. • Further consideration of adaptive re-use and relocation options for key items, with archival recording as a minimum.
Visual and urban design (Chapter 22)	During Early Works: • Impacts are considered to be moderate/low, with one negligible rating. • The retained conservation area and existing riparian vegetation would screen a substantial amount of the Early Works activities for viewpoints to the west of the Georges River. • The majority of activities would occur during standard daytime construction hours and would not require lighting. Where works are required outside of standard construction hours, potentially affected residents and relevant authorities would be notified in advance.	• Containing construction lighting within the area of actual works and designing it to avoid light spill to surrounding areas as much as possible. • Incorporating urban design principles into the Project design, including facade treatment, building design, materials and colour. • Visual mitigation measures such as landscaping, screening/ buffering of less

Impact issue (relevant EIS chapter)	Anticipated impact (assuming proposed mitigation)	Proposed design and mitigation measures
	• As Early Works would have a minimal impact, no mitigation measures are proposed specifically for this development phase. During construction: • Impacts are predicated to range from negligible to moderate/high for different receptors. • Moderate/high impacts were predicted for many viewpoints due to the impact of tall construction equipment such as cranes that would be visible above the treeline during construction of both the IMEX and interstate IMT facilities. Other construction impacts would be associated with earthworks, clearing and vegetation removal and construction of the warehousing. Along Moorebank Avenue there would be localised visual impacts from construction fencing and the warehousing development area would be highly visible. • Impacts are likely to be similar for the three rail access options, with the exception of receptors within the Georges River Casula Parklands, St Andrews Park and the residential properties surrounding St Andrews Park. These receptors would experience greater visual impact associated with the northern rail access connection, relative to the central and southern rail access options, as these receptors would have a clear view of the northern rail access. • The majority of activities would occur during standard daytime construction hours and would not require lighting; however, some out of hours construction work may be required. Lighting would be contained and positioned to avoid light spill to surrounding areas. During operation: • Impacts are predicted to range from negligible to moderate/high for different receptors. • The greatest visual impact of the Full Build development would be on public park and residential receptors on the elevated areas to the west of the Georges River and residential properties backing onto the SSFL. • For some residential locations that overlook the Project site, these receptors would also experience a noticeable change in the brightness of the area on clear nights. • The warehousing development would front Moorebank Avenue and would dominate views towards the Project site from the east. The visual impacts would reduce as landscaping is established. • Trains leaving the Project site via the northern and the central rail access options would directly face some residents in Casula, and the use of headlights could affect local residents. Impacts could be mitigated by avoiding the use of high beams lights on trains until they are running on the SSFL.	attractive activities/infrastructure. • Additional measures to be considered during detailed design, including additional landscaping along Moorebank Avenue; localised earth mounding and native canopy tree planting to internal landscaped areas on the western side of new buildings to mitigate visual impacts from residential areas. • Light spill mitigation measures to be considered during detailed design include designing lighting to minimise light spill; the use of shields on luminaires to minimise brightness effects; and low reflection pavement surfaces. • For the northern and the central rail access options, considering the practice of not using high beam lights on trains that are leaving the Project site to minimise transitory light spill impacts on residents in Casula.

Impact issue (relevant EIS chapter)	Anticipated impact (assuming proposed mitigation)	Proposed design and mitigation measures
Property and infrastructure (Chapter 23)	• The Project would result in a change of land use from the current Defence facility to an IMT. • Construction of the Project would permanently affect some small areas of LCC land. In addition, depending on the rail access option selected, some LCC-owned, Sydney Trains-owned, NSW Roads and Maritime Services, and privately owned land (Glenfield Landfill site) would be temporarily and permanently impacted. • Visitors to the Casula Powerhouse Arts Centre may experience some amenity impacts during construction of the northern or the central rail access options. In addition, the northern and central rail access options would necessitate the realignment of Powerhouse Road, which provides access to the Casula Powerhouse Arts Centre. However, it is not likely that an extended closure of Powerhouse Road would be required, and access to the Casula Powerhouse Arts Centre would therefore be maintained. • There is potential for some temporary recreational and amenity impacts associated with the construction of the rail access bridge across Georges River. • The Project would result in the need for upgrades to or augmentation of some infrastructure and services (including energy, water, wastewater, stormwater). • During construction, some utilities assets may be affected; however impacts would be reduced by confirming their location during detailed design and avoid conflicts where possible. • The Project would potentially have temporary impacts on the SSFL while the rail turnout connection is made to the SSFL. • No major infrastructure or utility impacts are predicted, other than disruptions to local roads such as Moorebank Avenue, which would be upgraded, and Bapaume Road, which would be reconfigured.	• Ongoing consultation with utility asset owners and road and rail authorities, and implementing 'dial before you dig' protocols'. • Detailed design and traffic management plans to ensure access is maintained to all adjoining properties during construction and operation. • Managing amenity impacts on land uses through the measures identified for traffic, transport and access; noise and vibration; local air quality; visual and urban design; and social and economic impacts. In addition, landholders would be compensated in accordance with the *Lands Acquisition (Just Terms Compensation) Act 1991*. Alternatively, access easements may be entered into with the subject landholders to authorise the construction and operation of the rail access connection on private land.

Impact issue (relevant EIS chapter)	Anticipated impact (assuming proposed mitigation)	Proposed design and mitigation measures
Social and economic impacts (Chapter 24)	• Socio-economic impacts associated with the Early Works phase are anticipated to be relatively minor in nature and would include minor adverse impacts related to traffic and amenity values, and positive impacts on job generation. • The Project is anticipated to generate employment opportunities during construction and operation - many of which would suit the local skills base. Employment opportunities would be associated with wider socio-economic benefits, including financial security, and improvements in health and wellbeing. • No substantial shift is expected in the local demographics or population during construction or operation. There may be some potential for increase in the demand for rental properties and social infrastructure/services in the Liverpool LGA during peak periods of construction; however no substantial impact on social and community infrastructure is expected. • Minor recreation impacts are expected, including closure of the RAE Golf Club at the southern end of the Project site, and some potential disruption during construction to activities by the NSW Barefoot Water Ski Club on the Georges River (northern rail access option only). There is also potential for the northern rail access connection to increase the visual severance between the Casula Powerhouse Arts Centre and the surrounding environment. • No direct impacts on local businesses are predicted, although some businesses in the area may experience temporary disruptions from vehicle access to the Project and other amenity impacts. On the whole, businesses are likely to benefit from construction demand and the influx of workers to the area.	• A Project contact phone number and website during Early Works, construction and operation to enable the community (including businesses) to access information on the Project and receive responses to any concerns. • An ongoing community consultation program to establish and maintain a good relationship with local residents and business owners. • A complaints line and resolution process during construction and operation.
Waste and resources management (Chapter 26)	• The Project would generate waste throughout the Early Works, construction and operational development phases. Waste generation and resource use would be similar for the northern, central and southern rail access options and associated IMT site layouts. • Waste generated from the Project can be broken down into two main streams: solid waste (i.e. demolition waste, green waste, hazardous waste and sewage, litter, paper and genera recyclable waste); and effluent, sewage, wastewater and trade waste. • Waste generation would be minimised as much as possible and a waste management plan would be prepared and implemented for Early Works, construction and operation. • Resources required during Early Works, construction and operation would include energy and fuels, construction materials and water. • A number of resource reduction measures are proposed as part of the Project and no significant resource supply or use impacts are predicted.	• Development of a waste management plan (based on the waste management hierarchy of reduction, re-use, recycling and recovery). • Actions including reusing/recycling materials and wastes within the Project to minimise landfill; use of practices that maximise opportunities for waste recovery; appropriate separation, treatment and/or disposal of solid, liquid and hazardous waste; and use of Water Sensitive Urban Design principles.

Impact issue (relevant EIS chapter)	Anticipated impact (assuming proposed mitigation)	Proposed design and mitigation measures
Cumulative impacts (Chapter 27)	• There is potential for Early Works and/or construction of the Project to overlap with the SIMTA warehousing development; however, the most intensive construction works are unlikely to overlap. • Intersections along Moorebank Avenue would experience in an increase in DoS and delay times, however all intersections would operate with a satisfactory LoS or better, except the intersection of Moorebank Avenue and Anzac Road. For cumulative impact scenario 3, intersection upgrades would be required for the Moorebank Avenue, Anzac Road and Bapaume Road intersection to address the impacts as a result of increased traffic. • The incremental (i.e. Project and the SIMTA development only, without reference to background air quality) air pollutant concentrations were predicated to be within the NSW EPA and NEPM criteria for all three cumulative impact scenarios. • Infrequent exceedances of the NSW EPA and NEPM air advisory reporting goals criteria occur at the closest receptor to the Project site boundary (within the SIMTA site). However, the ambient concentrations are already exceeded as a result of extensive bushfire activity in late 2013. • Some exceedances of amenity noise criteria would occur during at Casula, and in the case of cumulative impact scenario 3, also at Wattle Grove. Conceptual noise mitigation for the Project demonstrates that feasible and reasonable noise mitigation can control the noise emissions from the Project site and the SIMTA site to achieve the amenity noise criteria. • The cumulative effect of both Projects would result in the removal of approximately 75–84 ha of vegetation. However, no population of any species of local occurrence of any ecological communities known or likely to be present on the Project site is considered to be on the verge of meeting a critical threshold for habitat loss or degradation. • The impact to European heritage on the SIMTA site including the loss of WWII buildings, will further compound the rarity and representativeness of any remaining heritage items both within the Project site and the wider landscape. • There would be a low to moderate increase in the Aboriginal heritage impacts, when compared with the Project alone. Further testing is required to confirm the likely impact on archaeological resource across both sites.	• Should both projects receive approval, consideration would be given to the potential combined coordination of construction management plans where appropriate and relevant. • Measures to mitigate the cumulative impacts would include those measures already proposed as part of the Project in combination with mitigation measures proposed for the SIMTA development. The measures would be confirmed at detailed design and subsequent Stage 2 SSD applications. • Upgrades to Moorebank Avenue/Anzac Avenue/ Bapaume Road intersection required to address impacts associated with cumulative impact scenario 3. • Measures to mitigate the cumulative Aboriginal and European heritage impacts would include those already proposed as part of the Project in combination with investigating, archiving, salvage and relocation (where feasible) of items on the SIMTA site.

S.13 Environmental management framework

The environmental management framework for the Project will include an overarching Environmental Management System (EMS) that complies with AS/NZS ISO 140001:2004. This EMS would be developed by the selected contractor(s). Underneath the EMS structure will sit Environmental Management Plans, such as Construction Environmental Management Plans and Operational Environmental Management Plans.

Chapter 28 – *Environmental management framework* in Volume 1B of this EIS includes a consolidated list of management and mitigation measures for the Project. This includes the proposed timing of the implementation of the measures, i.e. during the detailed design or pre-construction, Early Works, main construction and/or operation phases.

Essentially there are two tiers of mitigation measures:

- The first tier comprises measures that are firm commitments, as they are essential to effectively mitigate or manage the impacts of the Project. The measure can be easily defined now. There is also the potential for measures to change or new measures to be added in response to community or stakeholder submissions received during the EIS exhibition.

- The second tier of measures is equally important, but comprises measures that will be further considered during the Stage 2 SSD approval and/or detailed design processes. A review of these measures would be undertaken at that time to confirm they are an effective, reasonable and feasible method to mitigate the potential risk to the environment. If it is determined that a better, alternative form of mitigation exists, this would be proposed as part of the Stage 2 SSD approval applications.

The Commonwealth EIS Guidelines require that details of the environmental record of the Project proponent are included in the EIS. The main EIS (refer section 28.1 in Chapter 28) includes a summary of the environmental record of the Commonwealth Department of Finance as the Project's previous Proponent, considering MIC is a new entity with no operational facilities and does not have an environmental record.

S.14 Where to from here?

As noted above, MIC is seeking both Commonwealth under the approval EPBC Act and NSW Stage 1 SSD approval under the EP&A Act for the Project. The next steps in the process are as follows:

- This EIS will be exhibited for 60 calendar days to satisfy both NSW and Commonwealth consultation requirements, during which Project stakeholders and the wider community are invited to make submissions on this EIS. At this time, a separate 'planning proposal' to rezone the Project site (refer section 4.2.4 of Volume 1A) will also be exhibited under the NSW EP&A Act.

- MIC and the Project Team will then consider the submissions received.

- In accordance with the EPBC Act approval process, MIC will lodge a final EIS and supplementary EIS with the Commonwealth DoE. The supplementary EIS will outline responses to the submissions that are relevant to the Commonwealth approval. The final EIS will detail any proposed changes to the Project, environment impact assessment and/or mitigation as a consequence of review of submissions.

- In accordance with the EP&A Act approval process, MIC will also lodge a Submissions Report with NSW DP&E that will outline responses to the submissions that are relevant to the Stage 1 SSD approval, as well as any proposed changes to the Project, environmental impact assessment and/or mitigation as a consequence of review of submissions.

- The two approval agencies (DoE and NSW DP&E) will then prepare individual Assessment Reports, which will make recommendations as to whether the Project should be approved.

- The Project will be determined (approved or declined) by the Commonwealth Minister for the Environment and the NSW Minister for Planning (or the NSW Planning Assessment Commission). The rezoning set out in the planning proposal would also be gazetted by NSW DP&E.

- The NSW approval process will continue past this point. The subsequent Stage 2 SSD approval process may be a single development approval (and supporting EIS or similar) for the entire development, or, more likely, multiple development approvals for various components of the development.

Due to the staged approval process, approval is not being sought for the development of any part of the Project site, with the exception of the Early Works component.

As part of the procurement process, MIC would coordinate any required modifications/variations or, if necessary, any new approvals, under the EPBC Act and/or the Stage 1 development approval for the Project. MIC would also coordinate the preparation of subsequent, more detailed development approval application to comply with the preferred tenderer's final design for the Project. MIC will work closely with the community throughout this process.

Consultation with the community and other stakeholders will continue throughout the entire assessment and approval process, and through to construction and operation. Future community engagement activities are detailed in Chapter 5 – *Stakeholder and community consultation*.