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Department of Finance and Deregulation

Moorebank Intermodal Terminal Project

Detailed Business Case

6 February 2012

Deloitte.

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In preparing this report, we have had access to information provided by the Department of Finance and Deregulation and its specialist advisors and publicly available information and an indicative list of sources of information is provided in the Appendices. We have also sought information from specialist bodies and given the nature of those bodies, we rely on their professional advice and have not sought to establish the reliability and accuracy of such information by reference to other evidence.

Any findings or recommendations contained within this report are based upon our reasonable professional judgement based on the information that is available from the sources indicated. Should the project elements, external factors and assumptions change then the findings and recommendations contained in this report may no longer be appropriate.

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Contents

Disclaimer i

1 Executive Summary 5
1.1 What are the Commonwealth's objectives for the Project? 6
1.2 Does Sydney require additional IMT capacity? 7
1.3 Is Moorebank a suitable site for an IMT? 10
1.4 Is there demand for an IMT at Moorebank? 12
1.5 What is the proposed concept design for the Moorebank IMT? 18
1.6 What economic, social and environmental benefits would the Project deliver? 22
1.7 What is the cost to the Government? 27
1.8 What financing and commercial structure is most suitable for the Project? 36
1.9 [redacted] 41
1.10 What interaction is required with the NSW Government, ARTC and other stakeholders? 45
1.11 What are the key activities required to deliver the proposed IMT? 49
1.12 Does the proposal for the Moorebank IMT contained in the DBC address the Commonwealth's objectives for the Project? 51

2 Introduction 54
2.1 Project overview 54
2.2 Project objectives 55
2.3 Moorebank IMT project phases 55
2.4 Related projects 56
2.5 Critical dependencies 59
2.6 Structure of the DBC 59

3 The need for an IMT at Moorebank 61
3.1 Australian Government Freight Strategy 61
3.2 The need for additional IMT capacity in the Sydney IMEX market 62
3.2.1 Projected growth in IMEX freight volumes 62
3.2.2 Implications of the current and future "planning cap" at Port Botany 63
3.2.3 Current terminal network and capacity constraints 64
3.2.4 Congestion at Port Botany 66
3.2.5 Freight impacts on the M5 Motorway 67
3.3 The need for additional IMT capacity in the interstate freight market 68
3.3.1 Building on the current investment in the rail network 69
3.3.2 IMT capacity constraints 69
3.3.3 Environmental and social impacts of road freight transport 69

4	Forecast demand for an IMT at Moorebank	71
4.1	Introduction	71
4.2	What markets could utilise Moorebank IMT?	72
4.3	Current and forecast container freight volumes	72
4.3.1	IMEX freight	72
4.3.2	Interstate freight	72
4.4	How is freight distributed within the metropolitan area?	74
4.4.1	Distribution of IMEX Freight	74
4.4.2	Distribution of Interstate Freight	76
4.5	Mode choice decision making: Is rail a cost-effective option versus road?	77
4.5.1	IMEX Freight	77
4.5.2	Interstate Freight	80
4.6	Is there sufficient infrastructure capacity to accommodate an IMT at Moorebank?	84
4.6.1	Overview of infrastructure constraints	84
4.6.2	Rail freight network capacity assumptions	86
4.7	How much freight could be handled by an IMT at Moorebank?	88
4.7.1	Demand scenarios	88
4.7.2	Network constrained demand estimates	90
4.7.3	Unconstrained demand estimates	94
4.8	What prices could be charged by an IMT at Moorebank?	96
4.8.1	Pricing mechanisms	96
4.8.2	Summary of pricing mechanisms	97
4.8.3	Supply chain cost components	99
5	Conceptual design of an IMT at Moorebank	102
5.1	Selection of preferred technical option	102
5.2	Project outline and functionality	103
5.2.1	Relationship to adjoining sites	104
5.2.2	Design process	104
5.2.3	Staging	104
5.2.4	Site development plan	106
5.2.5	Construction program	108
5.3	Infrastructure	109
5.3.1	Rail access	109
5.3.2	Terminal rail lay-out and connections – IMEX and interstate	109
5.3.3	Road access and internal roads	110
5.3.4	Warehousing	113
5.3.5	Landscape design	113
5.3.6	Public Interface, Signage and Wayfinding	114
5.3.7	Other infrastructure	115
5.3.8	Pavement Requirements	115
5.3.9	Utility Requirements	115
5.3.10	Water supply	117

5.4 IMT operations 119
5.4.1 Concept of operations 119
5.4.2 Plant and equipment 120

6 Environmental and Planning Issues 122
6.1 Introduction 122
6.2 Joint assessment process 122
6.3 What environmental issues would be addressed within the EIS? 122
6.3.1 Biodiversity 122
6.3.2 Air quality 123
6.3.3 Noise and vibration 124
6.3.4 European heritage values 125
6.3.5 Aboriginal heritage values 125
6.3.6 Contamination 126
6.4 What other future studies are proposed? 126
6.4.1 [redacted] 126
6.4.2 [redacted] 126
6.4.3 [redacted] 127
6.4.4 [redacted] 127
6.4.5 [redacted] 127
6.4.6 [redacted] 127
6.4.7 [redacted] 127
6.4.8 [redacted] 127
6.4.9 [redacted] 127

7 Economic Appraisal 128
7.1 Introduction 128
7.2 The economic, social and environmental benefits and costs of the Project 128
7.2.1 Introduction 128
7.2.2 Project Benefits 129
7.2.3 Project Capital Costs 130
7.2.4 Whole of Life Costs 132
7.2.5 [redacted] 134
7.2.6 Economic Evaluation Results 134
7.2.7 Sensitivity analysis 137
7.2.8 Additional economic analysis 138
7.3 Project impacts in the broader economy 139
7.3.1 Construction Impacts 139
7.3.2 Operational Impacts 140
7.4 The consequences of not proceeding with Moorebank 141

8 Financial appraisal 144
8.1 [redacted] 144
8.2 [redacted] 145

8.2.1 146
8.3 148
8.3.1 149
8.3.2 151
8.4 153
8.4.1 153
8.5.1 155
8.5.2 156
8.6 157
8.7 159
8.7.1 159
8.7.2 160
8.7.3 161
8.7.4 162
8.8 164
8.8.1 168
8.9 176
8.10 178
8.11 179
8.11.1 179
8.11.2 179

9 Commercial delivery strategy 182
9.1 182
9.1.1 182
9.1.2 183
9.1.3 183
9.1.4 185
9.2 186
9.2.1 186
9.3 187
9.3.1 187
9.3.2 188
9.3.3 190
9.3.4 195
9.3.5 196
9.4 198
9.4.1 198
9.4.2 200
9.4.3 200
9.4.4 204
9.4.5 205
9.4.6 207
9.5 208

9.5.1 [redacted] 209
9.5.2 [redacted] 211
9.6 [redacted] 214
9.7 [redacted] 215
9.7.1 [redacted] 215
9.7.2 [redacted] 215

10 Risk Management Strategy 217
10.1 Introduction 217
10.2 Risk Analysis Methodology 217
10.2.1 Stage 1 - Risk identification and high-level quantification 217
10.2.2 Stage 2 - Detailed risk quantification 218
10.3 Key process risks 220
10.4 Key project risks 223
10.4.1 Construction risks 223
10.4.2 Operating risks 224
10.4.3 Demand risks 224
10.5 Risk analysis outcomes 226
10.5.1 P80 risk quantification 226
10.5.2 Benchmarking – industry standards 227

11 Legal Overview 229
11.1 [redacted] 229
11.1.1 [redacted] 230
11.1.2 [redacted] 232
11.1.3 [redacted] 232
11.1.4 [redacted] 232
11.1.5 [redacted] 232
11.1.6 [redacted] 233
11.1.7 [redacted] 233
11.1.8 [redacted] 234
11.1.9 [redacted] 234
11.2 [redacted] 234
11.2.1 [redacted] 235
11.2.2 [redacted] 235
11.2.3 [redacted] 236
11.3 [redacted] 236
11.4 [redacted] 237

11.5 [redacted] 238
11.6 [redacted] 238
11.6.1 [redacted] 239
11.6.2 [redacted] 239
11.7 [redacted] 240
11.7.1 [redacted] 240
11.8 [redacted] 240
11.9 [redacted] 241

12 Stakeholder Consultation Strategy 243
12.1 What are the objectives of the stakeholder consultation process? 243
12.2 Who has the Project Team engaged with? 243
12.3 How did the Project Team engage with the community stakeholders? 244
12.3.1 Community Information Sessions 245
12.4 What are the key issues raised by the community stakeholders? 245
12.5 How does the Project Team propose to engage with community stakeholders in 2012? 248
12.6 How did the Project Team engage with Government stakeholders? 249
12.7 What are the key issues raised by Government stakeholders? 250
12.8 How did the Project Team engage with commercial stakeholders? 250
12.8.1 Data gathering interviews 250
12.8.2 Market Sounding Interviews Phase 1 251
12.8.3 Market Sounding Phase 2 252
12.9 What were the key issues raised by commercial stakeholders? 254

13 [redacted] 256
13.1 [redacted] 256
13.2 [redacted] 256
13.3 [redacted] 257
13.4 [redacted] 257
13.5 [redacted] 258
13.6 [redacted] 259
13.7 [redacted] 259
13.8 [redacted] 259
13.9 [redacted] 260

14 Project Implementation Plan 262

14.1 What are the key activities required to deliver the proposed Moorebank IMT? 262
14.2 [redacted] 264
14.2.1 [redacted] 265
14.3 [redacted] 267
14.4 [redacted] 268
14.4.1 [redacted] 268
14.4.2 [redacted] 270
14.4.3 [redacted] 272
14.4.4 [redacted] 273
14.4.5 [redacted] 274
14.4.6 [redacted] 275

15 Conclusion 277

16 Glossary of Terms 280

Key Points

The Detailed Business Case (DBC) builds on the analysis that was undertaken for the Final Scoping Study. In particular, it further refines and optimises a preferred technical solution, provides analysis of more detailed demand and cost information and evaluates a range of commercial ownership structures and procurement options and provides an implementation plan.

Inefficient freight delivery and the impact on national productivity

Australia faces major challenges in two key freight markets:

- The import/export (IMEX) container market, where rapid growth in container volumes, combined with constraints affecting Port Botany, threaten to create a bottleneck which would add costs to the entire supply chain.
- The interstate container market, where Australia needs to 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 off the Australian Government's $4.8 billion investment towards improving the national rail freight network.

The Moorebank IMT responds to these freight challenges

The DBC finds that additional intermodal terminal (IMT) capacity is required in Sydney to:

- Help facilitate the greater use of rail and reduce congestion at Port Botany and on local roads caused by the continuing high growth in container volumes and, in the process, facilitate an increase to the planning cap on throughput at Port Botany and boost national productivity.
- Increase national productivity through the more efficient transportation of freight.
- Enhance the competitiveness of the interstate rail freight network and reduce the adverse environmental and social impacts of continuing to use road freight.

The Australian Government has selected the Moorebank site occupied by the School of Military Engineering (SME) and a number of other Australian Defence Force units as a logical site for an IMT because the site is:

- Close to major freight markets and transport links (Southern Sydney Freight Line (SSFL), M5 and M7 Motorways) but sufficiently distant from Port Botany to make rail a viable alternative to road transport.
- Of sufficient size to handle expected IMEX and interstate demand with a sustainable practical capacity of throughput of approximately 1.2 million twenty-foot equivalent unit (TEU) per annum (p.a.) for IMEX and 0.5 million TEU for interstate container traffic.
- Owned by the Commonwealth.

Strong demand is forecast for the Moorebank IMT (the Project):

- [redacted]
- [redacted]

Benefits and costs of the Moorebank IMT Project

The Project would generate substantial economic benefits:

- The Moorebank IMT has a positive economic net present value of almost $1 billion and achieves a benefit-cost ratio of 1.72 (excluding the Moorebank Units Relocation (MUR) project costs). This compares very favourably with a range of other transport - related projects submitted to Infrastructure Australia.
- The Project would also provide a major boost to the economy of South-West Sydney. Approximately 1,650 full time staff are expected to be employed during the construction of the IMEX terminal and 975 staff are expected to be employed the construction of the interstate terminal. The operation of both terminals, together with warehousing, could see an additional 1,700 people being employed in the region.

[redacted]

- [redacted]
- [redacted]
- [redacted]
- [redacted]

Until the terminal is operating effectively, it is recommended that the Commonwealth maintain an ongoing involvement as a Landlord to manage its substantial investment and to ensure that the project objectives are met effectively.

- A GBE Company, as a wholly-owned entity of the Commonwealth, would enable the Landlord to have an appropriate commercial focus while maintaining effective Government oversight under the *Commonwealth Authorities and Companies Act 1997*. From a budgetary perspective, the GBE may be classified as a Public Non Financial Corporation.
- The GBE would have responsibility for exploring opportunities for private sector financing and investment in the development and operation of the IMT, thereby reducing the financial exposure on the Commonwealth.
- [redacted]
- Twenty-five different commercial structures were considered against their potential to achieve the Australian Government's Project objectives of developing an open access, fit for purpose, integrated IMT that will meet the immediate needs of the international and interstate containerised freight markets. [redacted]

Implementation arrangements

An implementation plan has been developed to deal with priority matters including [redacted] road upgrades; the Port Botany Landside Improvement Strategy; SSFL train path allocation; and responsibility for the rail connection to the SSFL. Following the initial transition period the GBE would be responsible for the implementation activities.

The Project would provide significant benefits to the NSW Government, Australian Rail Track Corporation (ARTC) and other stakeholders but is also dependent on critical infrastructure managed by these bodies. Engagement with ARTC would also be a key component of the implementation of the Project. [redacted] Subject to the Australian Government's consideration, key Project milestones include:

- Recommendation to Government in March 2012.
- Engagement with NSW Government and ARTC commencing 2011/12.
- Establishment of, and transition to the GBE in 2012/2013.
- DoD vacating the SME site by December 2014.
- Construction of the IMEX terminal begins in January 2015 (with non-intrusive limited on-site works commencing in advance of this date, subject to DoD assessment of the impacts of works on the operational capability).
- IMEX operations commence in July 2017.

Interstate operations are forecast to commence in 2028/29 however this is dependent upon review of policy and demand underpinnings.

1 Executive Summary

The Moorebank Intermodal Terminal (IMT) would provide an efficient solution for the improved movement of container freight between Port Botany and South West Sydney and within Australia. The sustainable practical capacity of throughput at the terminal is estimated at 1.2 million twenty-foot equivalent unit (TEU) per annum (p.a.) for import/export (IMEX) and 0.5 million TEU for interstate container traffic, thereby relieving the growing pressure on congested infrastructure around Port Botany. In addition, the terminal would contribute to the increased utilisation of the national rail freight network. The Moorebank IMT would provide a major boost to national productivity, helping to reduce business costs and the adverse environmental and social impacts of road transport, as well as creating jobs in South-West Sydney. Further, it is anticipated that the private sector would play a role in the construction, operation and potentially the privatisation of the facility.

The purpose of the report

The purpose of the Detailed Business Case (DBC) is to determine the feasibility of an IMT located on the School of Military Engineering (SME) site at Moorebank, and to support further consideration by the Commonwealth to proceed with the Project. The DBC builds on earlier works, the results of which are contained in the Final Scoping Study. In particular, it further refines and optimises a preferred technical solution, provides analysis of more detailed demand and cost information and evaluates a range of commercial ownership structures and procurement options. The DBC also includes a suggested implementation plan should the Commonwealth decide to proceed with the Project.

The DBC and this Executive Summary seek to answer the following questions:

- *What are the Commonwealth's objectives for the Project?*
- *Does Sydney require additional IMT capacity?*
- *Is Moorebank a suitable site for an IMT?*
- *Is there demand for an IMT at Moorebank?*
- *What is the proposed concept design for the Moorebank IMT?*
- *What economic, social and environmental benefits would the Project deliver?*
- *What is the cost to the Government?*
- *What financing and commercial structure would be most suitable for the Project?*
- *What are the Project risks and how would they be managed?*
- *What interaction is required with the NSW Government, Australian Rail Track Corporation (ARTC) and other stakeholders?*
- *What are the key activities required to deliver the proposed IMT?*
- *Does the recommended solution address the Commonwealth's objectives for the Project?*

This document is the Executive Summary and presents the key findings of the DBC.

1.1 What are the Commonwealth's objectives for the Project?

The Australian Government has endorsed the following six objectives for the Project which have been used to guide the preparation of the DBC:

1. Boost national productivity over the long-term through improved freight network capacity and rail utilisation.
2. Create a flexible and commercially viable facility and enable open access for rail operators and other terminal users.
3. Minimise the impact on Defence's operational capability during the relocation of Defence facilities from the Moorebank site.
4. Attract employment and investment to South-West Sydney.
5. Achieve sound environmental and social outcomes that are considerate of community views.
6. Optimise value for money (VfM) for the Commonwealth having regard to other stated Project objectives.

Project background

The need to address Sydney's insufficient intermodal rail freight capacity has been under consideration for some years, having been recognised as a major barrier to the future development of Sydney and improvements in national productivity. An intermodal terminal at Moorebank was first proposed by the Commonwealth in 2004.

As part of the Nation Building Program and reflecting a 2007 election commitment, the Australian Government allocated $300 million towards the detailed planning for an IMT at Moorebank. Following this, in May 2010, the Government allocated Budget funding for a feasibility study of the Moorebank site. The Moorebank Project Office (MPO), an interagency taskforce within the Department of Finance and Deregulation (DoFD) comprising representatives from DoFD, Department of Infrastructure and Transport (DoIT) and the Department of Defence (DoD), was established to prepare the study.

In September 2010, a group of specialist advisers led by KPMG were appointed to assist the MPO in undertaking a Scoping Study and a DBC. Advisers appointed included Lead Adviser (KPMG, supported by Parsons Brinckerhoff and Deloitte), Legal Adviser (Blake Dawson) and Communications Adviser (KGA). In March 2011, the Final Scoping Study Report was submitted to the Commonwealth. The findings of the Final Scoping Study indicated that an IMT at Moorebank would have a positive impact on national productivity and provide long term public benefits.

Following the Australian Government's consideration of the findings of the Final Scoping Study, the Government agreed to proceed to the DBC phase on the basis of a staged IMT development, i.e. the IMEX terminal and associated warehousing would be developed during the initial phase, and the Interstate facility would be developed when policy and demand require it. The Government also agreed that the DBC should further explore commercial and financial opportunities (including private sector financing) that would minimise the financial exposure to the Commonwealth.

Alignment with Government policy

The proposed Moorebank IMT Project is closely aligned with Government policy commitments to improve the efficiency and integration of the national freight transport network. The Commonwealth has committed $4.83 billion towards improving the national freight rail network. As part of this investment, the Moorebank Project would specifically complement the $1.84 billion investment to support the ARTC's North-South Strategy and its contributions to the Northern Sydney Freight Corridor Project ($840 million) and the Port Botany Freight Line ($170 million). Additionally, the ARTC is investing approximately $1 billion in constructing the Southern Sydney Freight Line (SSFL).

The Project also supports the draft National Freight Strategy, prepared by Infrastructure Australia (IA), which proposes a new national land freight network to allow for interoperability of the most efficient freight vehicles between principal freight nodes. The strategy includes the Moorebank IMT as one of nine major IMT/freight clusters across Australia and recommends the Moorebank IMT be progressed as a priority.

The National Ports Strategy, also prepared by Infrastructure Australia, emphasises the importance of landside efficiencies, in particular IMTs and improved rail logistics, to ensure that port-related activities across the freight network remain competitive relative to international counterparts.

The Moorebank IMT Project also supports the NSW Government mode share target of doubling the proportion of containers moved by rail through NSW Ports by 2019/20.

1.2 Does Sydney require additional IMT capacity?

Achieving an efficient and sustainable freight transport system is a challenge in two important freight markets:

- The IMEX container market, where rapid growth in container volumes, combined with constraints affecting Port Botany, threaten to create a bottleneck which is likely to add costs to the entire supply chain.
- The interstate container market, where Australia needs to 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 off the Australian Government's $4.8 billion investment towards improving the national rail freight network.

The need for IMEX infrastructure

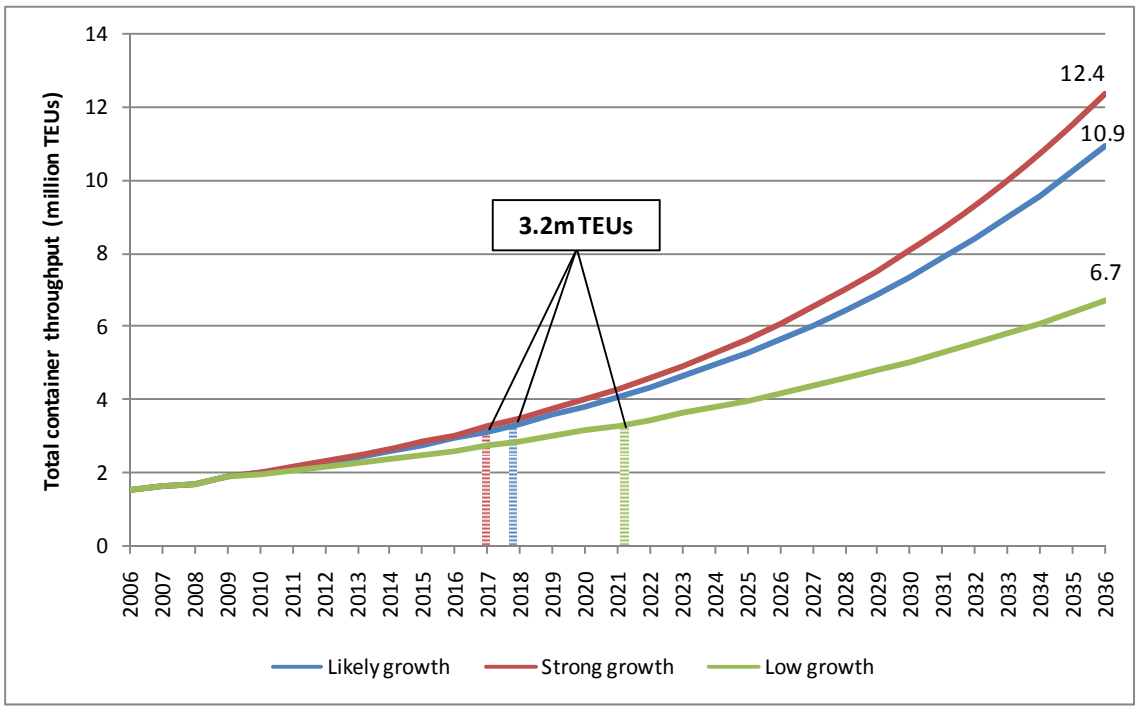
The Sydney IMEX container freight market is almost entirely dependent on Port Botany which is a major container port. Sydney's need for additional IMT capacity in the IMEX market is being driven by:

- **Continued strong growth in freight volumes** – Port Botany has experienced around 7 per cent[1] p.a. growth in freight volumes over the past five years and this is expected to grow at 6.7 per cent p.a. over the next 25 years.

[1] Sydney Ports Corporation data

Graph 1.1 illustrates Sydney Ports Corporation's (SPC) forecast container growth through Port Botany under three growth scenarios.

Graph 1.1 – Port Botany's forecast container demand



Source: Sydney Ports Corporation

- **The planning cap on Port Botany's container volumes** – The port is currently subject to a cap on throughput of 3.2 million TEU p.a. which, at current rates of growth, is expected to be reached between 2016/17 and 2020/21. The cap is imposed through a planning restriction which is correlated to the actual approximate capacity of the existing Port Botany infrastructure. [redacted] An IMT at Moorebank would help achieve [redacted] increased movement of containers by rail and reduced road congestion around Port Botany. [redacted]
- **Road congestion –** Heavy congestion is already being experienced at Port Botany and on the M5 Motorway. This would be aggravated by future growth in port volumes and associated truck movements. It is estimated that truck traffic at Port Botany would increase by 400 per cent[2] by 2029/30 if the current rail mode share is not improved.

[2] NSW Government 2011 Infrastructure Australia Submission – Port Botany and Sydney Airport Transport Improvement Program

- **Limited capacity within the existing IMT network –** The current IMT network is fragmented and its capacity and effectiveness is constrained due to a number of factors including space limitations, accessibility to rail paths shared with passenger rail and limited proximity to urban growth areas. Whilst a new IMT is underway at Enfield and its contribution is significant relative to the current low base, it is small relative to the expected growth in containers through the port. Also, Enfield is expected to primarily serve its localised market and would not have a major impact on Western Sydney.

The need for Interstate infrastructure

Sydney's need for additional IMT capacity in the interstate freight market is being driven by:

- **Growth in freight volumes –** Interstate freight is expected to grow at 3.6 per cent p.a. between 2011/12 and 2029/30 (road and rail freight 3.8 per cent and 3.5 per cent p.a. respectively).
- **Strategies to improve the competitiveness of the rail network –** ARTC has developed a number of long-term investment strategies to improve rail reliability and transit times. The Government considers the establishment of a large IMT on the SSFL to be a key component of supporting ARTC's North-South strategy to increase rail utilisation of the interstate rail network.
- **Limited IMT capacity –** The current interstate IMT network has small terminals and is characterised by vertical integration of providers which tends to restrict entry into the industry.
- **Environmental and social impacts of continuing to use road freight –** Road freight produces higher externality costs on a per tonne basis relative to rail and sea. An additional Interstate IMT would help to alleviate some of the negative environmental and social impacts associated with freight, including greater air pollution and greenhouse gas emissions, fuel consumption and waste generation, noise and vibration, time delays and other congestion costs and fatalities from road accidents.

Additional IMT capacity would be required to enable Sydney to cope with continuing growth in container freight volumes, to fully utilise its investment in port and rail infrastructure and to alleviate the adverse environmental and social impacts of continuing to rely on road transport over rail. The Moorebank IMT is considered to be an integral part of the solution to the immediate challenges in the near future for Sydney's outer southwest. A Moorebank IMT is ideally located to provide a competitive rail solution for the movement of containers to South-West Sydney. However, in the long term, additional freight capacity will be required along the key outer northwest corridor (M4) and is likely to benefit from additional IMT capacity on the western line.

Further IMT capacity is required in Sydney to:

- Accommodate the continuing high growth in container volumes.
- Enable Port Botany to manage congestion at the port and on local roads [redacted]
- Relieve capacity limitations within the Sydney IMT system.
- Enhance the competitiveness of the interstate rail freight network.

- Increase productivity through savings in transport costs as a result of transporting more interstate and IMEX containers by rail.
- Reduce the adverse environmental and social impacts of continuing to increase road freight.

1.3 Is Moorebank a suitable site for an IMT?

The proposed Moorebank site is located approximately 30km South-West of the Sydney Central Business District (CBD) and approximately 4km south of the Liverpool CBD. The site is on 220 hectare (ha) of mainly Commonwealth owned land which is currently occupied by the School of Military Engineering (SME) and a number of other Australian Defence Force (ADF) units. The DoD is developing complementary plans (the Moorebank Unit Relocation (MUR) Project) to relocate the SME, and other Defence units off the site to enable an intermodal project to proceed.

The Commonwealth has identified Moorebank as the logical location for additional intermodal capacity in Sydney. The site has a number of advantages, including that it is:

- Located near to the centre of the South-West Growth Centre (SWGC), adjacent to the SSFL and with direct access to the M5 and M7 Motorway. It is a sufficient distance from Port Botany to make rail a commercially viable alternative to road for movements from/ to the port.
- Centrally located relative to major freight markets, given that almost two-thirds of port container freight is transported to or from markets in Western Sydney.
- Adjacent to existing industrial areas.
- The size and length offers the potential to establish highly efficient and fully integrated IMT capacity to serve port and interstate trains.
- It is one of the last remaining parcels of suitable land for an IMT in Western Sydney with easy access to road and rail infrastructure. While other IMT capacity would also be required in the future, other potential IMT sites in Sydney would require substantial investment in additional infrastructure to link the national road and rail networks, and currently are not viable alternatives.

Related projects

The Moorebank IMT Project is separate from, but has important inter-dependencies with a number of major projects that are underway or planned by the Commonwealth, NSW Government and private sector entities. A number of these related projects are currently being developed in the industry and may affect the Moorebank IMT. These are summarised in Table 1.3.

Table 1.3 – Moorebank IMT – Summary of Related Projects

Project	Project description	Relationship with Moorebank	Indicative project date
Port Botany Expansion	SPC is currently increasing the capacity of Port Botany through the construction of a third terminal to be operated by Hutchison Port Holdings.	This Project would increase Port Botany's throughput and would provide a source of IMEX traffic for the Moorebank IMT.	SPC anticipates the expansion to be completed by late 2012.
Refinancing of Port Botany	The NSW Government has announced plans to refinance state owned assets at Port Botany in order to fund priority infrastructure projects.	Port Botany and the Moorebank IMT have important interdependencies in that Moorebank is expected to facilitate a more efficient transfer of freight in Sydney [redacted]	It is anticipated that the Port Botany assets will be refinanced in the first half of 2013.
Port Botany Improvement Strategy (PBLIS)	PBLIS' key objective is to improve the competitive access and service arrangements of container movements between stevedores and transport carriers.	PBLIS is a critical component to the continued future success of operations at Port Botany and therefore is important to the overall viability of the Moorebank Project.	–
Enfield Intermodal Logistics Centre	Hutchinson Port Holding has been appointed to develop, operate and maintain the IMT at Enfield.	Enfield is planned to have a maximum capacity of 300,000 TEU p.a, [redacted]	It is anticipated that the Enfield IMT would be operating by late 2012.
Sydney Southern Freight Line (SSFL)	ARTC is currently developing the SSFL.	The SSFL is in close proximity to the Moorebank site. Connection to the SSFL would provide rail access to Port Botany to and from the Moorebank IMT.	ARTC anticipates completion of the SSFL in December 2012.
Port Botany Freight Line Upgrade	The Port Botany Freight Line is a dedicated freight railway between Port Botany and Enfield/Chullora in central-west Sydney.	All IMEX freight going to/from Moorebank IMT would use the Port Botany Freight Line.	–
Metropolitan Freight Network (MFN)	The MFN consists of dedicated freight lines through metropolitan Sydney.	All IMEX freight going to/from Moorebank IMT would use the MFN.	The MFN is operated by the ARTC pursuant to a long term lease granted by RailCorp.

Table 1.3 – Moorebank IMT – Summary of Related Projects

Project	Project description	Relationship with Moorebank	Indicative project date
Moorebank Relocation Unit (MUR)	DoD is currently completing a Business Case to investigate the relocation of the SME, and other ADF Units on the Moorebank site to Holsworthy Barracks.	This relocation project would provide land for the development of the Moorebank IMT.	DoD anticipates the MUR Project could be completed by early 2015, however the MUR Project will not be complete at Holsworthy until mid 2015.
Sydney Intermodal Terminal Alliance (SIMTA) IMT	SIMTA proposes to develop a terminal on the east side of Moorebank Avenue on land occupied by the Defence National Storage and Distribution Centre (DNSDC). ~~The~~ [redacted] –It is planned to have a capacity of up to 1 million TEU p.a.	[redacted]	[redacted]
Defence Logistic Transformation Program (DLTP)	DoD, under the DLTP Project, is proposing to move its current storage and distribution facility and establish a new consolidated facility at West Wattle Grove.	The timing of DoD moving from the SIMTA site to the West Wattle Grove site would influence the timing of SIMTA's proposed IMT construction and operation start dates.	DoD is currently analysing the requirements associated with the DLTP move to West Wattle Grove.

Source: SPC, ARTC, SIMTA and DoD correspondence.

1.4 Is there demand for an IMT at Moorebank?

Work undertaken during the preparation of the Final Scoping Study concluded that containerised IMEX freight and interstate freight were the most feasible markets for an IMT at Moorebank. A number of other potential freight markets, such as bulk freight (bulk construction materials) and motor vehicles (imported via Port Kembla) were considered in the early stages of the Project but were not considered to be practical options for a freight terminal at Moorebank, and therefore no further analysis was conducted.

[redacted]

The development of a new high capacity IMT with the ability to operate over a 24 hour period, along with improvements to rail and port infrastructure has the ability to substantially improve the operational performance of rail freight making it a more competitive option relative to road freight.

The potential demand for the transport of containers via Moorebank has been assessed for each of the IMEX and interstate freight markets. The analysis has examined:

- Total growth expectations within each of the respective markets.
- The likely distribution of freight within the metropolitan area and the markets that could be served by an IMT at Moorebank.
- The extent to which rail freight prices, inclusive of charges for transfers at Moorebank, can be sufficiently competitive with road freight to induce a change in behaviour by the market.
- The impact of other metropolitan freight terminals and network capacity on freight transported via an IMT at Moorebank.

IMEX market analysis

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Interstate market analysis

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[redacted]

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Demand estimates

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IMEX demand

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Interstate demand

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Estimated container, train and truck movements at Moorebank

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Infrastructure constraints on demand

The demand estimates in Table 1.5 allow for a number of infrastructure constraints which limit the volume of containers that can be handled by an IMT at Moorebank. These infrastructure constraints present significant risks which would need to be monitored closely, and managed where possible, to ensure the success of the Moorebank IMT. The constraints include:

- **SSFL and the availability of freight paths –** as noted, the terminal would be dependent on use of the SSFL which would be required to support a variety of freight markets and could reach capacity at a relatively early stage of its life. ARTC has indicated that once the SSFL reaches capacity there is potential to increase the capacity on the line via the construction of passing loops and intermediate signalling.
- **Current rail configuration at Port Botany –** Port Botany is connected directly with the metropolitan freight network. [redacted]

These constraints have been recognised and discussions with the relevant stakeholders to address these constraints are underway.

[redacted]

[redacted]

1.5 What is the proposed concept design for the Moorebank IMT?

The proposed concept design provides a layout of an IMT that would provide the full range of integrated IMT services including IMEX and Interstate terminals, empty container storage, warehousing and associated ancillary services such as storage, maintenance facilities and administration facilities.

The concept design was developed through an evaluation of options and was subject to a detailed optimisation process. Considerations included:

- Optimising the use of land.
- Infrastructure and equipment to achieve the most cost-efficient solution.
- Ensuring feasible and efficient road and rail access arrangements.
- Responding to social and environmental needs.
- Providing a design that can accommodate the forecast IMEX and interstate freight demand as at 2049/50.

Ultimately, the final design for construction would be driven by the commercial considerations of the Government and or delivery entity and the terminal operator, agreement with the delivery entity's shareholder representatives (for the purposes of meeting the Commonwealth's Project objectives) and approval by the relevant planning agencies.

Proposed concept design

The concept design provides an IMT that occupies the whole of the site at Moorebank and caters for IMEX, and interstate freight and warehousing. The design is based on achieving a feasible IMT solution that can accommodate the forecast IMEX and interstate freight demand under the "Medium" demand scenarios as at 2049/50. The site layout has a sustainable practical capacity of approximately 1.2 million TEU p.a. for the IMEX facility, and 0.5 million TEU p.a. for the interstate terminal. The IMT facility comprises three distinct operational elements:

- Rail access, storage, working and classification tracks.
- Container storage.
- Over-the-road truck gate.

The configuration of these components has been designed to achieve an efficient operation of the facility and includes the following placements:

- Rail access to the site crosses the Georges River at the northern end of the site.
- Heavy vehicle access to the site is located at the northern end of the site.
- Warehousing is located along the western side of Moorebank Avenue.

- Support functions for the terminal are located close to container stacks.
- Rail track occupies the available space between the warehousing and the area to be retained for environmental purposes along the Georges River.

Concept design layout and key features

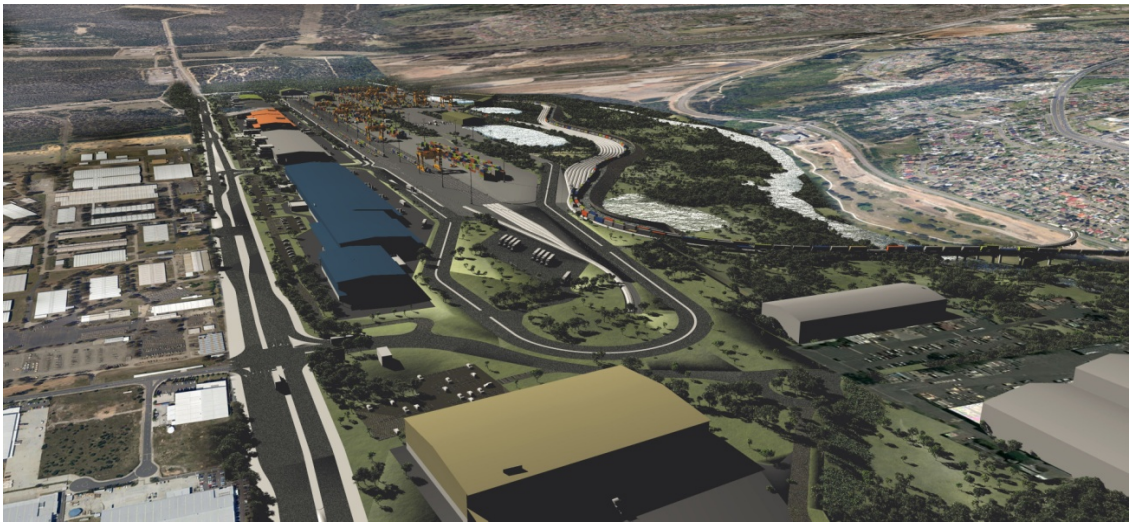
The proposed layout of the site, as set out in the concept design, has been designed to cater for the site's ultimate capacity (as based on year 2049/50 demand). Broadly, the layout is as follows:

- **IMEX** – consists of eight working tracks, each capable of accommodating 600 metres trains (the normal length for port shuttle services).
- **Interstate** – Interstate arrival, departure roads, and four working tracks capable of accommodating 1,800 metres Interstate trains on 1,500 metre sidings.
- **Warehousing** – under the selected IMT technical solution, there is capacity to develop land with complementary facilities. These facilities would support the efficient operation of the IMT and are likely to be attractive to a range of tenants including: retail warehouses, distribution centres, freight forwarders and other logistics organisations.
- **Retail –** the design for the IMT site allows for a 500 square metres 'roadhouse' (fast food retail outlets etc.).
- **Connection to the SSFL** – the rail connection into the site would cross the Georges River at the northern end of the site. The IMEX and Interstate trains would share this connection.
- **Road access –** the Project is expected to require the widening of Moorebank Avenue to a four-lane carriageway. The design caters for additional turning lanes to accommodate the increased traffic volumes estimated to occur in 2029/30.
- **Internal roads –** the site layout provides two access roads located at the northern and southern ends of the site. The northern access is south of Anzac Road and is provided for heavy vehicles generated by IMEX, Interstate and warehouse traffic.
- **Truck parking –** the concept design also allows for a "trouble truck" parking area to investigate incidents. The trouble truck parking area would be able to accommodate up to 25 trucks at any given time.
- **Warehousing traffic access** – light vehicles would access the warehouse developments directly off Moorebank Avenue. Heavy vehicles would use northern and southern access points and a warehouse access road parallel to, and west of, the Moorebank Avenue.
- **Landscape design –** the landscape design solution for the Moorebank IMT would maximise the integration of terminal facilities and the associated warehousing precincts by providing screening, breakout space, visual relief etc. Along the Georges River side of the site, the landscaping incorporates the Ecologically Sustainable Development (ESD) initiatives proposed to conserve the existing riverside and the former earthmoving operations training area.
- **Empty container storage area** – the concept design provides adequate empty container storage areas for the IMT. The loaded IMEX container storage can accommodate 6,775 TEU (including Reefer container storage), and the empty IMEX container storage can accommodate 7,200 TEU. The Interstate container storage area can accommodate 1,450 loaded TEU (including Reefer container storage) and 2,200 empty TEU.
- **Utilities** – adequate utilities (electricity, gas, water and sewerage) and water management measures would be provided.

- **Train shunting –** an allowance for arrival and departure tracks was made to facilitate unimpeded movement of trains in and out of the terminal. These tracks also allow for shunting of trains within the terminal.
- **Rail maintenance and repair yards** – these would be located off the arrival and departure tracks to ensure that the efficiency of terminal operations is not compromised. Rail maintenance and repair yards are located a short travel distance away from the refrigerated end of the loaded container storage area at the respective terminals. This will enable a quick emergency response to potential spills or breakages and minimise any interference to terminal operations.

An artist's impression of the proposed layout, viewing it from a northern perspective is provided in Illustration 1.7.

Illustration 1.7 – Artist's impression of the proposed Moorebank IMT layout



Source: Suters

Timing of development

The Project is proposed to be developed in stages to ensure that the provision of new IMEX and Interstate IMT infrastructure, which would ultimately provide capacity for 1.7 million TEU and associated warehouse capacity, is timed to meet market demand. The timing of development is based upon an assessment of a number of technical options and the development of a reference design. The three main stages of development are as follows:

- **Stage 1A IMEX terminal** – construction is to commence in January 2015, with limited on-site works commencing in advance of this date, subject to DoD assessment of the works in operational capability. July 2017 represents the earliest opening date of the IMEX terminal taking into consideration the construction period together with the MUR movement in December 2014. The IMEX terminal would have a capacity of 1.2 million TEU p.a.
- **Stage 1B Warehousing** – construction of six warehousing zones is staged over a period of approximately 30 months commencing July 2016 and is timed to meet market demand.

- **Stage 2 Interstate terminal** – it is proposed that the development of an Interstate terminal be periodically assessed by the Government or delivery entity to determine when demand and other policy considerations warrant the development of a facility. The proposed concept design provides for reservation of part of the site for an Interstate facility which is assumed, currently, to be developed by January 2029 (indicative).

Table 1.8 – Indicative project construction timetable

Stage	Dates
MUR Project	October 2012 to July 2015 (with the SME site being vacated by December 2014)
IMEX Construction	January 2015 to June 2017
Interstate Construction[1]	July 2027 to December 2028
IMEX Operations	From July 2017
Interstate Operations[1]	From January 2029

Source: MUR draft DBC, PB Gantt chart and PB cost report

[1]Note: Interstate construction is estimated to commence in mid 2027 for completion in early 2029, although the actual timing would be subject to market demand and policy considerations.

Table 1.8 provides details the indicative timeframe for construction and operations of the IMT.

[redacted]

The Moorebank site can accommodate the proposed IMT

- The SME site at Moorebank has sufficient capacity to accommodate the entire infrastructure that would be required for an IMT capable of handling both IMEX and interstate freight.
- The Project is planned to be developed in three main stages.
- Stage 1A (IMEX terminal) is assumed to commence construction in January 2015 and be completed by mid 2017.
- Stage 1B (warehousing) involves progressive development of six parcels of land for warehousing over a three-year period commencing in 2015/16.
- Stage 2 (Interstate terminal) construction is estimated to commence in mid 2027 for completion in early 2029, although the actual timing would be subject to market demand and policy considerations.

1.6 What economic, social and environmental benefits would the Project deliver?

The economic evaluation measures the costs and benefits of the Project to society. To be economically worthwhile, the benefits of the Project must exceed the capital and operating costs of the Project. Table 1.9 shows the results of the economic analysis.

Table 1.9 – Economic evaluation results at a 7% real discount rate – medium growth – incremental to base case

Measure	Value
Economic Net Present Value (NPV)[1] ($ Million)	946
Benefit Cost Ratio (BCR)[2]	1.72
[redacted]	[redacted]
Economic NPV/Investment[4]	1.05

Source: Deloitte Analysis

[1] Economic NPV: the difference between the present value of the total incremental economic benefits (i.e. additional to the base case) and the present value of the total incremental costs both calculated using a 7% p.a. real discount rate.

[2] Benefit Cost Ratio: the ratio of the present value of the total incremental economic benefits to the present value of the total incremental costs.

[redacted]

[4] Economic NPV/I: the Economic NPV of the Project divided by the present value of the capital cost. This measure is generally used in the context of rationing scarce capital budget funding.

The economic evaluation is confined to the Moorebank IMT Project and does not include the capital cost or benefits of the MUR project. The inclusion of MUR capital costs would substantially decrease the Economic NPV of the Project. However, any adjustment of this nature should also have regard to the benefits of the MUR project although such analysis is outside the scope of this DBC.

The economic, environmental and social benefits of the Project

The provision of increased intermodal capacity in Sydney reduces the unit costs of transporting containers by rail for IMEX and interstate markets. The reduction in rail freight costs means that more containers would be transported by rail, and this is expected to generate ongoing productivity benefits for the community. The total economic Project benefits (before costs) over the 30 year evaluation period are $10 billion or $2.3 billion in present value terms. These benefits are derived from a range of sources:

- **Savings in operating costs in the freight transport sector** – productivity improvements which lead to reductions in freight transport operating costs which can be passed onto consumers.
- **Improved freight service reliability and availability** – these benefits measure the improved quality of service experienced by consumers of rail services relative to road services.
- **Road damage cost savings** – these benefits are derived from a decrease in road damage caused by freight trucks.
- **Operating cost reductions** – the economies of scale provided by rail transport would achieve savings in operating costs where it is viable for freight to transfer from road to rail, thereby boosting national productivity.
- **Incremental terminal operator revenue –** this benefit captures the incremental terminal operating surplus.
- **Residual value of assets** – the operational life of the terminal assets would be longer than the economic evaluation period and consequently a residual value can be included as a project benefit for all operations.
- **A reduction in road congestion and road accident costs** – Sydney port truck volumes would be an estimated 3,300 vehicles per day lower from 2020 onwards. This benefit reflects the modal shift to rail which reduces delays and costs for both cars and commercial vehicles hence benefiting the community and industry.
- **Boost employment in South-West Sydney** – during construction and operation of the Moorebank IMT jobs will be created.
- **Journey reliability benefits –** this benefit reflects the savings achieved through more reliable road travel times for the community and industry.
- **A reduction in environmental costs associated with road transport** – environmental benefits include a reduction in noise, greenhouse gas emissions, fuel costs and other air pollution. For example, the Moorebank IMT would save an estimated 9,500 tonnes of Co2-e greenhouse gas emissions for every 1 million TEU containers that are transported by rail instead of road for IMEX traffic.

Quantified economic environmental and social benefits associated with the Project

The key impacts from an economic perspective of proceeding with the Moorebank IMT Project are shown in Table 1.10.

Table 1.10 – Estimated key Impacts of Proceeding with the Moorebank IMT Project

Item	Estimated impact of proceeding with Moorebank
Net gain of project benefits to NSW economy	• $950 million net project benefits (2010/11 dollars, discounted).
Lower truck volumes at Port Botany	• From 2019/20, truck volumes would be 3,300 vehicles per day lower.
For every 1 million TEU containers transported by rail instead of road for IMEX traffic	• 3.5 million litres of fuel would not be required to be consumed. • 9,500 tonnes of CO2-e greenhouse gases would not be emitted.
Fuel savings and greenhouse gas reductions for the interstate facility (in the year 2029)	• 4.1 million litres of fuel would not be required to be consumed. • 11,000 tonnes of CO2-e greenhouse gases would not be emitted.
Job impact	• 1,650 jobs realised during the construction of the IMEX terminal and 975 jobs realised for the interstate terminal.

Source: Deloitte, [redacted]

Comparison with benchmark projects

The BCR for the Moorebank IMT Project may be compared with other road, rail, passenger and freight projects submitted to Infrastructure Australia. The Moorebank IMT Project, with a BCR of 1.72, is one of the better performing projects and demonstrates its strong economic justification. Table 1.11 compares the Moorebank IMT Project to others submitted to Infrastructure Australia.

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Additional economic analysis

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IMEX only terminal

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Interstate only terminal

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The modelling estimates that the Project would lead to an increase in regional employment over the construction phase of approximately 1,650 full time staff during Stage 1 (IMEX terminal and warehousing), and 975 staff during Stage 2 (Interstate terminal). The operation of both terminals, together with warehousing, could see an additional 1,700 people being employed in the region.

The Project would generate substantial economic, social and environmental benefits

- The Moorebank IMT has positive economic benefits of almost $2.3 billion and achieves a BCR of 1.72. This compares favourably with a range of other transport-related projects submitted to Infrastructure Australia.
- The range of economic, social and environmental benefits includes:
  - Reduction in operating costs.
  - Reduction in road congestion, damage and accident costs.
  - Reduction in noise, greenhouse gas emissions and other air pollution.
  - Improved freight service reliability and availability.
- The Project would also provide a major boost to the economy of South-West Sydney. Approximately 1,650 full time staff are expected to be employed during the construction of the IMEX terminal and warehousing. The operation of both terminals, together with warehousing, could see an additional 1,700 people being employed in the region.

1.7 What is the cost to the Government?

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Capital costs

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1.8 What financing and commercial structure is most suitable for the Project?

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1.10 What interaction is required with the NSW Government, ARTC and other stakeholders?

Continued engagement and collaboration is necessary between the Commonwealth, NSW Government, ARTC, community stakeholders and commercial stakeholders to manage issues which could have a material impact on the Moorebank IMT Project.

Stakeholders have been grouped into three broad categories – Community, Government and Commercial. The stakeholders that the Project Team has engaged with, and would continue to engage with, is summarised in Table 1.28.

Table 1.28 – Moorebank IMT – Stakeholder Categories

Community Stakeholders	Government Stakeholders	Commercial Stakeholders
• Local residents • Community Groups – both local and broader Sydney • Academics and	• Federal Government • NSW Government • Local Government	• Rail Logistics and IMT Operators • Port Operators

Table 1.28 – Moorebank IMT – Stakeholder Categories

Community Stakeholders	Government Stakeholders	Commercial Stakeholders
Commentators • Unions • Local Business Groups • Professional Associations and Peak Bodies • Political Representatives		• Road Operators • Freight Forwarders and Distribution Centre Operators • Distribution Centre Cornerstone Customers • Financial Advisers • Financiers

Source: KGA

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1.11 What are the key activities required to deliver the proposed IMT?

Detailed consideration has been given to the activities that would be required to implement the Moorebank IMT Project should approval to proceed be obtained from the Commonwealth

Government. The phases and tasks to be undertaken are summarised in Table 1.29. The Transition Phase along with aspects of the Pre-Procurement Phase could be undertaken through the MPO. The tasks would need to be evaluated and refined following the establishment of the GBE.

Table 1.29 – Key implementation phases, tasks, key milestones and indicative dates

Phases	Tasks	Key Milestones
Transition Phase (January 2012 to May 2012): Activities during this phase relate to the collection of information to assist the Government decision process regarding a Moorebank IMT.	• Recommendation to Government. • Ongoing engagement with the NSW Government, ARTC and other stakeholders. • Progress work on the EIS. • Preliminary high-level planning for the potential establishment of the GBE and land lease for the IMT site. • Community and stakeholder liaison. • Liaison with Defence and the MUR Project Team.	• Government decision (May 2012).
Phase One - Pre - Procurement (May 2012 to December 2012): The focus of activities during this phase relates to NSW Engagement, MUR liaison and the establishment of the GBE.	• Continue NSW Government and ARTC engagement. • Continue community and commercial stakeholder engagement. • Determine the terms and conditions for the land lease. • Establish the GBE. • MUR engagement. • Plan the implementation process between GBE and MPO.	• NSW Government and ARTC engagement (2012).
Phase Two - Procurement Planning (February 2013 to October 2013): During this phase the GBE would focus on activities that relate to the procurement planning and progressing stakeholder engagement.	• Conducting a procurement and packaging study. • Transition from MPO to GBE. • GBE to confirm design and commercial model. • Preparation of procurement documentation. • Rail accreditation. • NSW Government engagement. • MUR engagement. • Engagement with ARTC in regards to the spur line and access.	• Transition from MPO to GBE (January to July 2013).
Phase Three - Procurement Process (August 2013 to July 2014): During this phase the GBE would focus on	• Managing the procurement process for the IMEX terminal. • Managing the procurement process for the warehousing. • Commence GBE reporting to the DoFD	• The procurement process (commences July 2013). • Contractual close

Table 1.29 – Key implementation phases, tasks, key milestones and indicative dates

Phases	Tasks	Key Milestones
activities that relate to the procurement process for the IMEX and warehousing.	and the DoIT.	of IMEX and warehousing contracts (July 2014).
Phase Four - Construction (August 2014 to June 2017): During this phase the GBE would focus on activities that relate to the construction process for the IMEX and commercial development (warehousing).	• Oversight of the construction process of the IMEX terminal. • Oversight of the warehousing construction process. • ARTC engagement. • MUR engagement.	• Defence intends to vacate the Moorebank IMT by December 2014, with final contractual complete of the MUR delivery phase works anticipated by October 2015. • Construction commences (July 2015).
Phase Five - Commencement of Operation (July 2017): During this phase the GBE would focus on activities that relate to the operations process.	• Management of the IMEX and warehousing site. • GBE reporting to the DoFD and the DoIT. • Ongoing analysis of the requirements for an Interstate Terminal on the site (reporting on the policy requirements and demand forecasts).	• Commencement of IMEX terminal and warehousing operations (July 2017).
Source: KPMG		

1.12 Does the proposal for the Moorebank IMT contained in the DBC address the Commonwealth's objectives for the Project?

The Moorebank IMT has an important long-term role in the freight supply chain to support national productivity, in particular, enabling more efficient use of existing rail and port assets, reducing business costs and creating jobs in South-West Sydney. Table 1.30 illustrates that the proposed Moorebank IMT Project (i.e. proposed concept design and commercial structures and arrangements) meets the Commonwealth's Project objectives:

Table 1.30 – Evaluation of the proposed solution against the Commonwealth's Project objectives

Objectives	Evaluation
1. Boost national productivity over the long-term through improved freight network capacity and rail utilisation.	The economic evaluation for the Project indicates that it achieves a BCR of 1.72, which compared with other recent transport projects ranks as one of the better performing projects. The demand analysis indicates strong available demand for the IMEX terminal [redacted] This demand is dependent on future trends in factors such as the price of oil, road user charges, exchange rates, the carbon price and labour costs. The Project would contribute to a reduction in rail freight costs and allow more freight to be transported by rail. This would generate a number of benefits for national productivity including savings in transport operating costs, improved freight service reliability and availability, reductions in road congestion, damage and accident costs.
2. Create a flexible and commercially viable facility and enable open access for rail operators and other terminal users.	It is anticipated that a GBE Landlord would be established to oversee the development of the Project to ensure a commercial outcome is achieved. The Project is proposed to be developed in three stages (IMEX, warehousing and Interstate) to ensure that the construction of Interstate infrastructure and associated warehouse capacity is flexible and timed to meet market demand and policy considerations. [redacted] The solution would provide open access to the Moorebank IMT by rail operators and users, which would encourage competition.
3. Minimises impact on Defence's operational capability during the relocation of Defence facilities from the Moorebank site.	The proposed delivery solution results in no intrusive impacts to DoD's activities on the SME site as the Project will commence only when the site is completely vacated. The Project would also result in the collocation of the SME with the other Defence units on the Holsworthy Barracks.
4. Attract employment and investment to South-West Sydney.	Economic modelling has been carried out to estimate the impact of the Project on the greater Sydney region. During the construction period, the Project is expected to result in an average annual increase to Gross Regional Product of $135 million p.a. for the IMEX and $78 million p.a. for the Interstate. The modelling estimates that the Project would lead to an increase in regional employment over the construction phase of approximately 1,650 full time staff during Stage 1 and approximately 975 full time staff during Stage 2. The operation of both terminals together with warehousing could see an additional

Table 1.30 – Evaluation of the proposed solution against the Commonwealth's Project objectives

Objectives	Evaluation
	1,700 people being employed in the region.
5. Achieve sound environmental and social outcomes that are considerate of community views.	The environmental and social benefits that an IMT at Moorebank would deliver are derived from a range of sources: • The community would benefit from a reduction in road congestion and road accident costs. For example without the Moorebank IMT from 2020 onwards truck volumes would be 3,300 vehicles per day higher. • The Moorebank IMT would bring about a reduction in environmental costs associated with road transport – in particular a reduction in noise, greenhouse gas emissions and other air pollution. For example, the Moorebank IMT would save 9,500 tonnes of Co2-e greenhouse gases for every 1 million TEU containers that are transported by rail instead of road for IMEX traffic. • Journey reliability benefits – this social benefit reflects the savings achieved through more reliable road travel times. • Road damage cost savings – these social benefits measure the cost savings derived from less road damage caused by freight trucks. • The local community would benefit through the creation of 1,650 full time jobs during Stage 1 and approximately 975 full time jobs during Stage 2construction of the interstate terminal. The operation of both terminals together with warehousing could see an additional 1,700 people being employed in the region. • Overall, the total Project benefits over the 30 year evaluation period are valued at approximately $10 billion in nominal dollars or $2.3 billion in present value terms.
6. Optimise value for money for the Commonwealth having regard to other stated Project objectives.	The proposed procurement approach was designed to achieve value for money. The Project would facilitate the modal shift from road to rail, would further enhance the Commonwealth's investment in rail infrastructure, would assist in reducing road congestion and road accidents and would assist in raising Port Botany's planning cap. Investment in the Project would also provide a major boost to the economy of South West Sydney by creating employment in the region. [redacted] There would be minimal impact to DoD's operational capability during the relocation of DoD's facilities from the Moorebank site. The Project would also provide significant economic, social and environmental benefits. [redacted]

Source: KPMG

2 Introduction

The Final Scoping Study of the Moorebank IMT was completed in February 2011 and provided analysis of the Project's technical, financial, economic, legal, social and environmental feasibility. The purpose of the DBC is to determine the feasibility of an IMT located on the SME site at Moorebank and to support further consideration and decisions by the Commonwealth to allocate funding to the Project. The DBC also provides advice on procurement and implementation, should the Commonwealth decide to proceed with the Project. The DBC builds on earlier works, the results of which are contained in the Final Scoping Study and further refines and optimises a preferred technical solution, including analysis of more detailed cost information, as well as evaluating a range of commercial ownership structures and procurement options.

This section provides an overview of the proposed Project and defines the purpose of the DBC. In particular this section provides information on the following:

- An overview of the proposed Project.
- Objectives of the Project.
- Description of the Project phases.
- Related Projects.
- Structure of the DBC.

2.1 Project overview

The Moorebank site, located in South-West Sydney and currently occupied by the SME and a number of other ADF units, is being considered as a future site for an IMT that is planned to handle container traffic from Port Botany and interstate rail traffic.

The Moorebank IMT would provide an essential element of an integrated transport solution for the movement of freight between Port Botany and the Sydney basin and regional areas as well as providing a key link in the interstate freight network. The Moorebank IMT would facilitate the greater use of rail and reduce congestion at Port Botany and on local roads caused by the continuing high growth in container volumes and, in the process, facilitate an increase to the planning cap on through put at Port Botany. The Moorebank IMT would also enhance the competitiveness of an interstate rail freight network and reduce the adverse environmental and social impacts of a continuing increase in road freight. The project would support national productivity, reduce business costs and urban traffic congestion through more efficient distribution of containers by rail, as well as creating jobs in South-West Sydney.

The proposed site for the Moorebank IMT is comprised mainly of Commonwealth owned land currently occupied by the SME and a number of other ADF units. Under Commonwealth direction, the DoD is developing complementary plans to relocate the SME and Moorebank based units to Holsworthy barracks, which would enable an intermodal project to proceed if approved by the Commonwealth. The location of the site is ideal due to its proximity to key transport corridors including the planned SSFL, the M5 and M7 Motorways and the Hume Highway.

The Project would provide significant benefits to the NSW Government, ARTC and other stakeholders, but also depends on infrastructure managed by these bodies. The MPO has developed an strategy to engage with these stakeholders on a range of matters relating to the Project [redacted] Engagement with ARTC would also be a key component of the implementation of the Project.

2.2 Project objectives

Six long-term objectives have been developed that summarise the intended impacts of the Project on the economy, environment and community and establish the broad strategic direction of the development of the DBC.

The Australian Government has endorsed the following six objectives for the Project which have been used to guide the preparation of the DBC.

1. Boost national productivity over the long term through improved freight network capacity and rail utilisation.
2. Create a flexible and commercially viable facility and enable open access for rail operators and other terminal users.
3. Minimise the impact on Defence's operational capability during the relocation of Defence facilities from the Moorebank site.
4. Attract employment and investment to South-West 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 other stated Project objectives.

2.3 Moorebank IMT project phases

In May 2010, the Australian Government allocated $71 million in funding for a feasibility study for the development of an intermodal terminal facility at Moorebank in Sydney of the Moorebank site and a complementary study for the move of the SME and other Defence units from the SME site to Holsworthy. The Moorebank Project Office, an interagency taskforce within the Department of Finance comprising of representatives from Finance, Infrastructure and Transport and Defence was established to prepare the study.

In September 2010, a group of advisers led by KPMG was appointed to assist the MPO in undertaking a Scoping Study and DBC. Advisers appointed included the Lead Adviser (KPMG, supported by Parsons Brinckerhoff and Deloitte), Legal Adviser (Blake Dawson), Communications Adviser (KGA), Communications Research Adviser (GA Research). The Project comprises three discrete phases, with the Lead Adviser appointed for Phase 1 and 2.

In March 2011, the Final Scoping Study was provided to the Commonwealth. The Final Scoping Study included:

- Demand projections for an IMT on the Moorebank site.
- A number of feasible technical options.

- An analysis of the financial viability of the Project.
- An analysis of the affordability and economic impact of each technical option.
- An analysis of the potential commercial ownership structures and procurement options.
- Detailing of the requirements for environmental and planning approvals.
- An identification of Project risks.

The findings of the Final Scoping Study indicated that an IMT at Moorebank would have a positive impact on national productivity and provide long term public benefits.

In June 2011 the Commonwealth agreed to proceed to the DBC phase of the study. The DBC contains a more detailed analysis all aspects of the proposed Project. It further progresses the commercial viability assessment of the Project, and provides recommendations in relation to the development of a functional and concept design (including design and performance specifications). The DBC also refines recommendations for ownership, funding, construction and operation of the Project.

Phase 3, the implementation phase of the Project, would involve an approach to the market for financing, construction and operation of the Moorebank IMT, following Commonwealth consideration and approval of the DBC.

2.4 Related projects

The Moorebank IMT Project is separate to, but has important inter-dependencies with, a number of major projects that are underway or planned by the Commonwealth, the NSW Government and private sector entities. A number of these projects are currently being developed in the industry and may affect the Moorebank IMT. These related projects have been considered in the DBC analysis and are summarised in Table 2.1:

Table 2.1 – Moorebank IMT – Summary of Related Projects

Project	Project description	Relationship with Moorebank	Indicative project date
Port Botany Expansion	SPC is currently increasing the capacity of Port Botany through the construction of a third terminal to be operated by Hutchison Port Holdings	This Project would increase Port Botany's throughput and would provide a source of IMEX traffic for the Moorebank IMT.	SPC anticipates the expansion to be completed by late 2012.

Table 2.1 – Moorebank IMT – Summary of Related Projects

Project	Project description	Relationship with Moorebank	Indicative project date
Refinancing of Port Botany	The NSW Government has announced plans to refinance state owned assets at Port Botany in order to fund priority infrastructure projects.	Port Botany and the Moorebank IMT have important interdependencies in that Moorebank is expected to facilitate a more efficient transfer of freight in Sydney. [redacted]	It is anticipated that the Port Botany assets will be refinanced in the first half of 2013.
Port Botany Improvement Strategy (PBLIS)	PBLIS key objective is to improve the competitive access and service arrangements of container movements between stevedores and transport carriers.	PBLIS is a critical component to the continued future success of operations at Port Botany and therefore is important to the overall viability of the Moorebank Project.	-
Enfield Intermodal Logistics Centre	Hutchinson Port Holding has been appointed to develop, operate and maintain the IMT at Enfield.	Enfield is planned have a maximum capacity of 300,000 TEU p.a, [redacted]	It is anticipated that the Enfield IMT would be operating by late 2012.
Sydney Southern freight Line (SSFL)	ARTC is currently developing the SSFL.	The SSFL is in close proximity to the Moorebank site. Connection to the SSFL would provide rail access to Port Botany to and from the Moorebank IMT.	ARTC anticipates completion of the SSFL in December 2012.
Port Botany Freight Line Upgrade	The Port Botany Freight Line is a dedicated freight railway between Port Botany and Enfield/Chullora in central-west Sydney.	All IMEX freight going to/from Moorebank IMT would use the Port Botany Freight Line.	-

Table 2.1 – Moorebank IMT – Summary of Related Projects

Project	Project description	Relationship with Moorebank	Indicative project date
Metropolitan Freight Network (MFN)	The MFN consists of dedicated freight lines through metropolitan Sydney.	All IMEX freight going to/from Moorebank IMT would use the MFN.	The MFN is currently managed by RailCorp but is expected to be transferred under a long term licence arrangement to the ARTC. ARTC already manages some parts of the MFN, including the final link into Port Botany through Botany Yards.
Moorebank Relocation Unit (MUR)	DoD is currently completing a Business Case to investigate the relocation of the SME, and other ADF Units on the Moorebank site to Holsworthy Barracks.	This project would provide land for the development of the Moorebank IMT.	DoD anticipates the MUR Project could be completed by early 2015, however the MUR Project will not be complete at Holsworthy until mid 2015.
Sydney Intermodal Terminal Alliance (SIMTA) IMT	SIMTA proposes is to develop a terminal on the east side of Moorebank Avenue, on land occupied by the Defence National Storage and Distribution Centre (DNSDC) [redacted] t is planned to have a capacity of up to 1 million TEU p.a.	[redacted]	[redacted]

[7] SIMTA, Referral of proposed action to EPBC, December 2011, p.5.

Table 2.1 – Moorebank IMT – Summary of Related Projects

Project	Project description	Relationship with Moorebank	Indicative project date
Defence Logistic Transformation Program (DLTP)	DoD, under the DLTP Project, is proposing to move its current storage and distribution facility and establish a new consolidated facility at West Wattle Grove.	The timing of DoD moving from the SIMTA site to the West Wattle Grove site would influence the timing of SIMTA's proposed IMT construction and operation start dates.	DoD is currently analysing the requirements associated with the DLTP move to West Wattle Grove.

Source: SPC, ARTC, SIMTA and DoD correspondence.

2.5 Critical dependencies

The success of the Project is dependent on a number of factors:

The MUR project – DoD is currently completing a Business Case to investigate the relocation of the SME and other ADF Units on the Moorebank site to Holsworthy Barracks should the Government decide to progress with an IMT at Moorebank. [redacted]

2.6 Structure of the DBC

The DBC seeks to answers the following key questions relating to the Project:

- *Does Sydney require additional IMT capacity?* The need for additional IMT capacity is discussed in Section 3 which considers the growth in IMEX and interstate freight markets, the planning limit at Port Botany, the limitations of the current IMT network and the range

of adverse environmental and social impacts of continuing to expand the road freight transport.

- *Is Moorebank a suitable site for an IMT?* The rationale for focusing on the Moorebank site is discussed in Section 3 which recognises the Government's commitment to the Project, the inherent advantages of the site, the recommendations of previous studies and the alignment of the Project with relevant Commonwealth and State policies.
- *Is there demand for an IMT at Moorebank?* Section 4 sets out the demand projections for the recommended technical option. *What is the technical proposal for the Moorebank IMT?* Section 5 describes the technical proposal and conceptual design of the IMT. The demand, operational, environmental and technical assumptions that have governed the development of the technical proposal are also addressed.
- *What economic, social and environmental benefits would the Project deliver?* The economic and environmental benefits of the Project are discussed in Sections 6 and 7. Section 6 outlines the environmental and planning approvals necessary. Section 7 discusses the potential economic benefits of the Project. *What is the cost to the Government?* The financial viability of the proposed option is examined in Section 8 to determine the potential Government financial contribution that would be required to support private sector delivery. This section also considers the potential annual budget impact of the Project.
- *What is the commercial structure proposed for the Project?* Section 9 outlines the assumptions that have governed the development of the proposed commercial and ownership structure of the Project as well as the recommended approach of procurement of the related infrastructure and terminal operations.
- *What are the Project risks and how are they to be managed?* Section 10 summarises key project and process risks associated with the Project, as well as approaches to managing these. The legal aspects of the project have been addressed in Section 11.
- *What interaction is required with the NSW Government, ARTC and other stakeholders?* The stakeholder consultation strategy is discussed in Section 12. [redacted]
- *What are the key activities required to deliver the proposed IMT?* Section 14 summarises the project management plan and key activities required to deliver the Project.
- *Does the recommended solution address the Commonwealth's objectives for the Project?* Section 15 presents an analysis of whether recommendations contained in the DBC would enable the Project to meet the Commonwealth's objectives for the Project.

3 The need for an IMT at Moorebank

This section examines the need for additional IMT capacity in Sydney and, in particular, seeks to address two key questions:

- *What are the main freight logistics problems that the Commonwealth is seeking to address with the Moorebank IMT project?*
- *What are the main causes of these problems (recognising that an understanding of the causes is essential to formulating effective solutions)?*

The section commences with a brief outline of the Commonwealth's freight strategy which recognises that long term planning for infrastructure capacity is critical for achieving an efficient and sustainable freight transport system. Key challenges to achieving these objectives are then identified in two important container freight markets:

- The IMEX container market, where rapid growth in container volumes, combined with constraints affecting Port Botany, threaten to create a bottleneck which would add costs to the entire supply chain.
- The interstate container market, where Australia needs to take advantage of the substantial operating cost savings and other environmental benefits which can be achieved through greater use of rail for long distance freight transport.

Some of the main drivers of the freight problem in the Sydney IMEX market include:

- The rapid growth in container freight traffic.
- The planning limit on throughput at Port Botany associated with managing the adverse impacts of increasing road transport of IMEX container freight.
- The existing and future road congestion around the port and on the M5 Motorway.
- The limitations of current IMTs to accommodate the expected growth in container volumes.

The problems of underutilisation of capacity in the interstate market reflect the fact that interstate rail is a more costly and less reliable alternative than road transport for the majority of users. While there are a range of causes, including road users not incurring the true cost of the investment in the national highway network, it is also evident that further investment is required in the rail network to make it effective and competitive with road transport.

3.1 Australian Government Freight Strategy

Infrastructure Australia has recently released a draft National Freight Strategy (February 2011),[8] as one of the seven national infrastructure priorities identified by Infrastructure Australia. The National Freight Strategy would seek to ensure that rail and road freight infrastructure planning and investment is nationally coordinated, and operates as an integrated freight network across Australia.

The draft strategy proposes the following objective for a national land network strategy:

[8]Infrastructure Australia, National Land Freight Strategy Discussion Paper, February 2011, http://www.infrastructureaustralia.gov.au/national_freight/files/NLFS_220211.pdf

> *"To improve the efficiency of freight movements across infrastructure networks, to minimise externalities associated with such freight movements and to influence policy making in areas relevant to freight."*

The draft Strategy proposes a new national land freight network to allow for interoperability of the most efficient freight vehicles between principal freight nodes. The strategy includes the Moorebank IMT as one of nine major IMT/freight clusters across Australia and recommends that the Moorebank IMT Project be progressed as a priority.

The Nation Building Program has also injected substantial funds into ARTC to upgrade the interstate rail networks, including the North-South investment strategy and SSFL which are major components affecting NSW.

3.2 The need for additional IMT capacity in the Sydney IMEX market

The Sydney IMEX container freight market is almost entirely dependent on Port Botany which is the State's only container port. Port Botany is currently handling just over two million TEU p.a. and, at current rates of growth, is expected to reach 3.2 million TEU p.a. between 2017 and 2021 when its throughput would be capped in accordance with the conditions of its current planning approval. Relieving this cap is both a driver of new container freight solutions and a manifestation of the underlying problems since it reflects an attempt to manage the impacts of exponential growth in container volumes on congestion in and around the port. Failure to address these problems would see Port Botany become a bottleneck and require new container port capacity at Newcastle or Port Kembla, which would add costs to the entire supply chain.

The following sub-sections consider the main drivers that are contributing to this emerging threat to the efficient transport of IMEX freight and which point to the need for additional IMT capacity in Sydney.

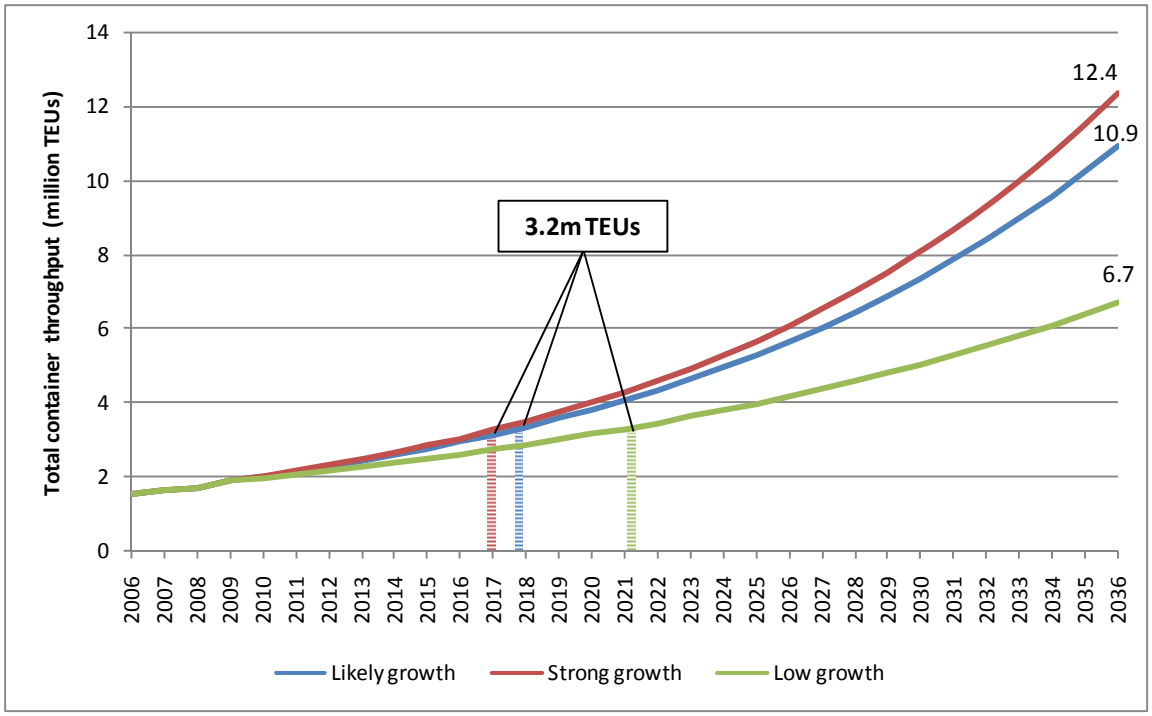
3.2.1 Projected growth in IMEX freight volumes

Population, employment in the freight and warehousing sector and economic growth is expected to continue to generate increases in freight generation and consumption activities in the metropolitan area in coming years, especially for the import market. For example, the population in South-West Sydney – which would be largely served by a Moorebank freight terminal - is expected to increase by 113% between 2006 and 2036. Population increases in Western Sydney as a whole are expected to comprise almost half of the total population increase within the Sydney metropolitan over this period. In addition, the South-West region of Sydney is expected to have significant growth in freight transport and warehousing employment[9] when compared against the rest of Sydney, further driving the growth of freight generation and consumption in the area.

Historical growth of containerised freight handled at Port Botany has been around 7% p.a. over the past five years, and has exceeded earlier forecast.[10] Comparable growth rates are expected to continue into the foreseeable future. Graph 3.1 shows three growth scenarios for containerised freight in NSW[11] as projected by the SPC and indicates a "likely" traffic level of 10.9 million TEU p.a. by 2036.

[9] NSW Bureau of Transport Statistics Forecasts
[10] Sydney Ports Corporation (2009) Trade Report 2008/09.
[11] Based on historic growth rates for Port Botany

Graph 3.1 – Port Botany's forecast container demand[12]



Source: Sydney Ports Corporation

3.2.2 Implications of the current and future "planning cap" at Port Botany

The current planning cap of 3.2 million TEU p.a. applying to Port Botany does not reflect the practical capacity of the port but represents a nominal volume allocated across existing stevedore operations at the time (i.e. 1.6 million TEU for two terminals). With the entrance of a new stevedore (Hutchison Port Holdings) in the market, SPC has begun the process to have the planning approval limit raised. [redacted] In particular, as discussed below, road congestion at Port Botany is expected to become a more significant problem in coming years associated with strong growth in the freight task, landside transport constraints at the port, growth of passenger traffic and the traffic associated with other major transport generators in the immediate area (especially Sydney Airport). As a consequence, ensuring that rail provides a cost effective option for moving containers within the Sydney metropolitan area would be important for optimising future freight movements through Port Botany.

[redacted]

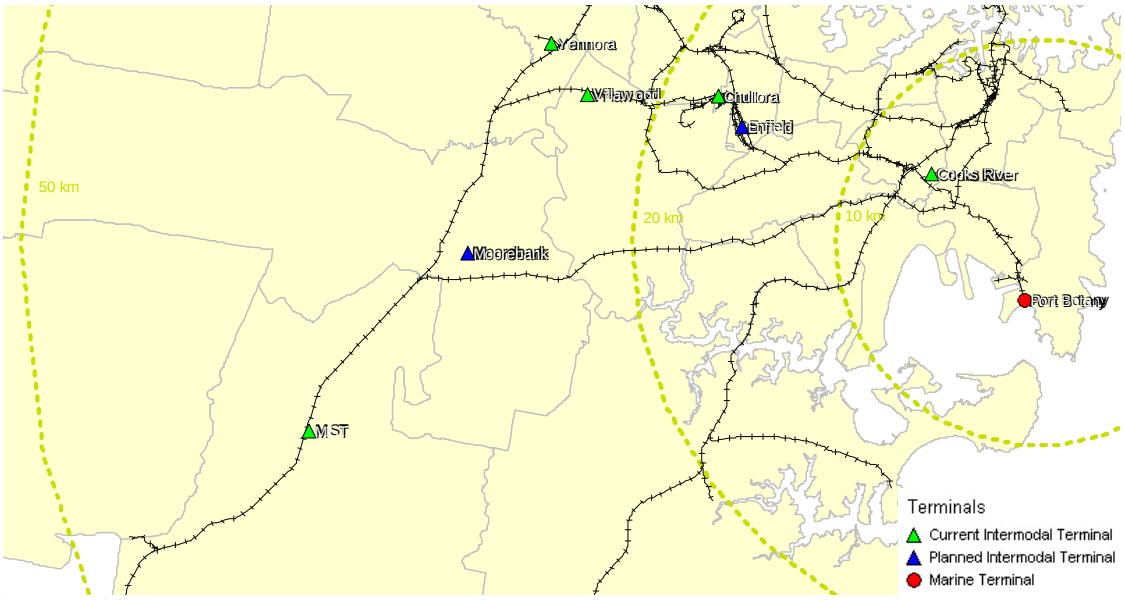
[12] Figures provided by Sydney Ports Corporation.

[redacted]

3.2.3 Current terminal network and capacity constraints

The IMT network in NSW suffers from a number of capacity limitations, reflecting, in part, its evolution from facilities that were originally designed for other purposes. Sydney, in particular, has a legacy of sites that originated as rail sidings connecting with industrial and manufacturing facilities which over time evolved to handle containerised freight. As a consequence, Sydney is unique relative to other Australian capital cities in that it is made up of a greater number of smaller terminals rather than one dominant terminal.

Illustration 3.2 – NSW IMT Network[13]



Source: KGA

The history and fragmented nature of Sydney's IMT infrastructure gives rise to a number of issues which adversely affect the capacity and effectiveness of the sector:

- **Limited space** – the majority of sites have restricted space available with short rail sidings, and, as such, have limited potential to increase capacity. [redacted]
- **Accessibility** – Accessibility to rail paths is a major constraint due to a number of terminals being located on the shared passenger/freight network. Passenger services have exclusive rights to use the CityRail network during peak hours, therefore restricting capacity for the freight industry. Once complete, the SSFL would provide a dedicated freight line between

[13] Booz and Co (2009) Towards Co-modalism: Capacity Constraints & Supply Chain Performance – Intermodal (Working Paper 1, Appendix 2) Report Prepared for the National Transport Commission.

[redacted]

Macarthur and Sefton Park where it connects to the Port Botany Freight Line. Access to the SSFL would be a necessary capability for current and future terminals.

- **Barriers to entry** – Significant barriers to entry and expansion in the intermodal container market exist. It is difficult to finding suitable land close to market, and if found, the capital costs of establishing a new IMT relative to potential unit operating revenues can be commercially prohibitive, particularly in the interstate sector. For new entrants, competition from existing vertically integrated operators is significant.
- **Proximity to market** – Urban growth centres in the South-West and the North-West of Sydney are planned within the NSW Government's Metropolitan Strategy for Sydney. Meeting the needs of these population and new employment centres with Sydney's ageing legacy network of IMTs would be an increasing challenge in the future.

[14] Deloitte Estimates

Table 3.4 – Summary of current IMTs in the Sydney Greater Metropolitan Area[15]

Facility	Ownership & operator	Market	[redacted]	Estimated current throughput (TEU)	Sidings (m)	Max. train length (m)
Current						
Chullora	Pacific National	Interstate Regional	[redacted]	300,000	450 x 4	1,800
Yennora	Stockland (Owner) POTA & CRT (Operators)	Interstate Import/ Export	[redacted]	115,000	530 x 2 250-480 x 3	800-900
MIST (Minto)	MIST Pty Ltd	IMEX	[redacted]	45,000	390 x 1 650 x 1 900 x 1	900
Villawood	Toll	IMEX	[redacted]	15,000-20,000	285 x 2 350 x 1	900
Cooks River (St Peters)	MCS Transport	Empty container storage	[redacted]	150,000	500 x 6	600
Under development						
Enfield ILC	TBC	IMEX	[redacted]	-	1,000 x 1	1,000

Source: Deloitte Analysis

3.2.4 Congestion at Port Botany

The growth of containerised freight handled at Port Botany is expected to have substantial effects on the surrounding landside infrastructure. For example, even if the State Government's target of doubling the rail mode share target can be met, it has been estimated that truck traffic at Port Botany would increase by over 200% by 2030.

The increase in truck volumes at the port could also increase waiting times and delays for trucks which would reduce the overall productivity of the industry. SPC has recently introduced a number of measures to reduce delays through its PBLIS. However, with ongoing growth in traffic at the port, the effectiveness of these improvements may be reduced over time.

Port Botany is located close to major commuter routes and Sydney Airport, both of which are expected to experience significant growth in traffic levels and passenger numbers, respectively. Sydney Airport moved 33 million passengers in 2009 and is forecasting an average growth rate

[15] Meyrick (2006) National Intermodal Terminal Study.
[redacted]
Sydney Ports Corporation (2009) Intermodal Terminal Guide Metropolitan & Regional NSW.
National Transport Commission (2008) Capacity Constraints & Supply Chains Performance – Intermodal.

of 4.2% p.a. until 2029.[16] [redacted] estimated that there were 15,000 landside person trips to the airport in 2003 and Sydney Airport has forecast that an additional 31,500 vehicles per hour during the morning period could be expected by 2023/24.[17] This growth would obviously exacerbate road congestion within the region.

3.2.5 Freight impacts on the M5 Motorway

The M5 Motorway is a main corridor for both passenger and commercial road movements from Sydney to the South-West and beyond. The corridor, and particularly the M5 East Tunnel, is highly congested during peak periods and experiences heavy traffic levels throughout the day. The average morning peak speed in 2006 was 44km/h which decreased to 35km/h in 2010.[18]

The proportion of trucks to cars is much higher on the M5 compared to most other arterial and toll roads.[19] Trucks aggravate congestion on the M5 because they consume more road space relative to cars[20] and are slower and less manoeuvrable. This causes particular problems on the steep gradients out of the westbound M5 East tunnel. In addition, trucks play a significant role in emissions and air quality problems associated with the M5 tunnel.

If the growth in port volumes is moved solely by road, it could specifically impact the M5 East Tunnel with a potential growth in truck volumes on the corridor by up to 7.5% p.a. on average between 2010 and 2030 as more freight generation and consumption activities are forecasted to shift to western Sydney.

Key findings:

Sydney's need for additional IMT infrastructure for the IMEX market is being driven by:

- Continued strong growth in IMEX freight volumes - Port Botany has experienced around 7% p.a. growth in freight volumes over the past five years and is expected to grow at 6.7% p.a. over the next 25 years.
- [redacted]
- The constrained capacity and effectiveness of the current IMT network due to the fragmented nature of current legacy assets, limited accessibility to rail paths shared with passenger rail, vertical integration at existing terminals, and limited proximity to urban growth areas.
- The heavy congestion that is already being experienced at Port Botany and on the M5 Motorway and would be aggravated by future growth in port volumes and associated truck movements.

[16] Sydney Airport Corporation (2009) Annual Report 2009.
[17] Sydney Airport Corporation (2006) Ground Travel Plan.
[18] NSW RTA (2010) Annual Speed and Traffic Volume Data in Sydney
[19] Private vehicles typically account for 70% of all trips in Sydney. See Centre for International Economics (2005) Sydney's transport infrastructure – The real economics Prepared for the Sydney Morning Herald
[20] A rigid truck is typically up to twice the length of a typical passenger vehicle, and articulated trucks up to three and a half times longer

3.3 The need for additional IMT capacity in the interstate freight market

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3.3.1 Building on the current investment in the rail network

Currently, interstate rail is a more costly and less reliable alternative than road transport for the majority of users, in particular on the North-South corridor of the eastern seaboard. This can be linked to a range of factors including the substantial improvements in road transport productivity in recent decades, the extensive upgrades to the interstate highway network and the fact that [redacted] At the same time, there has been under-investment in the rail network, further impairing its competitiveness with road transport.

ARTC has developed a number of long term strategies to facilitate the growth of freight on rail.[24] ARTC is predicting that rail mode share can be improved significantly as a result of infrastructure improvements to benefit rail reliability and transit times. This and other factors (service, cost, capacity, capability to cater to new entrants, longer services etc.) would contribute to future rail competitiveness within the interstate freight market. To take advantage of these track improvements, complementary investment in interstate IMT capacity is required. The Commonwealth considers the establishment of a large intermodal terminal on the SSFL to be a key component in supporting ARTC's North-South strategy to increase utilisation of the interstate rail network.

3.3.2 IMT capacity constraints

ARTC's standard gauge rail network links the mainland State capitals through key IMTs at Acacia Ridge in Brisbane, Chullora in Sydney, Dynon in Melbourne and Kewdale in Perth. Many of these and other regional IMTs were established by the former state-owned railways as a way to facilitate their freight operations. In today's terms, many of the sites can be considered small, outdated and very limited in their ability to efficiently handle large freight volumes. They therefore exhibit many of the IMT constraints noted above for Sydney's IMEX market in relation to accessibility and barriers to entry.

The draft National Freight Strategy recognises the critical role of IMTs in developing the national freight network and proposes major and new IMT/freight cluster sites in the cities of Melbourne (western interstate and Donnybrook), Sydney (Moorebank and Eastern Creek), Brisbane: south west (site to be identified), Perth (Kewdale/Forrestfield), and on sites to be identified at Gold Coast and Canberra.

3.3.3 Environmental and social impacts of road freight transport[25]

Freight transport provides important benefits to the economy and the broader community, but also generates potentially negative impacts on the environment and local communities. The impact of road freight is particularly significant as it produces a higher externality cost on a per tonne basis relative to rail and sea freight.[26] These costs are magnified for interstate freight given the long-distances involved in an Australian context and include the following impacts:

- Road transport is a major contributor of air pollution and greenhouse gas emissions which impose both short term (localised health impacts) and long term (global warming) external impacts on society.

[24] See ARTC North-South Corridor Strategy, Interstate and Hunter Valley Rail Infrastructure Strategy, Melbourne-Brisbane Inland Rail Alignment Study, Hunter Valley Corridor Capacity Strategy.
[25] Austroads (2000) Valuing Emissions and Other Externalities
[26] Austroads (2000) Valuing Emissions and Other Externalities.

- Trucks contribute to the number of road accidents and to the significant social and economic costs of fatalities and healthcare.
- Fuel consumption and waste generation (e.g. maintenance costs) for road vehicles relative to rail is considerably less efficient especially as travel distances and haulage increase.
- Congestion costs include time delays and the resulting additional emissions and wear and tear on road infrastructure.

These external costs of road transport can be mitigated by rail freight. However, without sufficient network and terminal capacity, much of the projected growth in freight is likely to be handled by road transport.

Key findings:

The need for additional IMT infrastructure in interstate markets is being driven by:

- The substantial benefits for national productivity that can be achieved through strategic investments such as Moorebank that help to make rail more cost effective and reliable relative to long-distance road transport.
- The constrained nature of the interstate IMT network which relies on legacy assets from previous government rail freight providers and limits efficiency and competition in the interstate freight market.
- The need to mitigate the environmental and social impacts of road freight including greater air pollution and greenhouse gas emissions, fuel consumption and waste generation, noise and vibration, time delays and other congestion costs, and fatalities from road accidents.

4 Forecast demand for an IMT at Moorebank

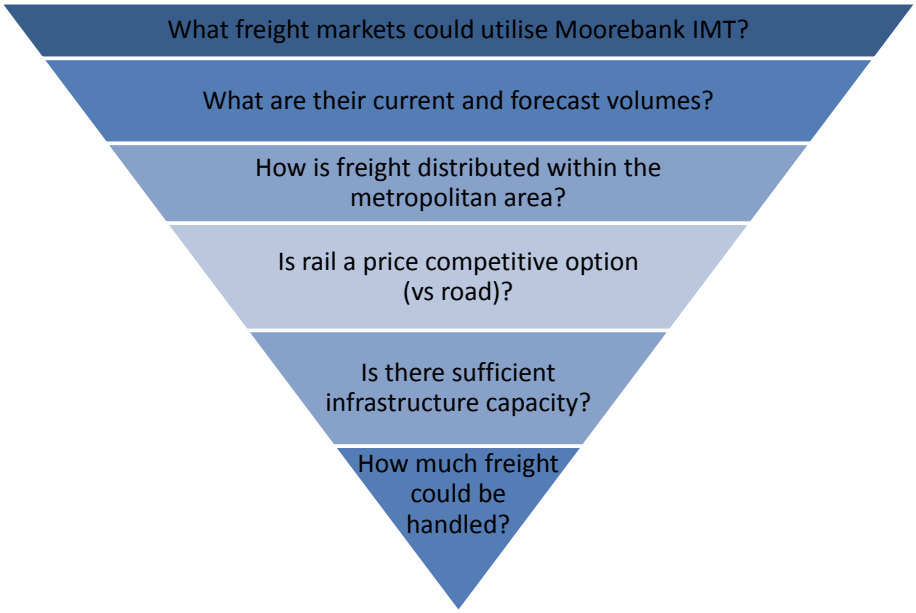
4.1 Introduction

The purpose of this section is to discuss potential demand for an IMT at Moorebank. The demand analysis sought to understand the following issues:

- The likely distribution of freight within the metropolitan area and the markets that could be served by an IMT at Moorebank.
- The level of pricing necessary for an IMT to be competitive against other transport options.
- The impact of other metropolitan freight terminals and network capacity on freight transported via an IMT at Moorebank.

The demand analysis has addressed a hierarchy of questions as shown in the following diagram, with each question being considered in the sections below. A more detailed discussion of the demand analysis including methodology and assumptions is provided in Appendix 1.

Diagram 4.1 Key questions considered in freight demand analysis



Source: Deloitte

4.2 What markets could utilise Moorebank IMT?

Work undertaken during the preparation of the Final Scoping Study concluded that containerised IMEX freight and interstate freight were the most feasible markets for an IMT at Moorebank. A number of other potential freight markets, such as bulk freight (bulk construction materials) and motor vehicles (imported via Port Kembla) were considered in the early stages of the project but were not considered to be practical options for a freight terminal at Moorebank, and were therefore not considered further in the analysis.

4.3 Current and forecast container freight volumes

4.3.1 IMEX freight

Current Market

Unlike a number of other Australian cities, Sydney is predominantly an importer of containerised freight. A wide range of commodities are imported into NSW via Port Botany, including manufactured products, machinery and transport equipment, chemicals, paper products and food and beverages.

Exports tend to be dominated by containerised grain, chemicals, and machinery and transport equipment which accounted for 30% of total exports in 2009/10. Export volumes tend to be variable as they can be influenced by seasonal factors such as rainfall and weather conditions.

Market growth expectations

4.3.2 Interstate freight

Current market

Sydney plays an integral role within the interstate freight network, both as a major market for cargo and as a hub of physical infrastructure linking markets in other states. Table 4.2 shows key inter-capital freight markets supported by IMTs within Sydney. Sydney-Perth freight movements have been separated into two separate sub-markets to account for varying train lengths and routes.

Rail mode share varies significantly by corridor. On the Sydney-Perth corridor, rail has a mode share of 80 per cent. On ‘short’ North-South routes such as Sydney-Melbourne and Sydney-Brisbane, rail mode share is much lower.

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Market growth expectations

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4.4 How is freight distributed within the metropolitan area?

4.4.1 Distribution of IMEX Freight

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4.4.2 Distribution of Interstate Freight

Interstate freight terminals generally serve much larger geographic areas compared to IMEX terminals. [redacted] Changes in whole journey costs and service parameters were assumed to play a more important role in local transport and delivery arrangements in the case of interstate freight.

[redacted]

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- Interstate terminals generally serve large geographic areas. The study assumes that a Moorebank IMT would have an interstate catchment equivalent to Chullora.

4.5 Mode choice decision making: Is rail a cost-effective option versus road?

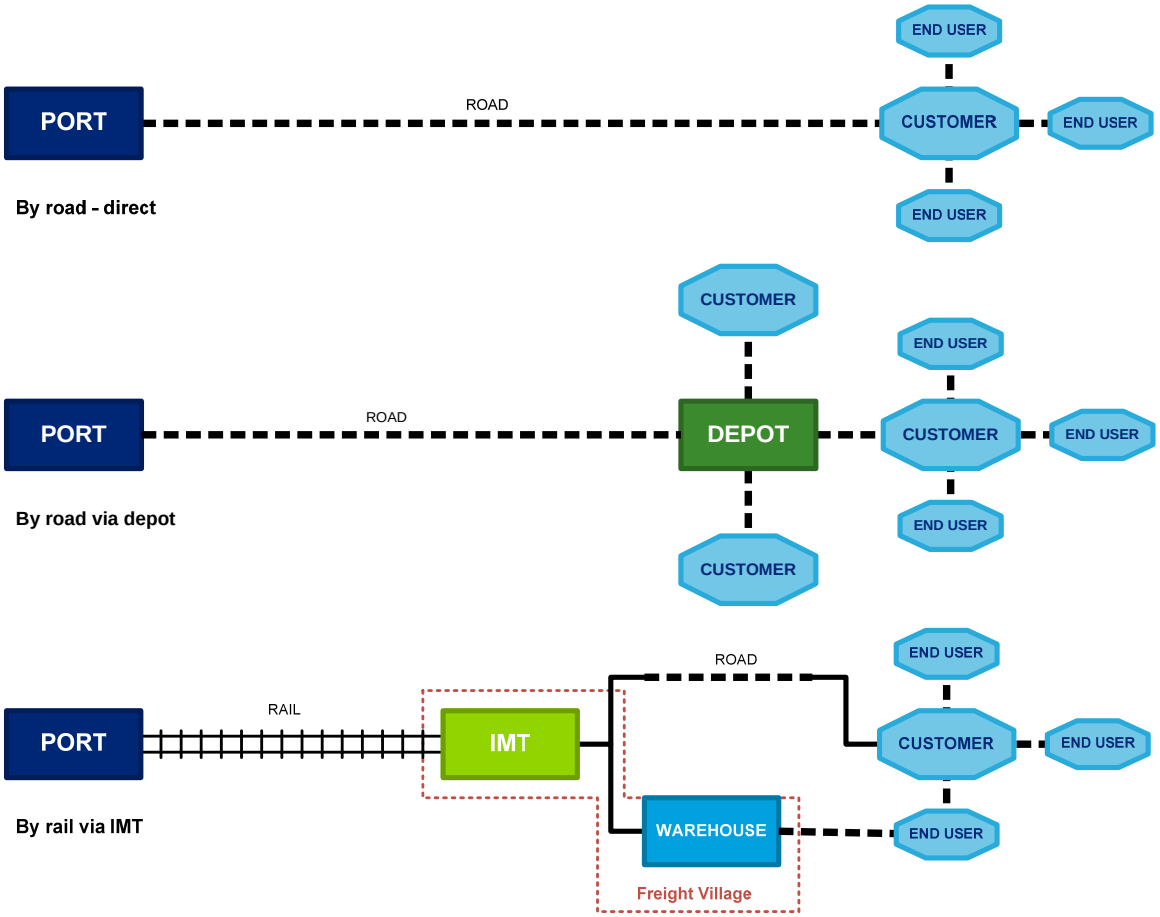
4.5.1 IMEX Freight

Supply chain options

Containers can move to and from ports in a variety of ways depending on whether the container is being imported or exported, the nature of the cargo itself, levels of time sensitivity and the size and/or location of the freight consignor (shipper) or consignee (customer). Consideration of these different transport options is important for understanding how an IMT at Moorebank could support supply chains within the metropolitan area.

The generic options for transport of containers to and from Port Botany are set out in Graph 4.5.

Graph 4.5 – Generic transport options for IMEX movements



Source: Deloitte Analysis

Drivers of mode choice decision making

The nature of secondary transport movements between an IMT and freight customers have a major bearing on the market that an IMT at Moorebank could capture. Freight distribution costs generally increase with greater handling requirements. Transporting containers via an IMT requires at least one additional 'lift' compared to a direct movement by road. Thus, the ability of an IMT to capture freight generally rests on the cost savings that can be achieved on the line haul transport component of the trip.

On-site warehousing plays an important role in determining rail's ability to compete with road because on-site customers do not incur the cost of a secondary road transport movement (although there may be a cost associated with internal site movements).

Broader changes in transport arrangements and supply chains over time would also impact on the commercial viability of an IMT at Moorebank. For example, increasing road congestion

within Port Botany or on the road network could result in an increase of freight movements occurring via a depot to enable better utilisation of trucks and other working capital.

Road/Rail cost analysis

Demand estimates for the IMEX market were informed by a comparison of road and rail costs for freight movements from Port Botany to the customer via Moorebank, other freight terminals and directly by road. A specialised road and rail operating model was developed to compare end to end supply chain costs (in the form of cost per TEU) for the different modes according to distances to each catchment area. Focusing on import freight movements, transport costs were compared according for the following options:

- Direct by road to customer.
- By road to customer via depot.
- By rail an IMT, then by road to customer.
- By rail an IMT, then by inter terminal vehicle to a customer offsite.

For each region, rail costs were calculated for (i) movements via Moorebank IMT and (ii) movements via the nearest other IMT.

It was assumed that IMEX freight volumes would necessitate the use of optimised rail configurations from the outset of developing the terminal, e.g. use of unit trains and improved loading and unloading to enable multiple cycles and reduced capital costs, and road pickup and delivery costs from the terminal to customers. Advice on rail cycle times and other technical assumptions underpinning the transport cost analysis was sought from specialist rail advisor Plateway.

Cost estimates incorporated tolls and other road-specific costs such as the Port Botany handling charges, linehaul, and pickup and delivery costs.[36] Lift charges and other related handling costs at Moorebank IMT were based on operating cost estimates developed by Parsons Brinckerhoff. As a simplifying assumption, ancillary charges such as those associated with refrigerated containers and dangerous goods,[37] were excluded from the cost analysis (i.e. it was assumed that ancillary charges would apply equally to road and rail and therefore have no impact on the cost relativity between the two modes).

[36] No allowance has been made for a differential time of day charging scheme for trucks.
[37] Feedback from industry stakeholders interviewed for this project suggest that these charges are not levied on a iform basis can vary significantly between freight forwarders/transport operators.

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4.5.2 Interstate Freight

Supply chain options

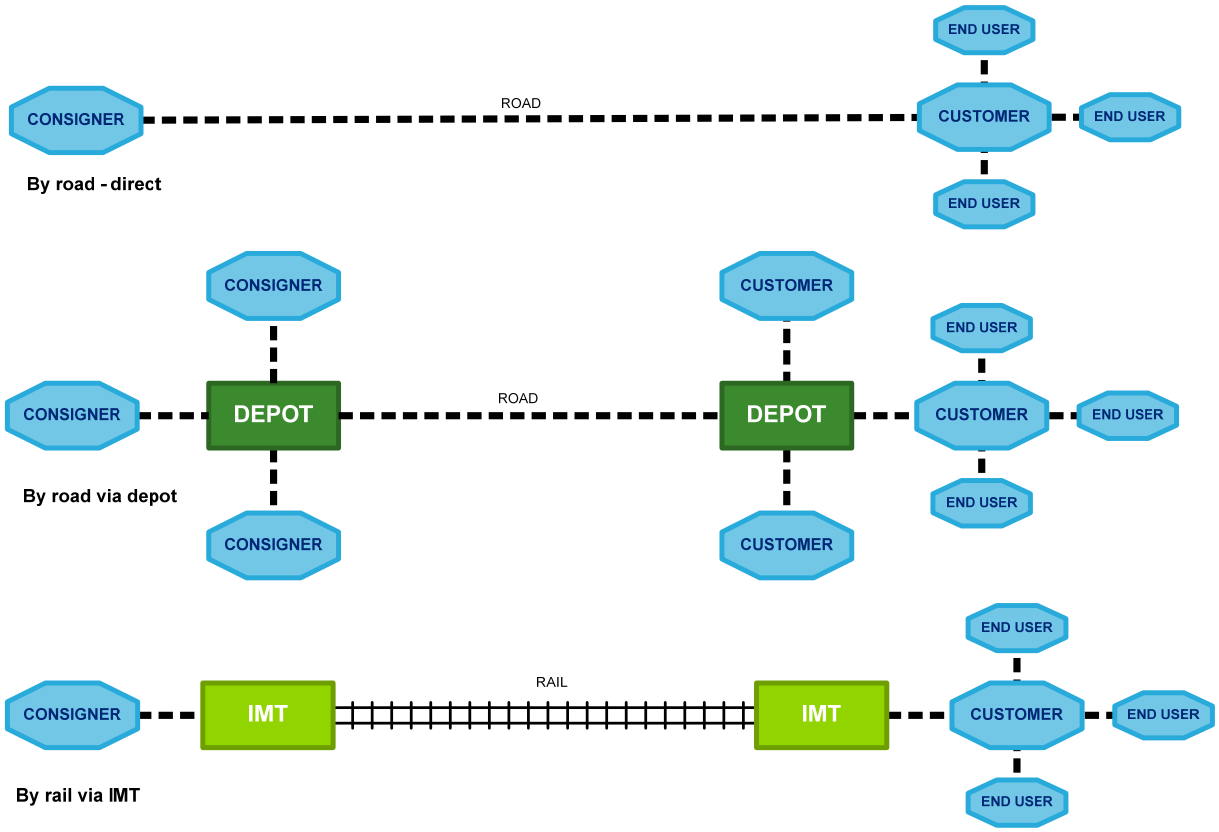
In theory, interstate rail services compete against road, sea and air but, in practice, the latter two modes cater to different markets and do not compete in any significant way with rail on the east coast. Within Australia, coastal shipping focuses almost exclusively on bulk freight whilst air generally caters to high-value, time-sensitive goods.

Road is therefore the principal competitor to rail in the context of interstate intermodal freight. Graph 4.7 sets out the generic options for transporting general freight between capital cities. Supply chain options for both modes are similar, involving pick-up and delivery activities within urban areas, along with consolidated linehaul movements between cities. These are:

- Direct by road to customer.
- By road to customer via depot.
- By rail and IMT and by road to customer.

- By rail and IMT then internal vehicle to customer onsite.

Graph 4.7 – Generic transport options for interstate movements



Source: Deloitte Analysis

Drivers of mode choice decision making

Research by BITRE and ARTC has identified a number of factors influencing mode choice decision making within the interstate road-rail freight market. These are:

- **Price** – influenced by a range of items including fuel and labour costs, road user charges and rail access charges.
- **Transit time and 'availability'** – overall travel times and the ability of road or rail to meet required delivery windows (e.g. next day services arriving at the start of a business day).
- **Reliability** – variability of transit times.

Availability and reliability have traditionally been perceived as problem areas for rail services travelling into and through Sydney for a number of reasons including the need for rail freight operations to use networks shared with passenger services, and passenger train priority within the Sydney network during peak periods and broader limitations associated with rail

infrastructure and geographic constraints including steep gradients on rail lines to the north and west of Sydney which can increase travel times.

These factors have restricted rail's ability to compete with road for freight movements, particularly between Sydney and Melbourne and between Sydney and Brisbane. The SSFL and other rail network improvements planned by ARTC are expected to address these issues and make rail a more attractive option for these markets.

Mode share growth prospects for the Sydney-Perth and Melbourne-Brisbane rail markets are generally regarded to be modest because of rail's considerable pre-existing price advantage over road, which is unlikely to change in the foreseeable future and generally outweighs broader service issues in customer decision making.

Road/Rail cost analysis – Interstate freight

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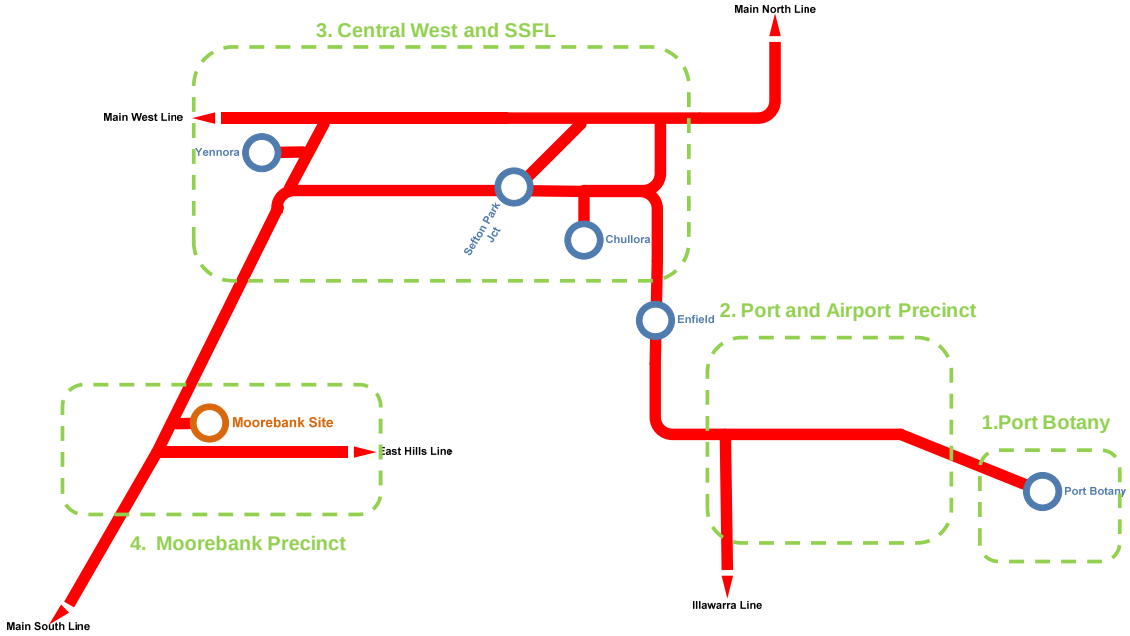
4.6 Is there sufficient infrastructure capacity to accommodate an IMT at Moorebank?

4.6.1 Overview of infrastructure constraints

Infrastructure constraints beyond the immediate vicinity of the terminal were considered to ensure that estimates of freight demand were ultimately realistic. Four main regions were identified for the purposes of discussing potential infrastructure bottlenecks that could impact on an IMT at Moorebank. These are shown in illustration 4.10.

Illustration 4.10 Components of the metropolitan freight network



Source: Deloitte analysis

Key issues and potential constraints associated with each of these regions are in Table 4.11.

Table 4.11 – Summary of infrastructure issues and potential constraints

Segment	Issues	Potential constraints
Port Botany	• Planning approval cap of 3.2 million TEU p.a. • DP World rail sidings less than 600 metres. • [redacted] • Patrick rail gantries non operational. • Single trains currently servicing both terminals.	• Current cap would limit future demand. • Poor rail configuration would limit rail efficiency. • Operating protocols and stevedore pricing inhibits rail competitiveness.

Table 4.11 – Summary of infrastructure issues and potential constraints

Segment	Issues	Potential constraints
Port and Airport Precinct	• M5 East is at capacity at peak times. • Airport traffic growing – Foreshore Drive and General Holmes Drive capacity. • Level crossings on rail line to Enfield. • High density residential development along rail corridor. • Growing number passenger trains on Illawarra Line - through traffic.	• Botany - Enfield line duplication incomplete. • Noise in rail corridor may limit growth. • Road network is constrained.
Central West and SSFL	• High density traffic on SSFL between Sefton Park and Moorebank. • Chullora has short sidings and is near capacity. • Narrow corridor for SSFL limits future expansion possibility.	• SSFL likely to reach capacity between 2021 and 2030. • Limited number of loops to handle 1,800 metre trains. • Ability to physically duplicate SSFL may be problematic.
Moorebank Precinct	[redacted] • Traffic levels may generate potential requirement for second road access point for trucks. [redacted]	• SSFL between Sefton Park and Moorebank. [redacted] • Southern road access. [redacted]

Source: KPMG Analysis

4.6.2 Rail freight network capacity assumptions

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4.7 How much freight could be handled by an IMT at Moorebank?

4.7.1 Demand scenarios

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4.7.2 Network constrained demand estimates

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4.7.3 Unconstrained demand estimates

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4.8 What prices could be charged by an IMT at Moorebank?

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4.8.2 Summary of pricing mechanisms

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4.8.3 Supply chain cost components

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5 Conceptual design of an IMT at Moorebank

The main purpose of this section is to address the questions:

- *Can an IMT be feasibly constructed on the Moorebank site to handle the forecast IMEX and interstate container demand?*
- *What are the functional requirements of the feasible IMT solution?*

The section describes the Reference Design which has been developed to demonstrate the feasibility of the Moorebank IMT Project. The Reference Design is based on the preferred technical option that was selected early in Phase 2 of this study from the short-list of options presented in the Final Scoping Study. A concept design determines in an outcome sense the requirements for design, construction and operation of the IMT. These requirements are articulated in detail in the Functional Reference Design Brief (FRDB) in Appendix 4. This section provides a high-level description of the infrastructure and operational requirements of the Project.

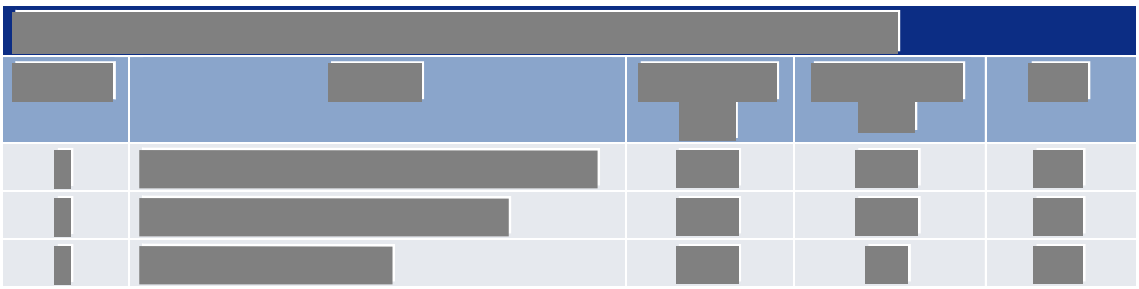
Ultimately, the final design for construction would be driven by the commercial considerations of the delivery entity and the terminal operator, agreement with the delivery entity's shareholder representatives (for the purpose of meeting the Commonwealth's objectives), and approval by the relevant planning agencies.

5.1 Selection of preferred technical option

The Final Scoping Study short-listed four technical options for the development of IMT infrastructure at Moorebank. The short-listed options were further evaluated at the commencement of Phase 2 of the DBC process to select a preferred technical option for detailed analysis in this report.

The methodology for selecting a preferred technical option involved evaluating the extent to which each short-listed technical option contributes to the achievement of the Project objectives, taking into account a range of detailed sub-criteria. The evaluation included quantitative scoring of the options against the objectives.

The short-listed options are summarised in Table 5.1 together with the ranking that they received following the evaluation process and some financial and economic results as determined in the Final Scoping Study. The preferred technical option is Option A2, which involves the development of a terminal serving the IMEX container market with capacity to expand to accommodate a terminal serving the interstate market when market conditions are suitable for this business (the analysis assumed expansion in 2030).



[redacted]

[redacted] The remainder of Phase 2 has focussed on the detailed development and analysis of the preferred technical option, which is described as the Reference Design for the purposes of this DBC.

The final design for construction will be a function of the commercial requirements of the selected terminal operator and the strategic plan of the Government and or delivery entity.

Key findings:

- The Reference Design is based on the preferred technical option that was selected at the commencement of Phase 2 of this study following the evaluation of the four technical options shortlisted in the Final Scoping Study.
- It comprises IMEX plus Interstate terminals, with the Interstate terminal deferred until market conditions are suitable.
- Ultimately, the final design for construction would be driven by the commercial considerations of the Government and or delivery entity and the terminal operator, agreement with the delivery entity's shareholder representatives (for the purpose of meeting the Commonwealth's objectives), and approval by the relevant planning agencies.

5.2 Project outline and functionality

The Reference Design provides an IMT that requires the whole of the Defence site at Moorebank and caters for IMEX, interstate and warehousing functions. The Reference Design is based on achieving a feasible IMT solution that can accommodate the forecast IMEX and interstate freight demand under the "medium" demand scenario as at 2050. The site layout has a sustainable practical capacity of approximately 1.2 million TEU p.a. for the IMEX and 0.5 million TEU for the interstate terminal. The IMT facility comprises three distinct operational elements:

- Rail access, storage, working, and classification tracks.
- Container storage yard.
- Over-the-road (OTR) truck gate.

The configuration of these components has been designed to achieve an efficient operation of the facility and includes the following placements:

- Rail access to the site crosses the Georges River at the northern end of the site.
- Heavy vehicle access to the site is at the northern end of the site.
- Warehousing has been located along the western side of Moorebank Avenue.

- Support functions for the terminal have been located close to container stacks.
- Rail track occupies the available space between the warehousing zone and the area to be retained for environmental purposes along the Georges River.

5.2.1 Relationship to adjoining sites

The sites immediately adjoining the SME site at Moorebank comprise properties with a range of compatible uses and zonings, as follows:

- Northern boundary – The ABB site and a parcel of Commonwealth land are each zoned "General Industrial" by the LCC which provides for a wide range of industrial and warehouses uses. The Northern LCC land also carries a zoning of "General Industrial", consistent with the properties around it.
- Eastern boundary – Across Moorebank Avenue there are two parcels of DoD land and the SIMTA site which is zoned "General Industrial" and currently leased to DoD for warehousing purposes.
- Southern boundary – Across the East Hills railway line the site is adjoined by the Holsworthy Military Reserve.
- Western boundary – Across the Georges River the site is adjoined by the Glenfield Landfill which is zoned "Public Recreation" but available for a wide range of industrial and warehouse uses; a small portion of Commonwealth land; and the Powerhouse site which is also zoned "Public Recreation" and is owned by the LCC.

The proposed IMT therefore integrates well with other uses in the precinct.

5.2.2 Design process

The development of the Reference Design was governed by the layout of the rail track as it is the least flexible element. The design process involved the following steps:

- Configuring the track lay-outs to accommodate the placement of the longest train lengths for interstate trains (1,800m) while allowing sufficient space for the trackage necessary to meet forecast demand in 2050. The rectangular shape of the IMT site promotes the layout of tracks parallel to Moorebank Avenue to create tracks of up to approximately 2km in length.
- Selection of the size, shape and location of container storage areas that would allow efficient handling operations.
- Positioning of internal roads, truck access gates, maintenance and repair functions and other terminal functions such as facilities for Commonwealth agencies.
- Selection of areas of the site that could be used for warehousing or other commercial functions. The Reference Design has warehousing and distribution centres limited to areas outside of the terminal gate, but still within the IMT site.

5.2.3 Staging

The Project is proposed to be developed in stages to ensure that the provision of new IMT infrastructure and associated warehouse capacity is timed to meet market demand. The Project comprises three main stages that are proposed as follows:

- Stage 1A – development of an IMEX terminal for operation in mid 2017.

- Stage 1B – development of warehousing, with land being developed progressively according to market demand based on commencement of operations of the IMEX terminal.
- Stage 2 – development of an interstate terminal when justified by market conditions, but estimated for the purposes of this business case to commence operations in 2030.

While the initial staging is intended to ensure that only the required infrastructure is built, in practice there is a substantial amount of facilitating works that cannot be deferred, such as site preparation, internal roads, connection to the SSFL, environmental offsets, etc. The staging is also limited by the need to minimise construction activities in a live operational environment and other inefficiencies associated with periodic re-establishment of project works.

Table 5.5 shows the activities planned for each stage.

Table 5.5 – Works planned for each Stage

Stage 1A - IMEX terminal

- Demolition of buildings on the SME site, including asbestos removal as appropriate.
- Bulk earthworks to Stage 1A area only.
- Rail entry to the site, including bridge construction and rail infrastructure to service the IMEX and turnout to Interstate section of the bridge (structure only and no rail infrastructure).
- Realignment works to the Casula Power House access road (north turnout only).
- All rail for IMEX, including Rail Mounted Gantry lines.
- Roads - Reconstruction of Moorebank Avenue and Warehouse Zones 1 & 6 (ABB portion) access roads.
- Construction of the IMEX terminal pavements and all associated buildings (administration and maintenance).
- All service utility termination and diversions.
- Electricity, data, gas, water reticulation for IMEX only.
- All stormwater infrastructure, including water detention basins but excluding minor distribution associated with interstate and warehousing development in Stage 1B and Stage 2.
- Contamination (IMEX area and site-wide high risk) and Unexploded Ordnance (UXO) remediation (if required).

Stage 1B - Warehouse development

- Bulk earthworks to Stage 1B area.
- Warehouse Zones 2-5 access roads.
- Construction of all Warehouse buildings including associated pavements, car parking and hardstands to these buildings.
- Power and service connections.
- Stormwater serving the warehousing and connected into the main lines constructed in Stage 1A.
- Contamination (Warehouse area) and UXO remediation (if required).

Stage 2 - Interstate terminal

- Bulk earthworks to Stage 2 area.
- Rail entry from the South, including viaduct, and all associated rail for the Interstate.

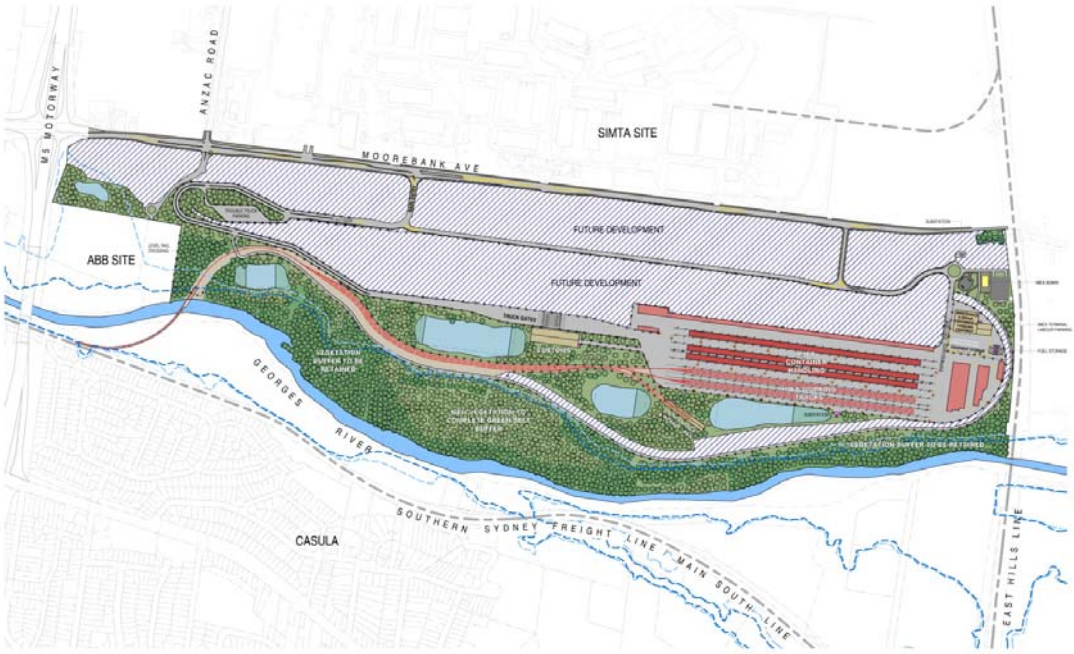
Table 5.5 – Works planned for each Stage
• Pavements and hardstand associated with the Interstate, including Rail Mounted Gantry lines. • Terminal support facilities such as the administrative and maintenance buildings. • Realignment works to the Casula Power House access road (south turnout only). • Additional area of truck access road including truck gates for Interstate. • Contamination (Interstate area) and UXO remediation (if required).
Source: Parsons Brinckerhoff

5.2.4 Site development plan

IMT Site encompasses the areas identified during the Final Scoping Study and DBC as the potential site of the IMT, being the SME Site, the Northern Commonwealth Land, the Northern LCC Land, the Northern Powerhouse Land, part of the Georges River (Moorebank section), the Commonwealth section of Moorebank Avenue, and Bapaume Road.

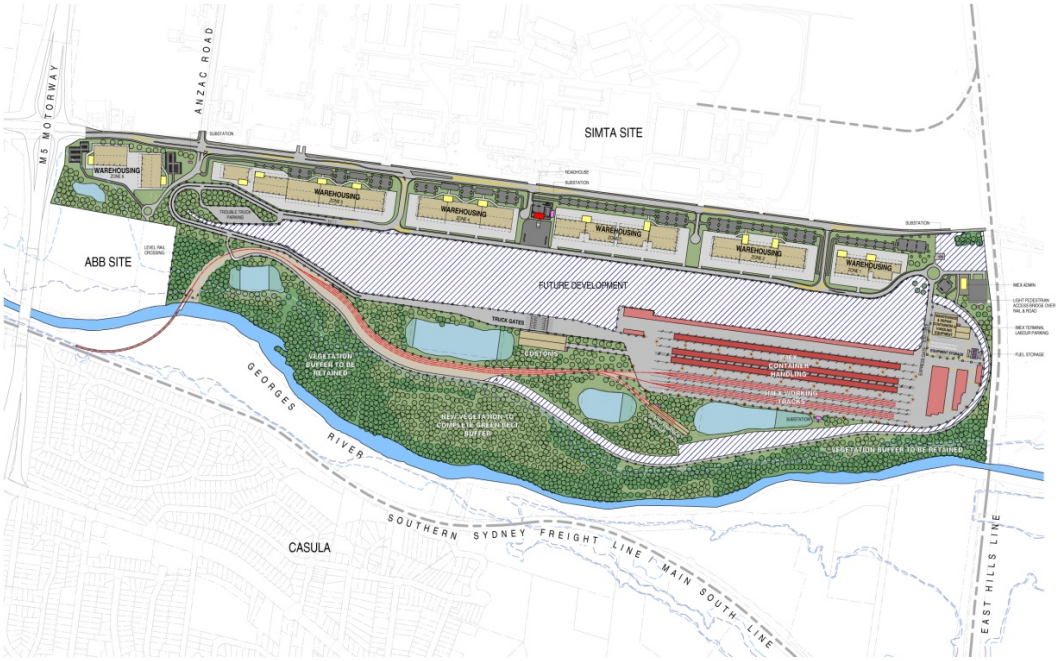
The following illustrations for the proposed Reference Design show the lay-out of the IMT at the completion of each stage, specifically: Stage 1A, which involves the development of the IMEX terminal, Stage 1B which involves the development of warehousing, and Stage 2, which involves the development of the interstate terminal in 2030.

Illustration 5.2 – Stage 1A (IMEX Terminal)



Source: Suters

Illustrations 5.3 – Stage 1B (IMEX Terminal & Warehousing)



Source: Suters

Illustration 5.4 – Stage 2 (IMEX and Interstate Terminals and Warehousing)

Source: Suters

5.2.5 Construction program

The design and construction program for Stage 1A of the Project, involving construction of the IMEX terminal, is estimated to commence in early 2015 and be completed in mid 2017. The program includes obtaining planning permits, design, site preparation (demolition, remediation, levelling), construction of the infrastructure, purchase and installation of equipment, testing and commissioning. The planning approval process is a key risk that may affect the commencement and duration of the program.

The design and construction program for the warehouses in Stage 1B of the Project is estimated to commence in mid 2017, enabling delivery of the first warehouse area at the same time as the start of IMEX operations in early 2018. The Reference Design identifies six warehouse areas and the program assumes that these would be developed progressively, at the rate of one every six months. On this basis, stage 1B would be delivered over a three year period, although this would ultimately depend on ability of private developers to develop and market the warehouses.

The program for Stage 2 of the Project, involving the design and construction of the interstate terminal, is also estimated to take approximately three years, including obtaining planning permits, design, site preparation, and construction of the infrastructure, purchase and installation of equipment, testing and commissioning. This stage is estimated to commence in mid 2027 for completion in mid 2030, although the actual timing of commencement of Stage 2 would be dependent on the Commonwealth confirming the need for the terminal, and may be earlier or later than estimated in this program.

Key findings:

- The Reference Design has been developed to accommodate forecast IMEX and interstate freight demand under the "medium" demand scenario as at 2050.
- The Project is proposed to be developed in three main stages: Stage 1A – IMEX terminal; Stage 1B – warehousing; and Stage 2 – Interstate terminal.
- Stage 1A is expected to commence construction in early 2015 and to be completed in mid 2017. Stage 1B involves progressive development of six parcels of land for warehousing over a three-year period commencing in mid 2017. Stage 2 is estimated to commence in mid 2027 for completion in mid 2030, although actual timing is subject to market conditions for the interstate terminal.

5.3 Infrastructure

5.3.1 Rail access

Rail access is proposed to enter the western perimeter of the site at the northern end (adjacent to the current ABB site). A single bridge structure is proposed to be constructed over the Georges River for two rail access roads which would connect to the north and to the south on the SSFL, close to the site entry point. The northern access would be used exclusively for port shuttle services for the IMEX terminal while both access roads would be used for interstate services.

A benefit of providing rail access to the northern end of the site is that it avoids the need for any connection to the SSFL across the Glenfield waste site. The proposed connection also minimises construction on the western side of Georges River and, by allowing adequate arrival and departure tracks within the IMT site, it reduces the requirement for additional tracks parallel to the SSFL. The proposed rail access would have no impact on the ABB property.

5.3.2 Terminal rail lay-out and connections – IMEX and interstate

While the IMEX and interstate trains share the northern connection to the SSFL, these services are otherwise physically and operationally separated within the IMT. From the eastern side of the rail access bridge, separate IMEX and interstate tracks follow the contours of the 100-year Georges River floodplain along the western edge of the site before the IMEX track straightens and forms the IMEX working tracks. The interstate track makes a 180 degree turn at the southern end of the site before forming working and storage tracks.

Freight trains leaving or entering the SSFL main line need to be able to stand entirely clear of both the SSFL and the IMT working tracks to allow for the staged arrival and departure of trains and to minimize disruption to both the IMT and the SSFL. The interstate arrival and departure roads are capable of accommodating 1,800 metre interstate train marshalling and shunting movements. Due to the need for arriving trains to clear the SSFL, the signalling within the IMT on the arrival and departure roads must allow trains to clear the turnouts as quickly as possible. Small rail maintenance and repair areas are located off the arrival and departure tracks to allow for minor servicing and repair of wagons and locomotives.

When fully developed, the IMEX terminal would consist of eight working tracks, each capable of accommodating 600 metre trains (the normal length for port shuttle services). The proposed

container handling methods require the working tracks to be arranged in groups of four, with 4.2 metre centres.

The interstate terminal includes the following tracks:

- Four working tracks suitable for 1,500 metre trains (trains greater than 1,500 metres in length can be split on the arrival road prior to being shunted onto working tracks).
- A separate grouping of combined storage and classification tracks.
- A shared run-around track to allow locomotives to change ends.

The track grade differential between the SSFL design levels at the projected point of connection and the Moorebank IMT entry is about 4 metre which can be accommodated within the operational characteristics of the trains.

Low speeds are assumed to apply within the terminal, improving safety and track maintenance and allowing turnouts and track curves to have a 190 metre radius. The rail curve radius has also been designed to prevent excessive wear on rolling stock and to reduce 'wheel squeal'. The grades of the track are planned to be no greater than the maximum grade of 1 in 80 between Port Botany and the IMT turn-out and are estimated to be no greater than 1 in 100 in the area crossing the river and less elsewhere on the site.

Bulk fuel storage has been included in the design and is proposed to be located in the general vicinity of the Terminal General Plant and Equipment Maintenance facility. It is envisaged it would have a holding capacity of around 500,000 litres. Smaller road tankers (around 8,000 litres) would move to the locomotives to refuel them at various locations around the terminal.

5.3.3 Road access and internal roads

Moorebank Avenue

The Project is expected to require the widening of Moorebank Avenue to a four-lane carriageway with additional turning lanes to accommodate the traffic volumes estimated to occur in 2030. The forecast traffic volumes take into account background and project traffic and assume that traffic generated by the DNSDC and the ABB site would remain at present levels. This study also allowed for traffic from a redeveloped DNSDC at West Wattle Grove to enter

Moorebank Avenue on a new access route to the south of and parallel to Anzac Road. The current traffic generated by the existing DNSDC site has been used for the purpose of undertaking the traffic assessment.

The Project would also require that the access road to the ABB site is re-aligned around the rail track and is entirely separate from terminal operations. In addition, the intersections of Moorebank Avenue with Anzac Road and the M5 Interchange would require upgrades to accommodate the widening of Moorebank Avenue and the additional volume of traffic generated by the terminal and the warehousing. Due to the concern over the proximity of the intersection of Moorebank Avenue/Bapaume Road to the M5 interchange and the chance of vehicles queuing back into this intersection, the reference design proposes access to the ABB site and to the proposed northern-most warehousing development be provided through an upgraded four way intersection of Moorebank Avenue/Anzac Road.

Intersections on Moorebank Avenue must:

- Be capable of carrying the forecast 2030 traffic volumes and comply with Road and Traffic Authority (RTA) requirements for design and operation.
- Permit, where necessary, dual turns by the largest design vehicle.
- Have indented right turn lanes that contain the projected 95th percentile queues under the forecast 2030 traffic volumes.

Internal roads

The site layout provides two access roads located at the northern and southern ends of the site. The northern access is south of Anzac Road and is provided for heavy vehicles generated by IMEX, Interstate and warehouse traffic. From this access point, heavy vehicle movement is segregated from light vehicle movement. The approach road to the truck gates and movement through the terminal area has also been designed to segregate OTR traffic from IMT plant and equipment operation as much as possible. Any light vehicle movement within the IMT would mostly be generated by maintenance staff.

The southern access is proposed for light vehicles which would be limited to administrative and maintenance staff car parking. The southern road access must also be designed to permit emergency vehicle access and the movement of heavy vehicles should the main access become blocked. This part of the internal road network is also proposed to be used for access by inter-terminal vehicles (ITVs) through the express gates to the back of the warehousing.

Light vehicle access for the warehouse developments would be directly off Moorebank Avenue with separate accesses for each warehouse. Warehouse staff car parks are planned to be on the Moorebank Avenue side of each facility.

The following factors have been taken into account in designing the internal roads:

- Separation of ITV and OTR traffic within the IMT as much as is possible.
- Provision of one-way circulation and avoidance of conflict points where possible.

- Provision of internal traffic lane widths with sufficient clearances to the design vehicle "swept path" envelope of 1,000 millimetre on curves and 1,500 millimetre on straights.
- Provision of a median strip to separate two-way OTR traffic between the Optical Character Readers (OCR) and the main access gate.
- Facilitation of access/egress of emergency services vehicles.
- Provision of two-way reversible gates at the main access gates.
- Separation of inbound and outbound truck movements at the Interstate IMT gate.
- Compliance of the rail crossings with the requirements of the relevant Australian Standard (AS1742, part 7).
- Approaches to the express gate allow for a truck to wait on both sides of the track without blocking the adjacent intersections and without encroaching onto the railway crossing.
- Confining access to the internal road network via the main truck access road and the southern access.

Truck parking

The inbound terminal gates have been located some distance inside the IMT site in order to minimise the potential for queues to interfere with the operation of the M5 intersection. Outbound queues are also able to form within the IMT site.

The Reference Design also allows for a "trouble truck" parking area to investigate incidents where an inbound OTR receives an error message on scanning at the OCR portal. The trouble truck parking area is able to accommodate up to 25 trucks at any given time. The area may also be used to allow early arrivals to make a U-turn to travel south to park on the 4.3 metres wide shoulder along the Truck Warehouse Access Road to wait for their allocated time slot. This represents a sizeable holding capacity for OTR vehicles, if needed.

Warehousing traffic access

Light vehicles would access the warehouse developments directly off Moorebank Avenue and heavy vehicles would use northern and southern access points and a warehouse access road parallel to and west of Moorebank Avenue. This layout requires turning lanes to be provided along Moorebank Avenue with the primary purpose of providing a safe location for vehicles to turn right into the site. Each warehouse is estimated to generate approximately [redacted] over the peak hour based on the RTA Guide to Traffic Generating Developments. It is expected that the majority of these movements would be light vehicles. It is also assumed that the shift patterns for staff would be outside peak traffic conditions and would have little influence to the operation of Moorebank Avenue during the peak conditions.

[redacted]

5.3.4 Warehousing

The Reference Design provides for approximately 97,400 square metres of Ground Floor Area (GFA) of warehouse capacity that would be located on a 35.4ha parcel fronting Moorebank Avenue south of Anzac Road, as well as a 4.0ha parcel of land at the northern end of the SME site. These sites are not required for IMT-related use and would be suitable for development with complementary warehouses that would interface directly with the IMT and generate demand for IMT services by users such as freight forwarders, logistics facilities and retail distribution centres.

This Industrial Zone is separate from the IMT facility and is able to be sold to, and developed by, one or more third parties contemporaneously with the construction of the IMT.

5.3.5 Landscape design

The landscape design solution for the Moorebank IMT should maximise the integration of terminal facilities and the associated warehousing precincts by providing screening, breakout space for the public and staff, and visual relief, as well as aiding wayfinding throughout the site. Landscaping along Moorebank Avenue is of particular importance and, in addition to complying with regulatory requirements, must provide visual relief from the otherwise industrial appearance of the warehousing zone. The landscape strategy should provide a layered approach along the streetscape integrating car parking and signage.

Along the Georges River side of the site, the landscaping must be incorporated into the ESD initiatives proposed for the conservation area made up of the existing riverside and the former earthmoving operations training area. It should provide visual screening to the IMT operations to alleviate impacts on neighbouring residences.

The following principles should be considered in future detailed designs:

- Where possible retain existing native trees along Moorebank Avenue to mitigate visual impact.
- Provide additional native trees to the carpark areas to maximise the opportunity for shade and to provide a landscape frontage that is scaled to compliment the new buildings.
- Commence early rehabilitation and supplementary planting of endemic species to the conservation zone on the western boundary.
- Commence early screen planting at the junction of Moorebank Avenue and M5 South Western Motorway to mitigate visual impact.
- Drought resistant species known to thrive in the site conditions are to be used in all landscape areas with consideration for species that are non-invasive in the vicinity of the conservation zone.
- Landscape areas to consider Crime Prevention Through Environmental Design (CPTED) principles.

- Consider opportunities for supplementary street planting in the residential area west of the site to ameliorate flood light impacts.
- Consider the use of lower, more frequent light poles to mitigate light spill effects and ambient light impacts.
- Consider localised earth mounding and provide native canopy trees to internal landscape areas on the western side of the new buildings to mitigate visual impacts from the residential area.
- Consider the use of site soils and mulching of removed native vegetation for re-use in landscape areas.

5.3.6 Public Interface, Signage and Wayfinding

In developing the masterplan for the site, the interface between the publicly accessible areas and IMT facilities needs to be carefully considered to enable safe use of the different precincts. The principles guiding the urban design aspects of the Moorebank IMT project are to:

- Create a high quality, efficient, and attractive development which addresses both its industrial neighbours to the east and the residential area across the Georges River.
- Strategically takes advantage of the sites location adjacent to the SSFL and the M5 Motorway.
- Encourage environmentally sustainable design and minimise impacts on both the environment and the public.
- Allow flexibility for future growth and staging of terminal operations and warehousing/commercial endeavours to maximise the sites potential.

These principles encourage a site layout which is clearly zoned into precincts which allows easy wayfinding opportunities. The urban design principles employed on the IMT ensure safety and amenity for its everyday users. Separate and segregated entries are provided for trains, trucks and staff resulting in no cross-overs of different users. Within the IMT there are only two cross-overs for different users – in the south near the administration buildings and a perimeter access road near the rail access bridge. This segregation ensures high efficiency for truck access to the terminal site as there is no loss in time for truck drivers waiting to cross any incoming train lines. Safety of intermodal staff is ensured by the separate passenger vehicle entry to the site and direct pedestrian access from the administration building and staff carpark to the terminal vehicle carpark and maintenance and repair building. The wayfinding/signage must support the infrastructure layout.

Traffic associated with the IMT would comprise both regular and first time users. The internal layout needs to be readily understood by drivers to promote efficient and safe operation. Similarly, the external road approaches and departures should provide clear and simple wayfinding to and from the facility to promote efficient and safe operation. The design encourages access to and from the north but has the ability to expand access to the south in the future if needed.

The internal road layout gives priority to entering vehicles to promote efficient and safe operation. Internal direction signage should comply with the requirements of the Australian standard 1742 manual of uniform traffic control devices (AS 1742) for the design speed for internal operations. External signage must comply with the requirements of RTA and AS 1742;

clearly direct inbound traffic on Moorebank Avenue to the correct intersection and be mounted overhead; and be conspicuous both day and night.

5.3.7 Other infrastructure

Terminal operations and maintenance functions are located at the ends of the IMEX/Interstate container stacks to facilitate easy access and to support efficiency. Warehousing is in a suitable location in proximity to the truck gate. The administration buildings are located at the southern end of the site.

5.3.8 Pavement Requirements

Three broad categories of pavement have been adopted according to the likely loads, as follows:

- Light vehicle pavement.
- ITV pavement.
- OTR heavy vehicle pavement.

Light vehicle pavement covers the areas regularly used by personal occupancy vehicles (POV) and occasionally by heavy vehicles, i.e. maintenance trucks that need to circulate between the various buildings and facilities on the site.

The ITV pavement covers the areas of frequent ITV use and includes the container stacking area. The loads on the container stack are likely to be higher than those in the ITV circulating area, but involve fewer repetitions. The OTR heavy vehicle pavement includes the areas frequently traversed by the trucks and is limited to the areas where ITVs would be excluded.

5.3.9 Utility Requirements

Energy Supply

System design criteria

The Reference Design incorporates an electrical power supply and distribution system design for the terminal comprising dual bulk primary high voltage (HV) supplies from the local electrical utility provider, an on-site switchboard and site-based dual HV cable ring main reticulation. The key design objective for these electrical power supplies is that no single failure within the electrical supply and distribution system should result in the total loss of the power supplies. The basic parameters of the electrical system were developed using values of maximum site demand developed from predicted site operations.

Site demand calculation

The maximum site electrical demand has been calculated for the different stages of IMEX and Interstate terminal operation and development. The process used a programme for calculating overall site demand using a database of loads for electrically-operated rail-handling container cranes, yard-stacking container cranes, reefer storage facilities, buildings and site lighting recorded from other similar operational container terminals around the world.

The programme sums these loads for the terminal's method of operation, site storage capability and its handling and throughput capacities. Using this process, the peak electrical load demands for the site were estimated to be 10 mega volt amps (MVA) for the initial IMEX stage with a further 5 MVA required for the final Interstate development stage.

Utility bulk power supplies

Discussions have been held with the local electrical utility provider, Endeavour Energy, to determine if adequate capacity would be available to the site from their system and at what voltage this power could be supplied. Based on these discussions, it is assumed that two sets of independent power supplies would be available from Anzac Village Substation with adequate capacity. However, the available capacity could change if other customers place firm demand prior to the IMT.

The proposal for the IMT power supply is to utilise 2 x 11kV, 6MVA rated independent feeders from the Anzac Village Zone Substation so that the IMT site can continue to operate if one of these power supplies fail, albeit at about 60 per cent of full operation. This limitation only applies to the Stage 1A operations; no such limitations would apply to the Stage 1B development stage as its predicted maximum demand is 5MVA which is within the capability of the 11kV substations 315A connections. In order to achieve adequate reliability, the 11kV supply cables would be segregated and run in two separate trenches: one running along Moorebank Avenue and the other running along the rear of the warehouses.

IMT main substation

The Reference Design allows for one Main Substation building to be located at the North Eastern end of the IMT site. This Main substation would contain some 11kV switchgear which would form the point of connection and interface between the utility system and the IMT site supplies. Recognising that IMEX and Interstate operations may be undertaken by two different operators, the design keeps each of these supplies separated and avoids sharing any common facilities.

Site reticulation

Power reticulation around the IMT site would be accomplished using 1 kV cable ring mains. Two physically separate rings would be used, one for the IMEX and one for the Interstate power distribution system. A ring main reticulation system provides improved reliability and flexibility to the system at a lower cost. Distribution substations would be connected to these cable ring mains at strategic points to supply the container handling cranes, workshops and administration buildings. Additional feeders from the switchboard are allocated for the supply of refrigerated containers in designated storage areas.

The development of warehousing along the eastern boundary of the IMT site naturally leads to the separation of warehousing supply from the container handling operations of the IMT site. Endeavour Energy proposes to provide a separate supply to these warehouses which would become 'Low Voltage' customers to Endeavour Energy, independent of the IMT site.

Sewerage Requirements

The layout of the sewerage schemes serving the SME and adjacent properties have been considered in the development of the sewerage servicing scheme for the reference design. The new sewer layout proposed to serve the IMT and adjacent properties have not used the existing structures as the capacities of these assets would be inadequate to service future growth and development of the IMT, and they likely do not follow SWC standards.

The proposed sewerage system for the IMT comprises two separate networks. A network within the IMT site serving the IMEX and Interstate administration buildings and maintenance/repair yard would be connected to an on-site sewage treatment plant to provide a source of recycled

water. A separate network running along Moorebank Avenue serving the warehousing site would be connected to a proposed pumping station which would transfer the flows to the Sydney Water Corporation's (SWC) existing network, eventually flowing to the Liverpool Sewage Treatment Plant (STP). The design of the Moorebank Avenue sewerage system provides for the connection of the SIMTA site which drains to Moorebank Avenue.

SWC owns a rising main that runs along Moorebank Avenue, between the Moorebank IMT and SIMTA sites. This main transfers treated effluent from Glenfield STP to Liverpool STP and cannot be relocated.

The backbone of the Moorebank sewerage catchment model, including Holsworthy wastewater transfer, has been used for capacity assessment and options development purposes. A dry weather wastewater loading for the proposed sites has been estimated to be approximately 337m^3 per day. The industrial and commercial flow patterns adopted by SWC's wastewater modelling team have been consulted to determine the diurnal patterns of flows. The sewerage scheme includes a reticulation network of 225 millimetres and a pumping station of 0.5m^3/s which would be located at the southern corner of the development site. A 250 millimetres diameter rising main would be used from the pumping station to transfer flows to an existing 300 millimetres sewer located close to Beddington Road, Holsworthy.

The three-month average recurrence interval rainfall event has been used for wet weather performance assessment for this sewerage catchment, including the proposed sites (Moorebank and SIMTA). The West Wattle Grove site proposed for development of DNSDC has not been specifically considered in this assessment and would need to be included in any future design process. The modelling results indicate the existing capacities of the sewerage network would be able to cope with the flow loading from the nominated wet weather design event.

5.3.10 Water supply

The proposed water supply system for the IMT would comprise two separately metered networks: the network serving the IMEX and Interstate administration buildings, and the network serving the maintenance/repair yard and container areas. Current water supply to the SME site stops at Moorebank Avenue north of the M5 Motorway. All further water supply pipes beyond this point are privately-owned assets belonging to Defence.

The design of the water supply system has followed the current SWC criteria used for planning purposes and is based on future maximum day demand for 2031. In addition, the network has also been designed and tested for Fire Flow analysis to meet the fire fighting regulations that SWC must meet.

The proposed water main route would follow Moorebank Avenue to all warehouses, then run into the IMT boundary fence and serve the administration buildings, maintenance/repair and other facilities. Separate fire mains are proposed from the north boundary of the site to the IMT area for the following reasons:

- The storage areas are predominantly located in the southern part of the IMT site. As the connection to the SWC network is from the north, there would be considerable head-loss during transfer when demand is high.
- Water distribution modelling software WaterGEMS automated fire flow analysis suggests that a 300 millimetres main be used to provide the required fire flow (60L/s for current

design). However, 300 millimetres is considered to be significantly oversized for normal water supply, which would raise water quality concerns due to long detention times.

The Moorebank IMT site is expected to be connected via the 200 millimetres diameter main along Moorebank Avenue and similarly the DNSDC site via the 200 millimetres diameter main at the junction of Anzac Road and Young Close.

The hydraulic modelling shows that with the projected maximum day demands, there are no significant areas of concern throughout the system. The capacity of the existing 200mm diameter mains at the connection point are sufficient to cope with the future development demands.

Water management

Flood risk

The Reference Design avoids development within the 100-year average recurrence interval (ARI) floodplain. It has a proposed rail line following the floodplain extent very closely due to track alignment considerations, but there is no encroachment on the 100-year ARI floodplain. This layout requires a single bridge crossing of the Georges River floodplain to minimise the impact on flood flows and local flood levels.

Surface water management

The Reference Design requires the development of all available land on the site outside of the floodplain, resulting in a significant increase in development density on the site. This increase in development density, in particular the increase in impermeable surfaces (roofs, concrete, asphalt etc.), would result in increased generation of surface water runoff. Under local planning controls the development is required to attenuate this additional runoff, thus mitigating any potential increase in downstream flood risk. The runoff generated from the developed site is also expected to contain increased levels of pollutants and therefore would require treatment prior to discharge to the Georges River.

The surface water attenuation and treatment facilities proposed for this layout would ensure that the layout would not have any unacceptable impacts on Georges River water quality or downstream flood risk.

Key findings:

- The Reference Design demonstrates the feasibility of developing separate IMEX and interstate terminals on the SME site at Moorebank. This design includes:
  - Rail access to the western perimeter of the site at the northern end, connecting to the north and south on the SSFL via a single bridge over the Georges River
  - On-site marshalling and shunting of trains up to 1,800 metres in length; up to eight 600 metre working tracks for IMEX; four 1,500 metre working tracks for interstate plus storage and classification tracks
  - Expansion of Moorebank Avenue to four lanes, with associated intersection upgrades; careful planning of internal roads to maintain separation of heavy and light vehicles and trains, queuing of trucks on-site, efficient movement of ITV and OTR vehicles, efficient and safe access to warehouses
  - Landscaping and public interface measures that minimise adverse impacts on the

environment and public

- In developing the concept design no issues relating to the provision of utilities were discovered that could not be overcome.

5.4 IMT operations

5.4.1 Concept of operations

Operational requirements

The Reference Design for the location of infrastructure and facilities within the IMT site is driven by the need to provide for efficient terminal operations. High-level planning of the options therefore aims to optimise the location of the container storage, truck gate, cross-docks, maintenance and repair (M&R) and Commonwealth facilities. A summary of the main requirements is provided below. The operating assumptions are based on supporting the fully developed terminal in 2050. For example, the design assumes operation on a 24/7 basis and that the terminal would be operated by a single entity under an "open access" regime. As such, it does not attempt to anticipate the risk that capacity and operating arrangements may be restricted by planning approvals or other regulatory requirements. Ultimately, the concept of operations would be driven by the commercial considerations of the Government and or delivery entity and the terminal operator, agreement with the delivery entity's shareholder representatives (for the purpose of meeting the Commonwealth's objectives), and approval by the relevant planning agencies.

Container storage

The majority of loaded and empty containers would be stored in a stack between trips by different transport modes (i.e. from truck to rail wagon and vice versa). This temporary storage increases flexibility and capacity in the terminal's operations because it allows variation between truck and train arrivals and departures. The loaded and empty container storage needs to be located in proximity to the working tracks to minimise travelling distance for ITVs. A shorter ITV path decreases the handling cost per container and the layout is optimised for this. Containers in the storage area would be handled by rail-mounted gantries (RMGs) and consequently the footprint of loaded containers is rectangular.

Trucks carrying containers travel through the container storage area to pick-up and/or drop off a container. The location of the storage area in relation to the truck in-and-out gates determines the travelling distance through the terminal.

Truck gate

For security reasons, all trucks must pass through a control gate when entering and leaving the site. The truck gate also directs over-the-road (OTR) vehicles within the terminal. The shape of the gates depends on the direction of the lanes and whether these can be reversed. The inbound traffic lane should have a location to the left of it for 'trouble trucks' that cannot be directed into the terminal because of logistic or administrative reasons. The IMT internal road network needs to support the gates being located some distance from the motorway so terminal truck queues do not bank up along Moorebank Avenue or to the intersection with the motorway. The inbound truck access road at the northern end of Moorebank Avenue has an at grade intersection for an entering truck lane.

Cross-docks

Cross-docks, also called express gates, are warehouses which receive ITVs on one side and despatch to normal road trucks on the other side. They therefore facilitate accelerated pick-up and delivery of containers by eliminating a component of storage and/or transportation by trucks. The Reference Design layout has been developed with the specific traffic flows within the footprint of the site associated with cross-docking taken into account.

Container handling equipment and maintenance and repair

The container handling equipment includes a significant proportion of RMGs to maximize available space on the site and to future proof the terminal for automation. RMGs on the container storage area are generally used intensively due to double handling in the stack and would need more maintenance than RMGs above working tracks. The M&R facilities are best located in an area close to the end of the container storage area.

Commonwealth Agencies

Commonwealth functions may be required on site to inspect selected import and export containers. Discussions held with relevant Commonwealth agencies have guided the development of the Reference Design. This approach has meant that the needs of these agencies can be met in the future through the proposed layout and the common infrastructure, particularly to support ICT functions.

5.4.2 Plant and equipment

Container Handling Equipment Requirements

Based on the anticipated cargo volumes, site geometry, rail access and rail yard configuration and the 40-year project horizon that is being considered for the Moorebank IMT, the following equipment assumptions were used to estimate the throughput capacity, variable operating costs and capital expenditures. These types of equipment represent the primary components that move containers through the IMT while loading/unloading OTR trucks and rail wagons. Equipment quantities required for the Reference Design were estimated during the throughput capacity analysis.

Working Track Lift Equipment

The core operation in an IMT occurs at the rail working tracks. The selection of lift equipment at this location sets the foundation for the layout of the terminal and is highly influenced by the terminal developer/operator. Working track lift equipment has been identified that is flexible enough to be automated at any time and the required supporting infrastructure is such that highly automated equipment like a wide span gantry crane can be implemented with little impact on the existing facility. For these reasons, RMG cranes capable of spanning four working tracks and one truck loading lane were selected. These RMGs should also be able to accommodate double stack wagons to support the future possibility of a double stack rail service to the IMT.

Loaded Container Storage Area Lift Equipment

For the same reasons described in the “Working Track Lift Equipment” description provided above, RMGs have been selected for the loaded container storage area. A similar crane span was selected to provide a uniform layout of the working tracks and storage area which are

located adjacent and parallel to one another in the most efficient terminal configuration. These RMGs are taller than the working track RMGs because they are able to carry one container over a five container high storage stack. A truck loading lane is also assumed for this storage yard RMG. RMGs work well in the loaded container storage yard because they can be automated and they can quickly sort through a stack from above to retrieve the container that is needed. If the Moorebank terminal operator decides to implement a wide span gantry operation in the future, it would be able to combine working track and storage areas together without relocating light poles.

Empty Container Storage Area Lift Equipment

Empty containers are typically densely blocked in a storage yard by customer and the first available container is picked for export. Therefore, empty handlers or side picks have been chosen for the empty container handling in the IMT storage yard. Empty handlers/side picks are capable of stacking containers up to nine high, although only up to eight empty containers high is proposed for the IMT. The following dwell times have been estimated for all empty containers:

- Average IMEX Empty Container Dwell (in and out) 5 days.
- Average Interstate Empty Container Dwell (in and out) 7 days.

Transport Equipment between Working Tracks and Storage

ITVs have been identified for moving containers between the working tracks and the storage areas. ITVs are non-street-registered truck-tractors that pull container chassis or bomb carts. For planning purposes, ITVs with bomb carts were used for in-terminal container transfers because the terminal is operating fully grounded storage areas and because of their flexibility. It is possible to implement other higher productivity equipment (i.e. Shuttle Trucks) or to implement Automated Guided Vehicles (AGVs) in later years when the cargo demand would be much higher or if a certain level of automation is desired by the developer/operator.

Key findings:

- The Concept Design aims to provide for efficient terminal operations, with an optimal configuration of container storage, truck gate, cross-docks, maintenance and repair facilities, and Commonwealth agencies (Customs and Australian Quarantine Inspection Service (AQIS)).
- In addition, the Concept Design has considered the optimum equipment selection taking into account the anticipated cargo volumes, site geometry, rail access and yard configuration, and 40 year project timeframe.
  - RMG cranes have been selected for the working tracks and container storage areas
  - Empty handlers/side picks are proposed for the empty container handling areas.
- ITVs are proposed to move containers between the working tracks and storage areas.
- The concept design and operation plan demonstrate that the Moorebank IMT site is capable of providing an integrated service capability that can be purpose built to provide highly efficient intermodal services. The final detailed design will be determined by the commercial imperatives of the terminal operator and the IMT planning objectives of the Government.

6 Environmental and Planning Issues

6.1 Introduction

This section provides a summary of the environmental issues that would be addressed within the EIS for the Project.

In particular, this section seeks to answer the following questions:

- *What environmental issues would be addressed by the Environmental Impact Study (EIS)?*
- *What other future studies are proposed?*

6.2 Joint assessment process

A joint Commonwealth-State assessment process is currently under discussion between the Commonwealth DoFD, the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) and the NSW Department of Planning and Infrastructure (DoPI) that would satisfy the requirements of both the Commonwealth and State environmental agencies.

6.3 What environmental issues would be addressed within the EIS?

This section provides a summary of the environmental issues that would be addressed within the EIS for the Project. The section outlines the environmental issues, the assessments undertaken to date (mid-2011), the key findings from these assessments and the proposed studies that still need to take place as part of the EIS process.

6.3.1 Biodiversity

Assessment undertaken to date and key findings

An ecological assessment was undertaken by Parsons Brinckerhoff in November 2010. The assessment involved a desktop review of ecological values to identify the presence of known threat-listed species and their habitats and threat-listed ecological communities based on existing information. Subsequently, a detailed field investigation was undertaken to verify the results of the desktop assessment. The vegetation on the Project site presents a complex ecology with four native vegetation communities recorded on site including: Castlereagh Swamp Woodland, Castlereagh Scribbly Gum Woodland, Riparian Forest and Alluvial Woodland (the latter two communities both listed as River-Flat Eucalypt forest under the Threatened Species Conservation Act 1995 (TSC Act)). While all four communities present on site form part of threat-listed ecological communities listed under the TSC Act, none of these communities correspond with a threat-listed community as listed under the EPBC Act.

Two threat-listed species of plant, Persoonia nutans (listed as Endangered under the EPBC Act and TSC Act) and Grevillea parviflora subsp. parviflora (listed as Vulnerable under the EPBC Act and TSC Act), were recorded in the Project site. Eight additional threat-listed plant species have a moderate likelihood of occurrence within the Project site based on preferred habitats and known distribution however, targeted searches did not detect these species.

The fauna survey detected the Grey-headed Flying-fox (listed as Vulnerable under the EPBC Act and TSC Act) flying over the site. An earlier fauna study (Lesryk 2003) recorded the presence of two threat-listed microbat species in the Project site: Large-footed Myotis and Eastern Bent-wing Bat. The presence of additional threat-listed species of bats is considered possible.

The Project site is also likely to provide habitat for a range of additional threat-listed species of animals not detected during surveys and play a role in the local and regional corridor network given its location adjacent to the Georges River and extensive areas of vegetation to the south. Many of these species are only likely to utilise the more intact riparian habitats along the Georges River and would only occasionally, if ever, utilise the more fragmented patches of vegetation in the central and eastern areas of the site. Most of these species have large home ranges that may extend well beyond the Project site and/or are migratory or nomadic and likely to use the Project site on a sporadic or seasonal basis.

[redacted]

6.3.2 Air quality

Assessment undertaken to date and key findings

Initial air quality investigations were completed by Parsons Brinckerhoff in December 2010 to establish the existing environment of the surrounding area. The existing air quality for the Project site is considered to be characteristic of an urban/industrial environment. The investigations identified that the following conditions exist:

- Local industrial activities from the existing landfill and the industrial estate to the east (Moorebank) and north-east (Liverpool) and emissions from the existing road and rail network are likely to give rise to emissions of particulate matter (total suspended particles (TSP), PM10 and PM2.5), oxides of nitrogen, sulphur dioxide, carbon monoxide, volatile organic compounds, heavy metals and odour.
- Some regional industries may also influence the air quality of the Project site depending on their proximity, with common industries in the Liverpool LGA including moulded plastics manufacturing, electric cable manufacture, metal coating processes, farming practices and manufacture of polyurethane foam.
- The air quality at the Project site in Moorebank is likely to be reflective of the air environment at the Liverpool monitoring station, given its proximity and similar land uses, which has recorded occasional 24 hour PM10 and 1 and 4 hour ozone (O3) exceedances (during the summer months only).

[redacted]

6.3.3 Noise and vibration

Assessment undertaken to date and key findings

Preliminary investigations were completed in December 2010 by Parsons Brinckerhoff to provide an overview of the existing noise environment.

The results of the preliminary assessment indicated that the noise characteristics of the area surrounding the Project are low and generally consistent with an urban, mixed-use environment of residential uses, light industrial and open space. Noise levels are predominately influenced by:

- Local road traffic noise and local fauna (birds, insects).
- Rail pass by events on the Main South Railway Line in Casula.
- The South Western Motorway (M5) in Casula and Wattle Grove.

[redacted]

6.3.4 European heritage values

Assessment undertaken to date and key findings

A European heritage assessment was completed by Navin Officer Heritage Consultants (NOHC) with inputs from Eric Martin and Associates in early 2011. The purpose of the assessment was to identify the existing European heritage values on the Project site.

The SME is included in the State Heritage Inventory Database as a complex/group, due to its listing on the Heritage Schedule of the Liverpool City Council Local Environmental Plan 2008. No Commonwealth Heritage Listed places are located on the Project site and no places on the Project site are listed on the State Heritage Register.

Numerous items and structures on the site have been identified through the literature review and field surveys as having varying degrees of European heritage significance.

[redacted]

6.3.5 Aboriginal heritage values

Assessment undertaken to date and key findings

An Aboriginal heritage assessment was conducted by NOHC in late 2010 and early 2011. The purpose of the assessment was to identify the existing Aboriginal heritage values on the Project site. Field surveys conducted by NOHC, in attendance with invited members of some local aboriginal groups, identified eight Aboriginal sites and one Potential Archaeological Deposit within the Project site. The significance of these items requires confirmation.

No previously recorded Aboriginal Heritage Information Management System (AHIMS) sites are located within the Project site. Fourteen AHIMS sites are recorded within a radius of 1.5 km around the Project site (three scarred tree items and the remainder being stone artefact scatters) (AHIMS 2010). A review of previous studies undertaken on the site identified no Aboriginal sites within the Project site.

A large proportion of the site is either low in sensitivity to archaeological Aboriginal deposits or has no sensitivity.

[redacted]

[redacted]

6.3.6 Contamination

Assessment undertaken to date and key findings

Parsons Brinckerhoff completed a Phase 1 Environmental Site Assessment (ESA) in November 2010 [redacted]

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7 Economic Appraisal

7.1 Introduction

The purpose of this section is to discuss the economic case for developing the Moorebank IMT given the relative costs and benefits of the Project compared to a without project or base case of not proceeding with the Project. In particular, this section seeks to answer the following questions:

- *What economic, social and environmental benefits does the Project deliver?*
- *Would the Project boost national productivity?*
- *What are the consequences of not proceeding with Moorebank?*

A more detailed discussion of the economic evaluation including the methodology, assumptions, project benefits and costs as well as the overall results is contained in Appendix 14.

7.2 The economic, social and environmental benefits and costs of the Project

7.2.1 Introduction

The economic evaluation considers the full range of costs and benefits of the Project compared to the base case[50] (assumptions regarding the base case are explained in Appendix 19). The Project was assessed in accordance with a number of government guidelines for economic evaluation including those issued by the Australian Transport Council, Infrastructure Australia and NSW Treasury.

To be economically worthwhile, the savings in transport costs and other externality costs of the Project option, relative to the base case must exceed the capital and operating cost of the Project. The economic evaluation is based on a number of key assumptions and these are summarised in the box below:

Key economic evaluation assumptions:

- All cost and benefits are expressed in real 2011 dollars, i.e. excluding inflation.
- The costs and benefits have been assessed over an initial 5 year construction period (2014 – 2018) followed by a 30 year benefit assessment period (2018 – 2047).
- The Project assumes a do-nothing base case scenario with completion of currently committed project including the SSFL, the Enfield Logistics Centre, the Port Botany expansion and the Port Botany rail line upgrade. No further transport infrastructure improvements are assumed.

[redacted]

[redacted]

[50] Please refer to Appendix 19.3 for the detailed assumptions of the base case.

A description of the Project benefits and costs relating to the Moorebank project are described in the following sections.

7.2.2 Project Benefits

Project benefits result from the provision of increased IMT capacity in Sydney which reduces the unit cost of transporting containers by rail in both the IMEX and interstate freight markets. The reduction in rail freight costs means that more container freight would be transported by rail in the project case than the base case where the main mode of transport is road haulage.

For NSW and Australia the resulting economic benefits of this modal shift include:

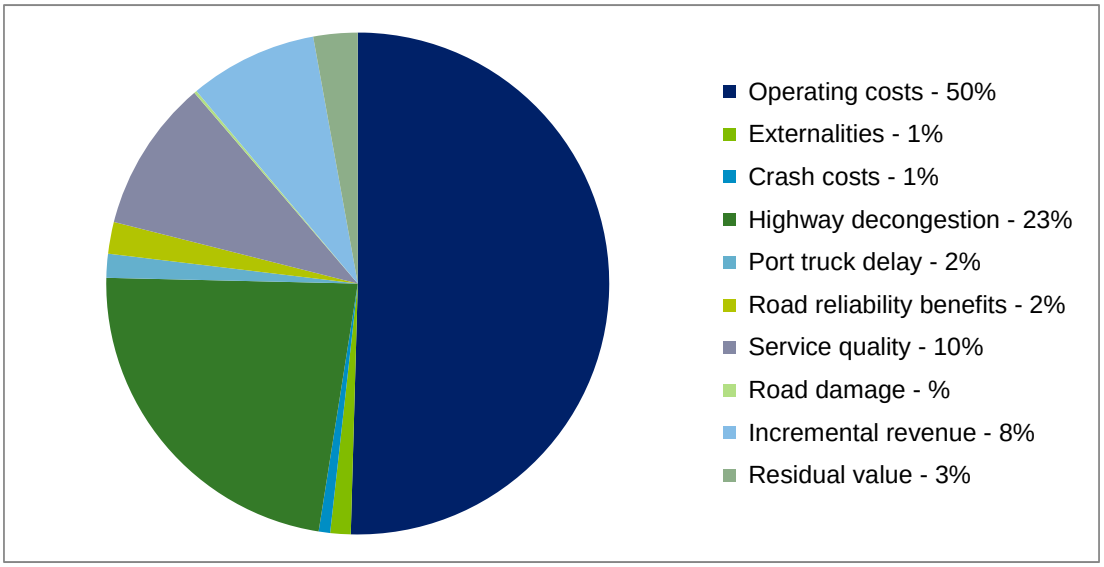
- Savings in vehicle operating costs since for a number of container freight movements, the Moorebank IMT would lead to a reduction the unit rail cost of transport from road to rail where economies of scale are obtained.
- Externality cost reductions (such as air pollution, greenhouse gas emissions and noise pollution) and the proportionately lower road use than would occur under the base case.
- Road crash cost reductions to rail and the proportionately lower road use than would occur under the base case.
- Highway decongestion benefits which reduces delays for both cars and remaining commercial vehicles on the road network as well as facilitating improved journey time reliability.
- Reduced truck wait time delays at Port Botany for IMEX freight.
- Service quality benefits resulting from non-price improvements in rail including reliability and availability enhancements.[51] These would occur as a result of operating through a more efficient IMT than is currently available in Sydney which would reduce delays (associated with shunting, marshalling, loading and unloading) and also have a positive impact on on-time running.
- Road damage cost reductions on the interstate highway network as a result of reduced road haulage lessening the impacts on road pavements.
- Incremental revenue as a result of the operating margin which would be earned by the Moorebank terminal operator.

The above benefits have been derived based on outputs from the demand models (freight and passenger) for the Project and base case situations. The differences are combined with a number of unit parameter values (time, vehicle operating costs, externalities, crash costs, etc.) to express these benefits in monetary terms.

Overall, the Project benefits amount to $2.3 billion in present value terms over the 30-year evaluation period. The benefit distribution is summarised in Graph 7.1.

[51] The definitions are reliability and availability are as defined in ARTC's Interstate Rail Audit (2001). These are defined in more detail in the appendix.

Graph 7.1 – Distribution of Project Benefits



Source: Deloitte

The project generates benefits in both the IMEX and interstate markets. Of the two markets, IMEX traffic generates a higher proportion of benefits than interstate. This reflects the significantly higher IMEX container volumes using rail in the project case compared to interstate.

The largest contributor to the benefit stream is operating cost savings resulting from a mode shift from road to rail. This benefit arises because the unit cost of rail is reduced in the project case as the Moorebank IMT provides more intermodal capacity in Sydney which removes an operating constraint which is apparent in the base case. Consequently, more containers can be transported from Port Botany to Moorebank by rail and this creates economies of scale of operation which reduce the price of rail freight. This makes it a more attractive option than road and results in a mode shift from road to rail. Given the higher utilisation and economies of scale of rail[52], operating cost benefits resulting from the project are significant.

Other significant project benefits also arise as a result of the mode shift from road to rail including road congestion relief benefits (23 per cent of total benefits) and rail service quality improvements (10 per cent).

7.2.3 Project Capital Costs

[redacted]

[52] An IMEX container train can carry 70 TEU per trip compared to a maximum 2 TEU for a semi-trailer and 3 TEU for a B Double.

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The economic evaluation for the Moorebank project (BCR of 1.72) was compared with other recent transport projects submitted to Infrastructure Australia and this is shown in Table 7.7. These include a mix of projects including road and rail, and passenger and freight projects. It is evident that the economic returns (measured in BCR terms) vary considerably between the different projects. Approximately 51 per cent of total economic benefits are share between industry and the community. 36 per cent of the benefits are industry specific, and 13 per cent being community specific.

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7.2.7 Sensitivity analysis

The economic evaluation involves making estimates of a number of factors which are subject to uncertainty. These include assumptions which impact on both project costs and benefits. Table 7.8 summarises the results for a range of sensitivity tests, with changes in key variables.

Table 7.8 – Sensitivity Text Results

Scenario	BCR
Central case result	1.72
4% discount rate	2.22
10% discount rate	1.34
Higher capital cost (+30%)	1.42
Lower capital cost (-30%)	2.16
Higher project benefits (+30%)	2.23
Lower project benefits (-30%)	1.20
Higher operating costs (+30%)	1.57

Table 7.8 – Sensitivity Text Results	
Scenario	**BCR**
Lower operating costs (-30%)	1.90
Source: Deloitte analysis	

The sensitivity test outcomes indicate that the Moorebank IMT project remains economically feasible under various changes in key variables.

7.2.8 Additional economic analysis

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Key economic results:

- The Project has a strong positive economic evaluation result with a BCR of 1.72 and an Economic NPV of approximately $950 million.
- Compared to other recent major transport infrastructure projects submitted to Infrastructure Australia, the Moorebank project has one of the highest BCR's.
- Approximately 51 per cent of total economic benefits are share between industry and the community. 36 per cent of the benefits are industry specific, and 13 per cent being community specific.
- Sensitivity analysis indicates that the Project remains economically viable under a number of alternative scenarios.

7.3 Project impacts in the broader economy

7.3.1 Construction Impacts

The capital investment in the Moorebank project would generate significant positive impacts on the wider economy which have not been quantified in the cost benefit analysis described above. These impacts would include:

- The initial effect on construction employment as a result of the construction of the terminal and its effect on the construction employment and firms.
- Direct effects resulting from output and employment required from all industries that supply goods and services to the construction industry.
- Indirect effects resulting from the subsequent inducement for extra output and employment due to increased spending by the wage and salary earners across all industries.

Regional economic modelling was undertaken to quantify the impacts of the construction of the Project on the NSW economy. These have been quantified using KPMG's regional computable general equilibrium (CGE) model. It is important to note that the results of the CGE analysis should be considered independently from the main economic evaluation results as there is a risk of double counting if all impacts are considered together. This is consistent with Infrastructure Australia guidelines which state that these different measures of project impact are not additive.

[redacted]

It should be noted that given the limited time during which construction activity would occur, the above impacts would be expected to be temporary. Further details relating to the CGE modelling undertaken by KPMG is contained within the Appendix 16.

7.3.2 Operational Impacts

In addition to the construction impacts of the Moorebank project described above, the operation of the facility can be expected to generate ongoing productivity benefits for the NSW economy. Productivity improvements in the form of freight cost reductions and time savings would have direct impacts on the transport sector as well as the wider economy. These benefits have been largely included in the cost benefit analysis.

Productivity impacts would include the following:

- Savings in operating costs in the freight transport sector.
- The decongestion cost and travel time reliability benefit for commercial vehicles.
- Port delay wait time reductions for commercial vehicles.
- The work trips component of decongestion benefits and journey time reliability for passenger travel.
- Service quality benefits in the rail sector.

Private benefits, such as time savings for non-work based trips, are ignored as they are assumed to have no significant economic impact (increased leisure time).

The productivity impacts of the Project have not been quantified through CGE modelling. However, based on analysis of transport sector costs in the Project case and base case it is possible to determine the impacts on the freight and passenger transport sectors. These impacts are summarised in Table 7.10.

Table 7.10 – Moorebank Productivity Benefits

Item	2020 percentage improvement	$ Savings in 2020 (2011 Real $million)
Operator cost savings	15.2%	120
Freight congestion cost reduction	1.2%	14
Passenger work time decongestion cost reduction	0.1%	18
Port delay cost reductions for trucks	0.4%	5
Rail service quality benefits	2.0%	24

Source: Deloitte Analysis

Given that transport is an intermediate good (i.e. it is not used as an end in itself, rather it is an input for other economic activity), transport efficiency savings would have positive flow-on effects on the broader economy.

Key wider economic impacts:

- The Project would support approximately 1,650 jobs during the Stage 1 construction (IMEX terminal and warehousing) and 975 jobs in Stage 2 construction (Interstate terminal).
- [redacted]
- The Project would lead to significant productivity improvements in the freight distribution industry which would have a knock-on impact on the NSW and the national economies.

7.4 The consequences of not proceeding with Moorebank

The impact of not proceeding with the Moorebank IMT would be evident in increasing congestion in the landside supply chain. While the volume of rail freight container movements to/from Port Botany has increased in recent years (225,000 in 2001/02 to 250,000 in 2010/11)[54], the rail proportion of total container movements has declined (22 per cent in 201/02 to 14 per cent in 2010/11). Rail volume peaked at 317,000 TEU in 2009/10 but dropped the following year due to the closure of the Pacific National IMT at Camellia.

The expected growth in Port Botany container throughput in the next 30 years which is forecast to reach up to [redacted] (subject to increasing the Port planning cap), would require a significant increase in the road haulage task to/from Port Botany. Table 7.11 shows the forecast increase in the truck task against two rail mode share scenarios. It is evident that even with a

[54] Sydney Ports Corporation (2011).

doubling of the rail mode share from the current level, that the truck task increase on current levels is forecast to be significant.

Table 7.11 – Forecast Truck Task Increase at Port Botany

	Current[55] (14%) rail mode share	Target[42] (28%) rail mode share
% increase in truck traffic at Port Botany – 2020	201%	168%
% increase in truck traffic at Port Botany – 2030	398%	333%

Source: Deloitte Analysis

In the absence of an increase in rail usage for port freight, there would be a significant impact on the road network in the vicinity of Port Botany as well as on the arterial road network, leading to increased congestion and longer and more unreliable journey times.

The demand modelling indicates that as a result of the project the number of trucks to/from Port Botany would be reduced by 3,300 vehicles per day from 2019/20 onwards. Clearly in the absence of the project, the truck volume reductions would not be realised.

For the interstate rail market, rail has a relatively low mode share (less than 20 per cent) in the north-south corridor and this has not been growing significantly in recent years. This is against a back-drop of significant expected overall interstate freight volume growth by 2029/30 where according to the BITRE, volumes are expected to increase by 3 to 4 per cent p.a. Even if rail captures its fair share of this growth, increasing volumes would be transported by road with the subsequent impacts on road damage, congestion (in certain locations), environmental externalities and road crashes.

Overall, the consequences of not proceeding with the Moorebank terminal would be to not realise the approximate $1 billion in benefits to NSW and the national economies identified in the economic evaluation. These benefits arise primarily as a result of a shift from road transport to rail transport. Some key statistics are included in Table 7.12.

Table 7.12 – Estimated key Impacts of Not Proceeding with the Moorebank Project

Item	Estimated impact of not proceeding with Moorebank
Loss of project benefits to NSW economy	• $950 million project benefits (2011 dollars, discounted) not realised.
Truck volumes at Port Botany	• From 2020 onwards truck volumes would be 3,300 vehicles per day higher.
For every 1 million TEU containers transported by road instead of rail for IMEX traffic	• An additional 3.5 million litres of fuel consumed. • 9,500 tonnes of CO2-e greenhouse gases not saved.

[55] Current mode share and mode share target as indicated in the NSW Government Submission to Infrastructure Australia, Port Botany and Sydney Airport Transport Improvement Program, November 2011

Table 7.12 – Estimated key Impacts of Not Proceeding with the Moorebank Project

Item	Estimated impact of not proceeding with Moorebank
Lost fuel savings and greenhouse gas reductions for the interstate facility (2029/30)	• 4.1 million litres of fuel not saved • An additional 11,000 tonnes of CO2-e greenhouse gases consumed.
Regional economic impacts	• 1,650 construction jobs not realised for the Stage 1 terminal and 975 jobs not realised for the Stage 2 terminal.

Source: Deloitte Analysis

Consequences of not proceeding with Moorebank:

- Loss of approximately $1 billion of benefits to the NSW economy and the national economies.
- 1,650 jobs not realised in the construction of the IMEX terminal and 975 construction jobs not realised with the Interstate terminal.
- Increased congestion of the Sydney arterial road network particularly in the port/ airport precinct and the M5 and M4 corridors.
- Increased environmental externalities on the local community as well as increased accidents on the arterial road network.
- Loss of significant productivity improvements in the road and rail transport sectors which would have a knock-on effect on other economic sectors.

8 Financial appraisal

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9 Commercial delivery strategy

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10 Risk Management Strategy

[redacted]

[redacted]

[redacted]

[redacted]

11 Legal Overview

[Note: this section has been drafted by MPO's legal adviser Blake Dawson.]

This section provides an overview of the legal issues relating to the Project that have been identified during the preparation of the Final Scoping Study and this Detailed Business Case.

12 Stakeholder Consultation Strategy

This section provides an overview of the stakeholder consultation process including activities undertaken and the findings from those activities. In particular this section seeks to answer the following questions:

- *What are the objectives of the stakeholder consultation process?*
- *Who has the Project Team engaged with?*
- *How did the Project Team engage with stakeholders?*
- *What are the key issues raised by stakeholders?*

12.1 What are the objectives of the stakeholder consultation process?

The stakeholder consultation strategy adopted for the Project sought to employ best practice to manage the stakeholder consultation process.

The key objectives of the consultation process were to:

- Provide clear and factual information outlining the DBC process to the community and stakeholders.
- Raise awareness of the Commonwealth's objectives for the Project and express views regarding the purpose of and process for development of the DBC.
- Provide an avenue for the community and stakeholders to learn more about the Project, express a view regarding perceived impacts and outline concerns.
- Develop long-term relationships with stakeholder groups and work towards generating a deeper understanding of the Project.
- Gather key market information from commercial stakeholders, and gauge the level of potential market interest in the Project.

12.2 Who has the Project Team engaged with?

Stakeholders were grouped into three broad categories – Community, Government and Commercial – reflecting the fact that different parties within the Project Team (the Communications Adviser, MPO and the Lead Adviser) were best placed to engage with different stakeholders.

While MPO is responsible for all stakeholder engagement and consultation, the management of activities associated with each stakeholder category were:

- Community stakeholders – primarily managed by the communications adviser (KGA).
- Government stakeholders – primarily managed by MPO.
- Commercial stakeholders – primarily managed by KPMG.

However, given the importance of a harmonised approach and consistent messaging, the three stakeholder categories were managed with a high degree of cooperation between the Project Team.

A list of stakeholders that the Project Team engaged with is summarised in Table 12.1.

Table 12.1 – Moorebank IMT – Stakeholder Categories

Community Stakeholders	Government Stakeholders	Commercial Stakeholders
• Local residents • Community groups – both local and broader Sydney • Academics and commentators • Unions • Local business groups • Professional associations and peak bodies • Political representatives	• The Commonwealth • NSW Government • Local Government (Liverpool City Council)	• Rail logistics and IMT operators • Port operators • Road operators • Freight forwarders and distribution centre operators • Distribution centre cornerstone customers • Financial advisers

Source: KGA

The engagement approach adopted for each category of stakeholders is discussed in turn in the following sections.

12.3 How did the Project Team engage with the community stakeholders?

Activities undertaken to facilitate the community stakeholder engagement included the following:

- Community Information Sessions for the general public.
- Stakeholder meetings and briefings.
- Regular updates on the Project website.
- Distribution of regular 'Community Update' newsletters.
- Site visits for community stakeholders.
- Distribution of an Information Paper on the Project.
- Provision of a telephone information line.
- Provision of an online inquiry service via the website.
- Collecting feedback from the community.
- Briefing of industry and business bodies.

Given the high number of residents from culturally and linguistically diverse backgrounds in the region surrounding the Project site, a multicultural communications specialist was engaged to assist with stakeholder consultation and communications. A translation service was provided in 14 languages thereby ensuring that all members of the local community were appropriately informed and had an equal opportunity to participate in the consultation process.

The activities undertaken for community stakeholder consultation and communication provided the following:

- A source of basic up-to-date information to the general public to assist them in understanding the Project and its objectives, via the website and directly by contacting KGA's team.
- A direct relationship with stakeholders that enables insight into their concerns and emerging issues.
- A mechanism of gathering stakeholder feedback.
- An opportunity to better explain the Moorebank IMT concept and the wider benefits of the Project.

12.3.1 Community Information Sessions

On 28 and 29 October 2011, two Information Sessions were organised at Wattle Grove and Casula respectively. These community engagement sessions formed part of the EIS process. The purpose of the sessions was to provide the community with an opportunity to view information about the Project. This included maps, site displays, an Information Paper and the opportunity to talk with members from the Project Team. The sessions also provided the Project Team an opportunity to better inform the community about the Moorebank IMT concept.

Publicity for the sessions was achieved through:

- Information made available on the Project website.
- A Community update newsletter mailed to 10,000 households.
- Advertising in local newspapers.
- Interviews with local newspapers (Liverpool Leader and Liverpool City Champion).
- Emails sent to Project email subscribers.
- Calls or emails were made to selected stakeholders including the NSW Government, the local councils (Liverpool City Council and Campbelltown City Council) and peak bodies (including Western Sydney Regional Organisation of Councils, Infrastructure Partnerships Australia, NSW Business Chamber, Sydney Business Chamber and Committee for Sydney).

12.4 What are the key issues raised by the community stakeholders?

Community research findings

In December 2010 a telephone survey of 1,000 Moorebank area and other Sydney residents was conducted on behalf of the Commonwealth in relation to the Moorebank IMT proposal. The sample consisted of approximately 600 residents from the suburbs of Moorebank, Wattle Grove, Holsworthy, Casula and Glenfield plus 400 from the remaining greater Sydney area. Community research conducted indicated that while many residents are aware of the Project, they have little detailed knowledge about it. Residents generally acknowledged the benefits of the Moorebank IMT and recognised the importance of such a proposal in transferring freight off roads onto rail thereby relieving traffic congestion. A significant proportion of participants expressed concerns about the potential impact on the local area. The issues most frequently raised through the community research included the following:

- Suitability of the site due to its proximity to residential areas.
- Perceived traffic impacts on surrounding roads.
- Perceived air quality and health impacts.
- Perceived noise pollution.

A number of residents considered the site is too close to residential areas and proposed Badgerys Creek as an alternative. Attitudes varied somewhat between suburbs, with the strongest concerns being observed in Wattle Grove and Moorebank suburbs, as opposed to Casula and Glenfield where there is interest in the potential of the Project to generate jobs.

Other concerns raised by the community included those relating to perceptions of light pollution and the adverse visual impact.

Community stakeholders also raised questions about the process for preparing the EIS, including the studies being conducted locally in relation to noise, air quality and traffic movements.

The research also indicated that Sydney residents outside the immediate Liverpool area are strongly supportive of the Moorebank IMT concept and recognised the benefits of transferring freight away from roads onto rail.

MPO's online inquiry service

Table 12.2 identifies the issues raised by community stakeholders that were submitted to the MPO through the Project's online inquiry service. These issues have been raised predominantly by those living in the immediate community around the Moorebank IMT site which included Moorebank, Casula, Glenfield, Wattle Grove and Holsworthy. A total of 364 stakeholders logged into the online Community Consultation software service. 431 "events" (emails, phone calls, surveys, news articles and blogs) were recorded that enabled reporting and tracking of developing issues.

The information gathered on community stakeholder views has been provided to the Project Team for consideration in the Project design. In many cases these concerns were provided directly to MPO and Parsons Brinckerhoff. These community concerns are expected to be further addressed in the EIS.

Table 12.2 – Key Stakeholder Concerns

Issues	Total number of times issue raised by stakeholders
Air pollution/quality	159
Congestion	150
Community consultation process	150
Noise	133
General public health	129
Flora and fauna	118
Proximity to residential areas	118

Table 12.2 – Key Stakeholder Concerns

Issues	Total number of times issue raised by stakeholders
Perception of decision already made	117
House prices	116
Consideration of alternative sites	115
Asthma	112
Political	111
Public Safety	111
Vibration	110
Light pollution	101
Georges River	101
Amenity	97
Site issues	75
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
Heritage	19
Feasibility study process	16
Other issues	26

Source : KGA

Key findings:

Overall, the main issues of concern to the community in the suburbs around the Moorebank IMT site are:

- Perceived air quality impacts.
- Perceived traffic/congestion impacts.
- Adequacy of community consultation process.
- Perceived general public health impacts.
- Perceived noise impacts.
- Perceived impact on the property prices.

It is envisaged that issues raised by the community in the future would be addressed by:

- Ongoing direct engagement with interested residents and the local media as project milestones are reached including the Commonwealth's announcement.
- A major public communications effort around the time of the EIS display period is planned including local information sessions, stakeholder briefings and public information activities.

12.5 How does the Project Team propose to engage with community stakeholders in 2012?

The Communications Strategy was last updated in July/August 2011 to provide a framework for activities in the second half of 2011. To facilitate an ongoing community consultation program, the Project Team has developed a revised communications strategy to cover the calendar year 2012. Please refer to refer Appendix 15.

The 2012 communications strategy proposes a continuation of engagement and consultation strategies, messages and channels in line with the key unfolding events relating to the Commonwealth's decision and EIS display.

The 2012 communications strategy provides a forward plan of expected public communication activities. In particular the strategy identifies:

- The key communications milestones to be achieved in the first half of 2012 in anticipation of the Commonwealth's announcement regarding the future of the Project. [redacted]
- The key communications milestones to be achieved in the second half of 2012 in anticipation of the release of the EIS and display period. Activities include community information sessions, direct mail, online information, local advertising and stakeholder briefings. [redacted]

The 2012 communications strategy is a flexible document that would be reviewed over time as key dates are finalised for the milestones noted above.

Beyond 2012

Public communications activity will be required beyond 2012, assuming the recommended model is approved by Government and the Project proceeds. There would be for communications support during the planning, procurement and operations phase.

The Australian Government, via MPO and thereafter the GBE, would continue to oversee and approve all aspects of the proposed public communications strategy including all key messages,

public statements, media relations, stakeholder engagement, online information, direct mail, advertising and community relations activities.

12.6 How did the Project Team engage with Government stakeholders?

The activities undertaken to facilitate consultation with relevant government stakeholders included the following:

- Government stakeholder mapping.
- Meetings and consultation with relevant Commonwealth stakeholders including DoD, DoIT, DoFD, ARTC, Infrastructure Australia and SEWPaC.
- Meetings and consultations with relevant State Government stakeholders including Transport for NSW, NSW Treasury, NSW Department of Planning, NSW RTA, NSW Department of Premier and Cabinet, Victorian Department of Transport and SPC.
- Meetings and consultations with relevant local Government entities including Liverpool City Council.

In relation to stakeholder engagement processes between the Commonwealth and the NSW Government and ARTC on issues such as interrelated projects (e.g. PBLIS), land acquisitions and rail interface connections a recommended engagement strategy is discussed in detail in Section 13.

Table 12.2 lists a sample of Government stakeholders that the Project Team engaged with.

Table 12.2 – Moorebank IMT – Government Stakeholders

Commonwealth Government Stakeholders	NSW Government Stakeholders	Local Government Stakeholders
• Department of Prime Minister and Cabinet • The Department of Treasury • The Department of Defence • The Department of the Environment, Water, Heritage and the Arts • Attorney General' Departments • Australian Bureau of Statistics • Infrastructure Australia • Australian Competition and Consumer Commission ACCC • Australian Customs Service	• Transport for New South Wales • Office of Public Works and Services • Department of Planning and Infrastructure • NSW Maritime • Sydney Water • Office of Environment and Heritage • NSW Rail - Rail Corporation New South Wales • NSW Rail - Rail Infrastructure Corporation • NSW Road Transport • SPC - Sydney Ports Corporation • Sydney Ports Authority	• Liverpool City Council • Campbelltown City Council

Source: MPO

12.7 What are the key issues raised by Government stakeholders?

The Project Team has undertaken a high level of consultation with several NSW Government agencies on important matters relating to the implementation of the Project.

There is a range of NSW agencies with an interest in the Project for which Transport for NSW (TNSW) has acted as the coordinating agency. These include Roads and Maritime Services (an operational entity of TNSW), the Department of Planning and Infrastructure, Sydney Ports Corporation, the Department of Premier and Cabinet and Infrastructure NSW. The Project Team has worked closely with Department of Planning and Infrastructure to ensure that the Project is considered in an expeditious manner under Part 4.1 of the Environmental Planning and Assessment Act.

The Project Team has also undertaken ministerial adviser level meetings with the office of the Minister for Roads and Ports, the Hon Duncan Gay MLC and the office of the Premier, the Hon Barry O'Farrell MP.

A number of local government bodies have been consulted with, principally LCC, which has the most direct interest in the Project as the local council authority. LCC's views on environmental issues such as human health (air quality) and amenity issues (noise, traffic, etc.) along with the issues raised within the community have been considered in the studies undertaken in the preparation for the proposed Moorebank IMT DBC.

The Campbelltown Council and Western Sydney Regional Organisation of Councils have also been consulted in relation to local road infrastructure.

12.8 How did the Project Team engage with commercial stakeholders?

The activities undertaken to facilitate the commercial stakeholder engagement include, but are not limited to, the following:

- Data gathering interviews to identify and obtain relevant information on potential market demand for the services to be provided by the Moorebank IMT.
- Market sounding interviews held in February 2011 as part of the Final Scoping Study (Phase 1).
- Market sounding interviews held in September 2011 as part of the DBC (Phase 2).

12.8.1 Data gathering interviews

In October and November 2010, a number of data gathering interviews were held with industry participants to identify and obtain relevant information on potential market demand for the services to be provided by the Moorebank IMT. The information gained during these interviews was used to inform various market demand variables and parameters as part of the market demand forecasting process.

12.8.2 Market Sounding Interviews Phase 1

During February 2011, a series of interviews were undertaken with industry and other relevant stakeholders in order to gauge the general level of interest in the Project and hear their views, primary concerns and issues associated with the Project.

Potential terminal operators, rail users, warehouse customers and other commercial participants were interviewed through the market sounding process. In addition a number of relevant Government entities including SPC, Transport Victoria and the RTA, were also consulted on the Project, particularly in relation to inter-related infrastructure. The views expressed by stakeholders assisted by informing the MPO and its advisers on the impacts and consequences of different delivery options being considered for the Project.

During phase 1 of the market sounding interviews, key details of the Project such as the preferred technical option had not yet been determined, and as such no commitments or specific representations to participants' issues were given. Rather, the focus was on receiving comments from stakeholders based on Project information available at the time.

Market sounding process

The market sounding interviews were undertaken in accordance with a prescribed process approved by the MPO and the Probity Adviser, which can be summarised as follows:

- The Lead Adviser developed a Phase 1 Market Sounding Strategy identifying the purpose of the Industry Stakeholder engagement process, rules and procedures, topics for discussion and a list of proposed Industry Stakeholders. The MPO and the Probity Adviser reviewed and approved the draft Strategy.
- Meetings were held in Sydney and Melbourne and were attended by representatives of the MPO, KPMG and Blake Dawson (Legal Adviser and Probity Adviser).
- The market sounding participants were provided with a Moorebank IMT Fact Sheet in advance of the meeting that contained publicly available background information on the proposed Project. The Probity Adviser reviewed and approved the Fact Sheet before it was provided to participants.
- Meetings had clear objectives documented in an agenda approved by the MPO and the Probity Adviser in advance of the meeting. KPMG prepared a script for each meeting to ensure consistency of discussion. The same questions were put to all of the stakeholders in each industry category. However, different sets of questions were asked of different categories of stakeholders.

Market sounding participants

In order to seek a variety of feedback from industry on the Project and to balance alternative views, potential participants were identified across a broad range of relevant industry disciplines including:

- Rail logistics and IMT operators.
- Port operators.
- Road operators.
- Freight forwarders and distribution centre operators.

- Distribution centre cornerstone customers.
- Government stakeholders.

[redacted]

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12.8.3 Market Sounding Phase 2

A second phase of market sounding was conducted in September 2011, which sought to elicit more detailed responses to the range of commercial models evaluated as part of the DBC.

The purpose of these meetings was to ascertain the likely level of interest participating IMT operators, potential users of the facility and potential financial advisers if the Project were to proceed, as well as create awareness in the market regarding the study. The meetings were also used to test certain assumptions/propositions (e.g. commercial structure, user requirements, identification of Project constraints and risks) to inform the DBC.

The feedback from the market sounding meetings was used by the MPO and its advisers in preparing the DBC.

Market sounding process

The market sounding interviews were undertaken in accordance with the prescribed process approved by the MPO and the Probity Adviser. An agenda was provided by the Project Team prior to each meeting.

Market sounding participants

The market sounding process was structured to ensure it included input from a cross section of participants (port operators, IMT operators, potential users and financial advisers). A desktop analysis was also undertaken to identify potential domestic and international operators that could be approached for this purpose.

Each of the potential participants was sent a brochure via email. The brochure was also made available via the website. The purpose of the brochure was to provide a high-level overview of the Project, to allow interested parties to learn more about the Project and its objectives and to provide direction for an organisation to indicate their potential interest in the Project.

Organisations were also able to register their interest in participating in the market sounding process by responding to the proposed website reference on the DoFD Moorebank IMT website. The website provided organisations interested in participating in the market sounding process with the criteria which was be used to determine whether an organisation was suitable to participate in the market sounding process.

Participants

[redacted]

12.9 What were the key issues raised by commercial stakeholders?

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13 Engagement Strategy

[Note: this section has been drafted by MPO's legal adviser Blake Dawson.]

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14 Project Implementation Plan

The purpose of this section is to outline an indicative high-level implementation plan for the delivery of the Project (post the submission of the DBC) should approval to proceed be obtained from the Commonwealth. In particular, this section seeks to answer the following questions:

- *What are the key activities required to deliver the proposed Moorebank IMT?*
- *When are the activities required to be undertaken?*
- *Who are the appropriate parties to undertake these activities?*

14.1 What are the key activities required to deliver the proposed Moorebank IMT?

The activities that would be required to implement the Moorebank IMT project should approval to proceed be obtained from the Commonwealth are summarised in table 14.1. The Transition Phase along with aspects of the pre-Procurement Phase could be undertaken through the MPO with subsequent phases being undertaken by the GBE.

Table 14.1 – Key implementation phases, tasks, key milestones and indicative dates

Phases	Tasks	Key Milestones
Transition Phase (January 2012 to May 2012): Activities during this phase relate to the collection of information to assist the Government decision process regarding a Moorebank IMT.	• Recommendation to Government. • Ongoing engagement with the NSW Government, ARTC and other stakeholders. • Progress work on the EIS. • Preliminary high-level planning for the potential establishment of the GBE and land lease for the IMT site. • Community and stakeholder liaison. • Liaison with Defence and the MUR Project Team.	• Government decision (May 2012).
Phase One - Pre - Procurement (May 2012 to December 2012): The focus of activities during this phase relates to NSW Engagement, MUR liaison and the establishment of the GBE.	• Continue NSW Government and ARTC engagement. • Continue community and commercial stakeholder engagement. • Determine the terms and conditions for the land lease. • Establish the GBE. • MUR engagement. • Plan the transition implementation process between GBE and MPO.	• NSW Government and ARTC engagement (2012).
Phase Two - Procurement Planning (February 2013 to October 2013): During this phase the GBE would focus on activities that relate to the procurement	• Conducting a procurement and packaging study. • Transition from MPO to GBE • GBE to confirm design and commercial model. • Preparation of procurement documentation • Rail accreditation.	• Transition from MPO to GBE (January to July 2013).

Table 14.1 – Key implementation phases, tasks, key milestones and indicative dates

Phases	Tasks	Key Milestones
planning and progressing stakeholder engagement.	• NSW Government engagement. • MUR engagement. • Engagement with ARTC in regards to the spur line and access.	
Phase Three - Procurement Process (August 2013 to July 2014): During this phase the GBE would focus on activities that relate to the procurement process for the IMEX and warehousing.	• Managing the procurement process for the IMEX terminal. • Managing the procurement process for the warehousing. • Commence GBE reporting to the DoFD and the DoIT.	• The procurement process (commences July 2013). • Contractual close of IMEX and warehousing contracts (July 2014).
Phase Four - Construction (August 2014 to June 2017): During this phase the GBE would focus on activities that relate to the construction process for the IMEX and commercial development (warehousing).	• Oversight of the construction process of the IMEX terminal. • Oversight of the warehousing construction process. • ARTC engagement. • MUR engagement.	• MUR movement (December 2014). • Construction commences (July 2015).
Phase Five - Commencement of Operation (July 2017): During this phase the GBE would focus on activities that relate to the operations process.	• Management of the IMEX and warehousing site. • GBE reporting to the DoFD and the DoIT. • Ongoing analysis of the requirements for an Interstate Terminal on the site (reporting on the policy requirements and demand forecasts).	• Commencement of IMEX terminal and warehousing operations (July 2017).
Source: KPMG		

These phases and the related activities are detailed in the implementation Gantt chart in Appendix 10. A more in-depth description of the activities during each of the phases is provided in this section.

14.2

15 Conclusion

Does the solution address the Commonwealth's objectives?

The Moorebank IMT has an important long-term role in the freight supply chain to support national productivity, in particular more efficient use of existing rail and port assets, reduce business costs as well as to create jobs in South-West Sydney. Table 15.1 illustrates that the proposed Moorebank IMT solution (i.e. proposed Concept Design and commercial structures and arrangements) meets the Commonwealth's objectives:

Table 15.1 – Evaluation of the proposed solution against the Commonwealth's objectives

Objectives	Evaluation
1 Boost national productivity over the long-term through improved freight network capacity and rail utilisation.	The economic evaluation for the Project indicates that the Project achieves a BCR of 1.72, which compared with other recent transport projects ranks as one of the better performing projects. The demand analysis indicates strong available demand for the IMEX terminal [redacted] This demand is dependent on future trends in factors such as the price of oil, road user charges, exchange rates, the carbon price and labour costs. The Project would contribute to a reduction in rail freight costs and allow more freight to be transported by rail. This would generate a number of benefits for national productivity including savings in transport operating costs, improved freight service reliability and availability, reductions in road congestion, damage and accident costs.
2 Create a flexible and commercially viable facility and enable open access for rail operators and other terminal users.	It is anticipated that a GBE Landlord would be established to oversee the development of the Project to ensure a commercial outcome is achieved. The Project is proposed to be developed in three stages (IMEX, warehousing and Interstate) to ensure that the construction of Interstate infrastructure associated warehouse capacity is flexible and timed to meet market demand and policy consideration. [redacted] The solution would provide open access to the IMT by rail operators and users, which would encourage competition.
3 Minimises impact on Defence's operational capability during the relocation of Defence facilities from the Moorebank	The proposed delivery solution results in no intrusive impacts to DoD's activities on the SME site as the Project will commence only when the site is completely vacated. The Project would also result in the collocation of the SME with the other Defence units on the Holsworthy Barracks.

Table 15.1 – Evaluation of the proposed solution against the Commonwealth's objectives

Objectives	Evaluation
site.	
4 Attract employment and investment to South-West Sydney.	Economic modelling has been carried out to estimate the impact of the Project on the greater Sydney region. During the construction period, the Project is expected to result in an average annual increase to Gross Regional Product of $135 million p.a. for the IMEX and $78 million p.a. for the Interstate. The modelling estimates that the Project would create an average annual increase in regional employment during the construction phase of approximately 1,650 FTE p.a. during Stage 1 and approximately 975 FTE p.a. during Stage 2. During the operations phase the IMEX terminal, interstate terminal and warehousing would create approximately an additional 1,700 jobs p.a.
5 Achieve sound environmental and social outcomes that are considerate of community views.	The environmental and social benefits that an IMT at Moorebank would deliver are derived from a range of sources: • The community would benefit from a reduction in road congestion and road accident costs. For example without the Moorebank IMT from 2020 onwards truck volumes would be 3,300 vehicles per day higher. • The Moorebank IMT would bring about a reduction in environmental costs associated with road transport – in particular a reduction in noise, greenhouse gas emissions and other air pollution. For example, the Moorebank IMT would save 9,500 tonnes of Co2-e greenhouse gases for every 1 million TEU containers that are transported by rail instead of road for IMEX traffic. • Journey reliability benefits – this social benefit reflects the savings achieved through more reliable road travel times. • Road damage cost savings – these social benefits measure the cost savings derived from less road damage caused by freight trucks. • The local community would benefit through the creation of 1,650 full time jobs during Stage 1 and approximately 975 full time jobs during Stage 2construction of the interstate terminal. The operation of both terminals together with warehousing could see an additional 1,700 people being employed in the region. • Overall, the total Project benefits over the 30 year evaluation period are valued at approximately $10 billion in nominal dollars or $2.3 billion in present value terms.
6 Optimise value for money for the Commonwealth having regard to other stated Project objectives.	The proposed procurement approach was designed to achieve value for money. The Project would facilitate the modal shift from road to rail, would further enhance the Commonwealth's investment in rail infrastructure, would assist in reducing road congestion and road accidents and would assist in raising Port Botany's planning cap. Investment in the Project would also provide a major boost to the economy of South West Sydney. Approximately 1,650 full time staff are expected to be employed during construction of the IMEX terminal. The operation of both terminals, together with warehousing, could see an additional 1,700 people

Table 15.1 – Evaluation of the proposed solution against the Commonwealth's objectives

Objectives	Evaluation
	being employed on the site. [redacted] There would be minimal impact to DoD's operational capability during the relocation of DoD's facilities from the Moorebank site. The Project would also provide significant economic, social and environmental benefits. [redacted]

Source: KPMG

16 Glossary of Terms

ABB	Asea Brown Boveri
ABN	Australian Business Number
ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
Acquisition Act	Lands Acquisition Act 1989 (Commonwealth)
AGV	Automated Guided Vehicles
AHIMS	Aboriginal Heritage Information Management System maintained by the OEH under the Heritage Act
AQIS	Australian Quarantine Inspection Service
ARI	Average Recurrence Interval
ARTC	Australian Rail Track Corporation
BCR	The benefit-cost ratio is an indicator that summarises the overall value for money of the project in the form of benefits relative to costs, expressed in monetary terms at discounted present values
BITRE	Bureau of Infrastructure, Transport and Regional Economics
Bulk freight	Commodities that are transported unpackaged in large quantities Cargo is usually dropped, poured or stored under pressure in a bulk carrier Bulk cargo is often classified into sub categories of liquid bulk and dry bulk
C&C Act	The *Competition and Consumer Act 2010* (Cth)
CAC Act	*Commonwealth Authorities and Companies Act*
Campbelltown Council	Campbelltown City Council
CAPEX	Capital Expenditure
CBA	Cost Benefit Analysis
CBD	Central Business District
CGE	Computable general equilibrium modelling generally provides estimates of the distribution of the Project benefits using selected macro-economic parameters such as contribution to GSP and job creation as a result of a project
Civil Liability Act	The *Civil Liability Act 2002* (NSW)
CLM Act	The *Contaminated Land Management Act 1997* (NSW)
Co	Company
Commonwealth	Commonwealth of Australia
Commonwealth Acquisition Act	The *Lands Acquisition Act* 1989 (Cth)
Commonwealth Gazette	The official journal published by the Commonwealth containing a variety of material including Commonwealth notices and regulations
Constitution	The *Commonwealth of Australia Constitution Act*
Contractual Close	The date at which the contract with the short-listed consortia is completed This would be followed by Financial Close when the financier locks in their project financing arrangements
Corporations Act	The *Corporations Act 2001* (Cth)
CPI	Consumer Price Index
CPW	Cumberland Plain Woodland

Critical SSI	Critical State Significant Infrastructure as declared by the Minister under Section 115V of the EPA Act
Cross Dock Facility	A facility than enables unloading materials from an incoming semi-trailer truck or rail wagon to be loaded directly into outbound trucks, trailers, or rail wagons, with little or no storage in between
Crown	The sovereign of the Commonwealth, from time to time
Cth	Commonwealth
[redacted]	[redacted]
DBC	Detailed Business Case
[redacted]	[redacted]
Defence	The Commonwealth Department of Defence
DGRs	Director General's Requirements
Disposals Policy	The Commonwealth Property Disposals Policy and associated Guidance for Departments and Agencies, both of which are administered by Finance
DoIT	The Commonwealth Department of Infrastructure and Transport
DLTP	Defence Logistic Transformation Program
DNSDC	Defence National Storage and Distribution Centre
DoD	The Commonwealth Department of Defence
DoFD	Department of Finance and Deregulation
DoPI	NSW Department of Planning and Infrastructure
Dwell time	Down time for train awaiting access to a terminal or network path, or to be loaded or unloaded Time spent by a container on the ground between journeys
EA	Environmental Assessment
EIS	Environmental Impact Statement
Endeavour Energy	The State owned corporation (formerly known as Integral Energy Australia) created pursuant to the *Energy Services Corporations Act 1995* (NSW) and the *State Owned Corporations Act* 1989 (NSW) and which is responsible for the supply of electricity in, among others, the Liverpool LGA
Enfield ILC	Enfield Intermodal Logistics Centre
EOI	Expression of Interest
EPA Act	*Environmental Planning and Assessment Act 1979* (NSW)
EPBC Act	The *Environment Protection and Biodiversity Conservation Act 1999* (Cth)
ESA	Environmental Site Assessment
ESD	Ecologically Sustainable Development
Feasibility Study	The study being conducted by MPO and its advisers into the feasibility of the Project, including the Final Scoping Study and the Detailed Business Case
Federal OHS Scheme	An Occupational Health and Safety scheme established under Section 35 of the BCII Act and administered by the Federal Safety Commissioner
Finance	The Commonwealth Department of Finance and Deregulation
Financial Close	Contractual close of all Project-financing documents
Ft	Foot
FTE	Full-time equivalent is a way to measure a worker's involvement in a project (eg an FTE of 1.0 is the equivalent to a full-time worker whereas an FTE of 0.5 indicates a part-time worker)
GA Research	Gavin Anderson Research

Gantry Crane	A gantry crane running on steel rails used for stacking intermodal containers within the stacking areas of a container terminal RTGs are used at container terminals and container storage yards to straddling multiple lanes of rail/road and container storage, or when maximum storage density in the container stack is desired
GBE	Government Business Enterprise
GBE Guidelines	Commonwealth Government Business Enterprise – Governance and Oversight Guidelines October 2011
GFA	Gross Floor Area
GFC	Global Financial Crisis
GMA	Greater Metropolitan Area
[redacted]	[redacted]
HV	High voltage
HVAC	Heat Ventilation and Air Conditioning
IA	Infrastructure Australia
ICT	Information and communications technologies
IMEX	Import-Export
IMEX Terminal	The import-export component of the IMT, together with related infrastructure and rail sidings, as referred to in the Reference Design
IMT	An intermodal terminal is an area of land used to transfer freight between at least 2 modes of transport It is typically used to describe the transfer of international, ISO containers from road to rail and vice versa
IMT Site	The areas identified during the Scoping Study and Detailed Business Case as the potential site of the IMT, being the SME Site, Northern Commonwealth Land, Northern Powerhouse Land, part of the Georges River (Moorebank Section), the Private Section of Moorebank Avenue and Bapaume Road
IMT Site Survey	The cadastral site plan, a copy of which forms Annexure E to this Report
Infrastructure Act	The *Infrastructure NSW Act 2011* (NSW)
SEPP	State Environmental Planning Policy (Infrastructure) 2007
In-Ground Infrastructure	Pipes, sewers, drains, roads, wires, conduits and other infrastructure affixed to or situated within land
Interpretation Act	The *Acts Interpretation Act* 1901 (Cth)
Interstate Terminal	The interstate component of the IMT, together with related infrastructure and rail sidings, as referred to in the Reference Design
IRR	Internal Rate of Return is a rate of return used in capital expenditure to measure and compare the profitability of investments The calculation does not include environmental factors, such as inflation
ITSRR	Independent Transport Safety and Rehabilitation Regulator
ITV	Inter-terminal Vehicles
KGA	Kreab Gavin Anderson
KM	Kilometre
KM/H	Kilometres per hour
kV	Kilovolts
kW	Kilowatts
Landside infrastructure	Road and rail links and other infrastructure (eg pipelines) which support freight movements through infrastructure gateways (eg ports and airports)
LCC	Liverpool City Council

Lead Adviser	KPMG Australia
LG Act	The *Local Government Act 1993* (NSW)
LGA	Local Government Area as defined by the Australian Bureau of Statistics
Liverpool Council	The Council of the City of Liverpool
Liverpool LEP	Liverpool Local Environmental Plan 2008
Liverpool LGA	The Liverpool Council Local Government Area
m	Metres
M&R	Maintenance and Repair
m/s	Metres per second
M5	M5 Motorway
M7	M7 Motorway
MFN	Metropolitan Freight Network; The dedicated freight lines within the following NSW rail corridors: Sefton Park, to Chullora, Flemington South to Belmore, Belmore to Marrickville, Marrickville to Botany and Dulwich Hill to Rozelle[1]
Minister	A person who holds office, either in the Australian Government or the NSW Government (as the case may be) and who has responsibility for administering one or more departments in government
mm	Millimetres
Moorebank Precinct	The SME Site, SIMTA Site, Northern Commonwealth Land, ABB Site, West Wattle Grove, Adjacent Commonwealth Land, Georges River (Moorebank Section), Northern Powerhouse Land, Southern Powerhouse Land, Western Commonwealth Land, Glenfield Tip and the northern part of the Holsworthy Military Reserve, as shown on the Moorebank Precinct Map
MPO	Moorebank Project Office
MUR	Moorebank Units Relocation
MVA	Mega volt amps
NCC	National Competition Council
Nominal costs	Costs inclusive of inflation (escalation)
NPC	Net Present Cost
NPV	Net present value is a standard method for using the time value of money to appraise long-term projects It is defined as the present value of future cash flows minus the purchase price (which is in itself a present value)
NSFC	North Sydney Freight Corridor
NSW	New South Wales
NSW Rail Access Undertaking	The undertaking made pursuant to Schedule 6AA of the Transport Act between RailCorp and RIC on or about 4 September 2011
NSW WHS Act	*Work Health and Safety Act* 2011 (NSW).
NT Act	The *Native Title Act 1993* (Cth)
NT NSW Act	The *Native Title (New South Wales)* Act *1994* (NSW)
O&M	Operations and Maintenance
OCR	Optical Character Recognition
OEH	The NSW Office of Environment and Heritage
Open access	Usually consists of a multi user freight facility or terminal serving single or multiple markets
OTR	Over the Road
PAC	The NSW Planning Assessment Commission established under the EPA Act
PB	Parsons Brinckerhoff

PBLIS	Port Botany Landside Improvement Strategy
PMF	Probable maximum flood
PNFC	Public Non-Financial Corporation
POV	Personal Occupancy Vehicles
[redacted]	[redacted]
PUD	Pickup and delivery to and from a freight customer
Rail Bridge	The proposed railway bridge over the Georges River (Moorebank Section) for the purposes of connecting the IMT to the SSFL Rail Spur
RailCorp	Rail Corporation NSW
Reference Design	The proposed design for the IMT prepared by the Technical Adviser
RFP	Request for Proposal
RIM	Rail infrastructure operator under the RS Act
RMG	Rail Mounted Gantry
Rolling stock	Refers to all vehicles that move on rail, both powered (locomotives) and unpowered (wagons)
RS Act	*Rail Safety Act* 2008 (NSW).
RS National Law	Rail Safety National Law
RS Regulations	Rail Safety (General) Regulation 2008
RTA	Roads and Traffic Authority
RTO	Rail transport operator under the RS Act
Rubber Tyred Gantry (RTG) Crane	A mobile gantry crane used for stacking intermodal containers within the stacking areas of a container terminal RTGs are used at container terminals and container storage yards to straddling multiple lanes of rail/road and container storage, or when maximum storage density in the container stack is desired
RUC	Road User Charge
S&R SEPP	The State Environmental Planning Policy (State and Regional Development) 2011
Scoping Study	The Final Scoping Study Report will present a limited number of short-listed technical options for the delivery of the Project and propose a range of commercial options which may be applied to each technical option
SEPP	State Environmental Planning Policy
SEWPaC	Commonwealth Department of Sustainability, Environment, Water, Population and Communities
Siding	Low-speed rail track section generally used for marshalling, stabling, storing, loading and unloading of rolling stock
SIMTA	The Sydney Intermodal Terminal Alliance, being a joint venture between QR, Qube and Stockland
SME	School of Military Engineering
SPC	Sydney Ports Corporation
SPV	Special Purpose Vehicle
sqm	Square metre
SSD	State Significant Development as defined in Division 41 of Part 4 of the EPA Ac
SSFL	Southern Sydney Freight Line - a planned single track enhancement to the rail corridor between Sefton Park Junction and Macarthur for dedicated freight use
SSFL Rail Spur	The proposed rail spur to be constructed on the Northern Powerhouse Land linking the SSFL to the Rail Bridge and, ultimately, the IMT
SSI	State Significant Infrastructure as defined in Part 51 of the EPA Act

SWC	Sydney Water Corporation
TEU	Twenty foot equivalent unit, the international measure used for standardising container throughput numbers
The Project	Moorebank Intermodal Terminal project
TNSW	Transport for NSW, being the centralised public transport authority for NSW
Transhipments	Freight which is transferred from one mode of transport to another or similar mode of transport at a port, intermodal terminal or other type of freight handling facility
Transport Act	The *Transport Administration Act* 1988 (NSW)
Treasury	The Commonwealth Treasury
TSC Act	Threatened Species Conservation Act 1995
UXO	Unexploded Ordnance
VfM	Value for Money
Yr	Year