

SIMTA Intermodal Terminal Project – Moorebank Precinct East Stage 2

Peer Review

Project Number: 82017122-01/Report 001 Ver 1

Prepared for
Liverpool City Council

20 February 2017



Contact Information

**Cardno South Coast
Trading as Cardno (NSW/ACT) Pty Ltd**
ABN 95 001 145 035

Level 1, 47 Burelli Street
PO Box 1285
Wollongong NSW 2500

Telephone: 02 4228 4133
Facsimile: 02 4228 6811
International: +61 2 4228 4133

southcoast@cardno.com.au
www.cardno.com.au



Author(s):

Daniel Thompson
Manager - Planning



Approved By:

Alex Larance
Manager - Environment

Document Information

Prepared for: Liverpool City Council
Project Name: Peer Review
File Reference: Report 001 Ver 1 SIMTA
MPE Stg 2 Review
Master.docx
Job Reference: 82017122-01/Report 001
Ver 1
Date: 20 February 2017

Version Number: 1

Effective Date: 20 February 2017

Date Approved: 20 February 2017

Document History

Version	Effective Date	Description of Revision	Prepared by:	Reviewed by:
0	7/02/2017	Draft	Daniel Thompson	Alex Larance
1	20/02/2017	Final	Daniel Thompson	Alex Larance

© Cardno. Copyright in the whole and every part of this document belongs to Cardno and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or in or on any media to any person other than by agreement with Cardno.

This document is produced by Cardno solely for the benefit and use by the client in accordance with the terms of the engagement. Cardno does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.

Executive Summary

The Sydney Intermodal Terminal Alliance (SIMTA), comprising a consortium of Qube holdings and Aurizon plan to construct and operate an intermodal freight terminal (IMT) and associated infrastructure on the former Defence National Storage and Distribution Centre site, at Moorebank, NSW. SIMTA obtained approval for the Concept Plan (MD 10_0193) on 29 September 2014 for an IMT with a capacity of 250,000 twenty-foot equivalent Units (TEUs) per annum, as a transitional Part 3A Project in accordance with section 75O (now repealed) of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Moorebank Precinct East (MPE) is being developed separately to a second IMT, also managed by the SIMTA, located adjacent to the site to the west. The two sites are separated by Moorebank Avenue with this second site referred to as Moorebank Precinct West (MPW). The Commonwealth government in the form of the Moorebank Intermodal Company previously obtained approval for the development of an IMT on the site with a capacity of 1.05 million Twenty-foot Equivalent Units (TEUs) per annum, subject to SSD_5066 under Division 4.1 of the EP&A Act. SIMTA have subsequently reached agreement with the Commonwealth Government to take over the MPW site.

An Environmental Impact Statement (EIS) for Stage 2 of the MPE was released for exhibition from 13 December 2016 to 24 February 2017. The Stage 2 EIS details the environmental impact associated with the demolition of existing buildings on the DNDSC site and the construction of warehousing, associated facilities, freight village, roadways, stormwater and ancillary services. The Stage 2 EIS builds on the approval, determined 16 December 2016, for Stage 1 works which include IMT facilities, 4 rail sidings and associated container storage space.

The MPE Stage 2 EIS has been detailed in the *Moorebank Precinct East – Stage 2 Proposal: Environmental Impact Assessment* Report (Arcadis, 2016a) (MPE Stage 2 EIS). The NSW Department Planning and Environment (DP&E) have invited Liverpool City Council (Council) to make a submission to the modification by 24 February 2017, with this submission prepared by Cardno on behalf of Council.

The submission considered the proposed Stage 2 works comparative to the existing Project Approval inclusive of early works and the potential for additional environmental impact. The review found that the proposed Stage 2 works, particularly the extension of the MPE Project boundaries and the import of spoil material has the potential for extensive environmental impacts, primarily on Moorebank, surrounding suburbs and associated transit corridors.

Key issues identified by Cardno's submission included:

- > **Many of the impacts previously identified in the Council review of the Concept and Stage 1 Approval are yet to be adequately assessed and mitigated to an acceptable level.**
- > **A modification to Concept Approval SSD_5066 under Section 75W of the EP&A Act has been lodged by SIMTA and is yet to be determined. Stage 2 is reliant on the earlier stages progressing. Consequently, Stage 2 assessment should be held in abeyance pending the outcome of the modification.**
- > **Traffic congestion and associated impacts on amenity due to additional vehicles on the road network. These impacts are anticipated to be greater than predicated in the EIS due to the methodology and associated assumptions used.**
- > **Noise and Air Quality impacts on human health during construction and operations, which are likely to be greater than identified in the EIS due to the traffic assumptions used.**
- > **Critically endangered plant species in the form of *Hibbertia fumana* has recently been rediscovered directly adjacent to the proposed development, in the area recognised as The Boot. Further discussion of adequate survey, avoidance and mitigation should be provided in the Biodiversity Assessment Report.**

The review identified the potential for extensive environmental impacts, some of which are yet to be adequately assessed by the proponent. Furthermore, it is questionable whether these impacts can be mitigated without the identification and preparation of supporting infrastructure, management plans, operating procedures and compensation schemes, which the current scheme and associated assessment

fails to do. Consequently, it is considered that additional information is required before a comprehensive assessment and subsequent determination of the proposal can be made.

Furthermore, it is recommended that a precinct wide, master planned approach to earthworks is considered. This approach reflects previous comments from the Planning and Assessment Commission and Council, which would allow more orderly development and aid the understanding of the full extent of environmental impacts.

Table of Contents

Executive Summary	ii
1 Introduction	6
1.1 Background	6
1.2 Review Objectives	7
1.3 Methodology	8
1.4 Project Team	11
1.5 Structure of the Report	11
1.6 Limitations	11
2 Reoccurring Themes	12
2.1 Concept Approval Modification 2	12
2.2 Traffic and Transport	13
2.3 Noise	13
2.4 Air Quality	14
2.5 Local Infrastructure Contributions	15
2.6 Visual Amenity	16
2.7 Heritage	16
2.8 Human Health	17
2.9 Cumulative Effects	17
3 Environmental Impact Assessment	19
3.1 Legislative Review	19
3.2 Consistency with Assessment Requirements	23
3.3 Road Traffic and Transport	44
3.4 Noise and Vibration	52
3.5 Air Quality	54
3.6 Human Health	58
3.7 Biodiversity	62
3.8 Stormwater and Flooding	64
3.9 Soils and Contamination	66
3.10 Hazard and Risk	69
3.11 Visual Amenity, Urban Design and Landscape	73
3.12 Heritage	78
3.13 Greenhouse Gas and Ecologically Sustainable Development	81
3.14 Property and Infrastructure	85
3.15 Waste	90
3.16 Socio Economic	92
4 Conclusions & Recommendations	95
4.1 Recommendations	96
5 References	97

Tables

Table 3-1	Concept Approval Schedule 3 - Conditions to be met in future development applications Review	24
Table 3-2	Secretaries Environmental Assessment Requirements Review	34
Table 3-3	Future Operational Traffic Modelling	48
Table 3-4	Potential underestimation of MPE Stage 2 emissions (as relevant to cumulative assessment).	56
Table 3-5	Viewpoints where Visual Impact likely	74
Table 3-6	Summary of Visual Assessments	75
Table 3-7	Property Identified as Impacted	85
Table 3-8	Summary of impacts on affected properties	87

Figures

Figure 1-1	Location Plan – Greater Sydney Context	9
Figure 1-2	Location Plan – Moorebank SIMTA MPE and MPW Sites	10
Figure 3-1	Land to which Part 2.4 of the Liverpool Development Control Plan Applies	21
Figure 3-2	VIA Viewpoint locations and directions	74

1 Introduction

This section introduces the submission and provides a background to the Project.

The Sydney Intermodal Terminal Alliance (SIMTA), comprising a consortium of Qube Holdings and Aurizon, plan to construct and operate an intermodal freight terminal (IMT) and associated infrastructure at Moorebank, NSW. The IMT comprises two adjacent sites, Moorebank Precinct East (MPE) and Moorebank Precinct West (MPW), serviced by Moorebank Avenue. SIMTA has now proceeded to Stage 2 of the MPE facility with the release of an Environmental Impact Statement (EIS) for the proposed works.

The site located within the Liverpool Local Government Area was previously Commonwealth land operating as the Defence National Storage and Distribution Centre (DNSDC). The site is now owned by SIMTA with surrounding land primarily Commonwealth owned. The proposed rail spur passes through a number of different public and privately owned parcels. The site is adjacent to Moorebank Avenue to the west with the Georges River beyond, with the residential suburb of Wattle Grove to the east.

The EIS was placed on public exhibition from 13 December 2016 to 24 February 2017. Liverpool City Council (Council) and its community have raised significant concerns about the scale of impacts associated with the combined IMT Project and have raised their strongest objection to the development scheme. Cardno (NSW/ACT) Pty Ltd (Cardno) was engaged to prepare a submission on behalf of and in conjunction with Council to the exhibited documents.

1.1 Background

SIMTA is currently progressing with the development of two IMT facilities located adjacent to Moorebank Avenue on previously owned Commonwealth land. The land on the eastern side of Moorebank Avenue is referred to as MPE and occupies land previously utilised by the DNSDC. The land on the western side of Moorebank Avenue, referred to as MPW, is located on Commonwealth land and previously accommodated the School of Military Engineering (SME). The subsections below provide further background to both the MPE and MPW sites.

1.1.1 Moorebank Precinct East

The MPE site was previously Commonwealth owned operating as the DNSDC. SIMTA has taken ownership of this land and obtained Concept Approval (MP 10_0193) as a transitional Project under Part 3A of the *Environmental Planning & Assessment Act 1979* (EP&A Act), with subsequent staged Project Approvals to be obtained by SIMTA under Division 4.1 of the EP&A Act. The Project is identified as State Significant Development (SSD) subject to *State Environmental Planning Policy (State and Regional Development) 2011* (State and Regional SEPP) with an EIS informed by Secretaries Environmental Assessment Requirements (SEARs). Approval for Stage 1 works within the overall Concept Approval was granted on 12 December 2016, along with Modification 1 to the Concept Approval. An EIS for Stage 2 of the MPE Project was placed on exhibition for the period 13 December 2016 to 24 February 2017 and is the subject of this application.

SIMTA propose to concurrently modify the Concept Approval (Modification 2), with the modification documents currently on public exhibition. The modification will be the subject of a separate submission from Council and Cardno.

The MPE IMT is approved to accommodate a container freight volume of 250,000 Twenty-foot Equivalent Units (TEUs) per annum. The 250,000 TEU capacity is the maximum permitted freight road volume subject to the Concept Approval. The IMT comprises a rail spur linking the site to the Southern Sydney Freight Line (SSFL), with four sidings on site serviced by trucks via Moorebank Avenue. The SIMTA Project is proposed to service Port Botany, with freight received by rail and then distributed via truck (refer to **Figure 1-1** for the Greater Sydney Regional context).

The MPE site borders are defined by:

- > North – Defence Joint Logistics Unit (DJLU) with residential and industrial areas of Moorebank beyond.
- > East – vegetated Commonwealth land and the residential suburb of Wattle Grove.

- > South – the heavily vegetated Holsworthy Military Reserve, with the East Hills Line Railway beyond.
- > West – Moorebank Avenue, with the MPW beyond. The Georges River, with the River foreshore recreational area including the Casula Powerhouse Arts Centre and the suburb of Casula further west.

The MPW site is to the west and has approval for the staged development of an IMT by SIMTA as discussed in **Section 1.1.2** below.

1.1.2 Moorebank Precinct West

The Commonwealth government in the form of the Moorebank Intermodal Company (MIC) obtained Concept Approval (SSD_5066) for the MPW site including early works. SIMTA have subsequently reached agreement with the Commonwealth Government to take over the site to develop the Moorebank Precinct on a 'whole of precinct basis'.

The MPW IMT is approved to accommodate a container freight volume of 1.05 million TEUs per annum, subject to SSD_5066. The Project has been identified as SSD subject to *State Environmental Planning Policy (State and Regional Development) 2011* (State and Regional SEPP) with an EIS informed by SEARs prepared in support of the original approval. A modification to the Concept Approval, which is primarily to facilitate the importation of 1,600,000m³, was lodged with the Department of Planning & Environment (DP&E). Cardno in conjunction with Council lodged a submission to the modification, with the amendment currently being determined.

1.1.3 Context

Figure 1-1 shows the MPE and MPW sites in the context of other IMT's within the Greater Sydney Region, with **Figure 1-2** illustrating the proximity of the two sites. The SIMTA *Intermodal Terminal Facility- Stage 1: Environmental Impact Statement* prepared by Hyder Consulting (2015a) to inform the MPE Stage 1 development identified that MIC, the previous proponents of the MPW site and SIMTA the proponents of the MPE site had reached an agreement to develop the two IMT sites through a precinct wide approach, with SIMTA subsequently becoming the proponent for both sites. This agreement has not yet resulted in a master planned approach for both sites being put forward.

The physical proximity and a common operator for both Moorebank IMT sites suggests that there may be a shared rail link to the SSFL and associated infrastructure. Such a scheme has not yet been put forward, with separate rail connections and road interfaces proposed.

It is acknowledged that the scope of this review is focused on the MPE Project. However, given the proximity of the two IMT's, there is the potential for large scale and wide ranging cumulative environmental impacts. Consequently, such impacts and opportunities for further integration of the Projects has previously been raised by both the Planning Assessment Commission and Council, with further comment in this submission. The consideration of cumulative impacts would ensure the most efficient and coordinated use of resources, while gaining a clear understanding of the potential impacts of both Projects on the Liverpool community and Council assets.

Council and its community have raised significant concerns about the scale of impacts associated with the Project and have raised their strongest objection to the development scheme. Cardno has previously been engaged to prepare a submission on behalf of and in conjunction with Council to the public exhibition period.

1.2 Review Objectives

The review objectives comprise:

- > Review the adequacy of the environmental assessment within the EIS and supporting documentation
- > Identify the potential impacts resulting from the Project, including those cumulative impacts associated with MPE and MPW
- > Identify if the Concept Approval requirements (State and Commonwealth) have been satisfactorily addressed including; the Concept Approval (MP10_0193) Schedule 3 Future Assessment Requirements; revised environmental mitigation measures (REMMs) and Appendix 1 Statement of Commitments (SOCs) and; as well as the NSW DP&E SEARs

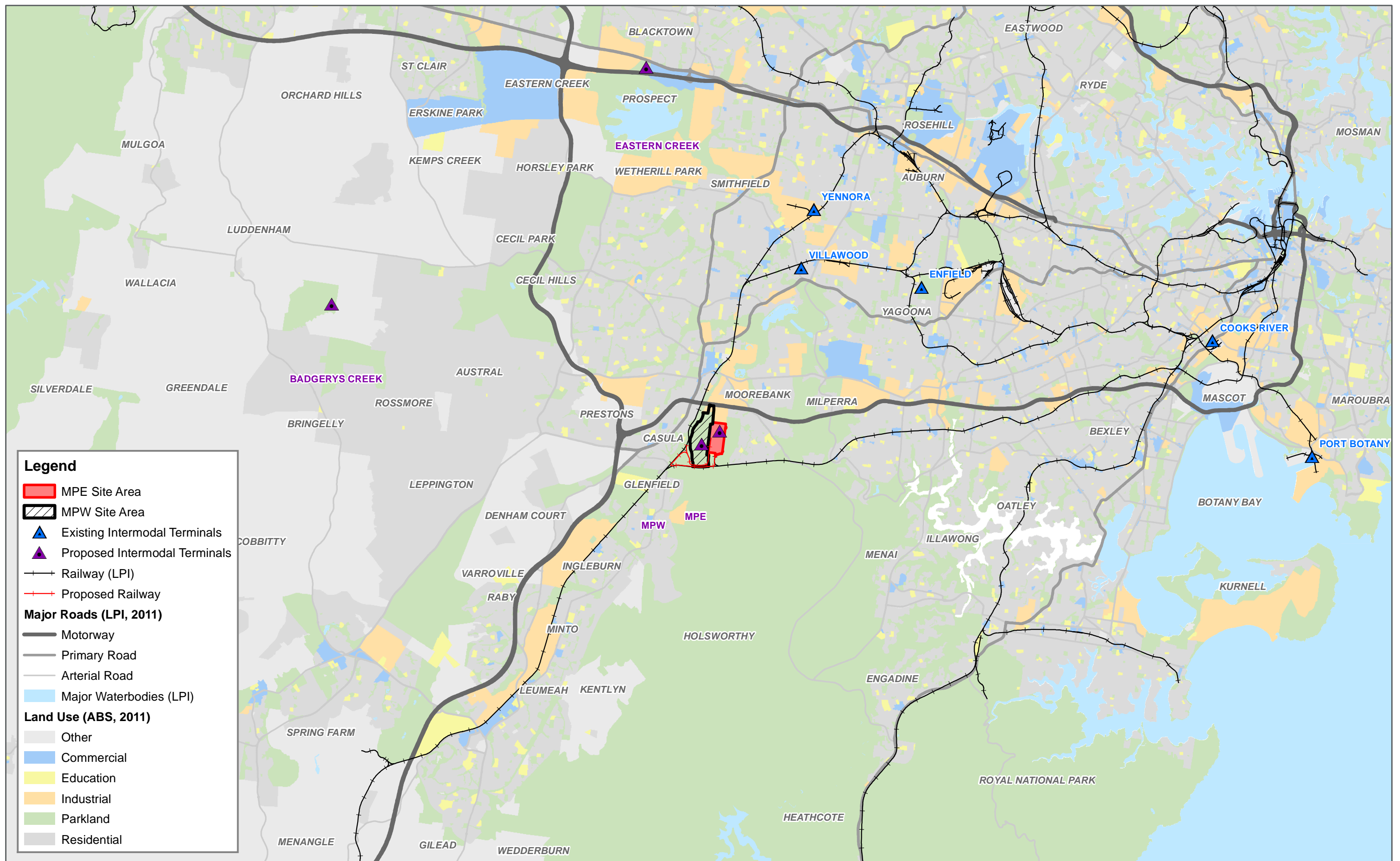
- > Identify whether the proposed development is considered appropriate for support, as well as the commitments and conditions of determination to mitigate and manage impacts, should the Stage 2 works receive approval.

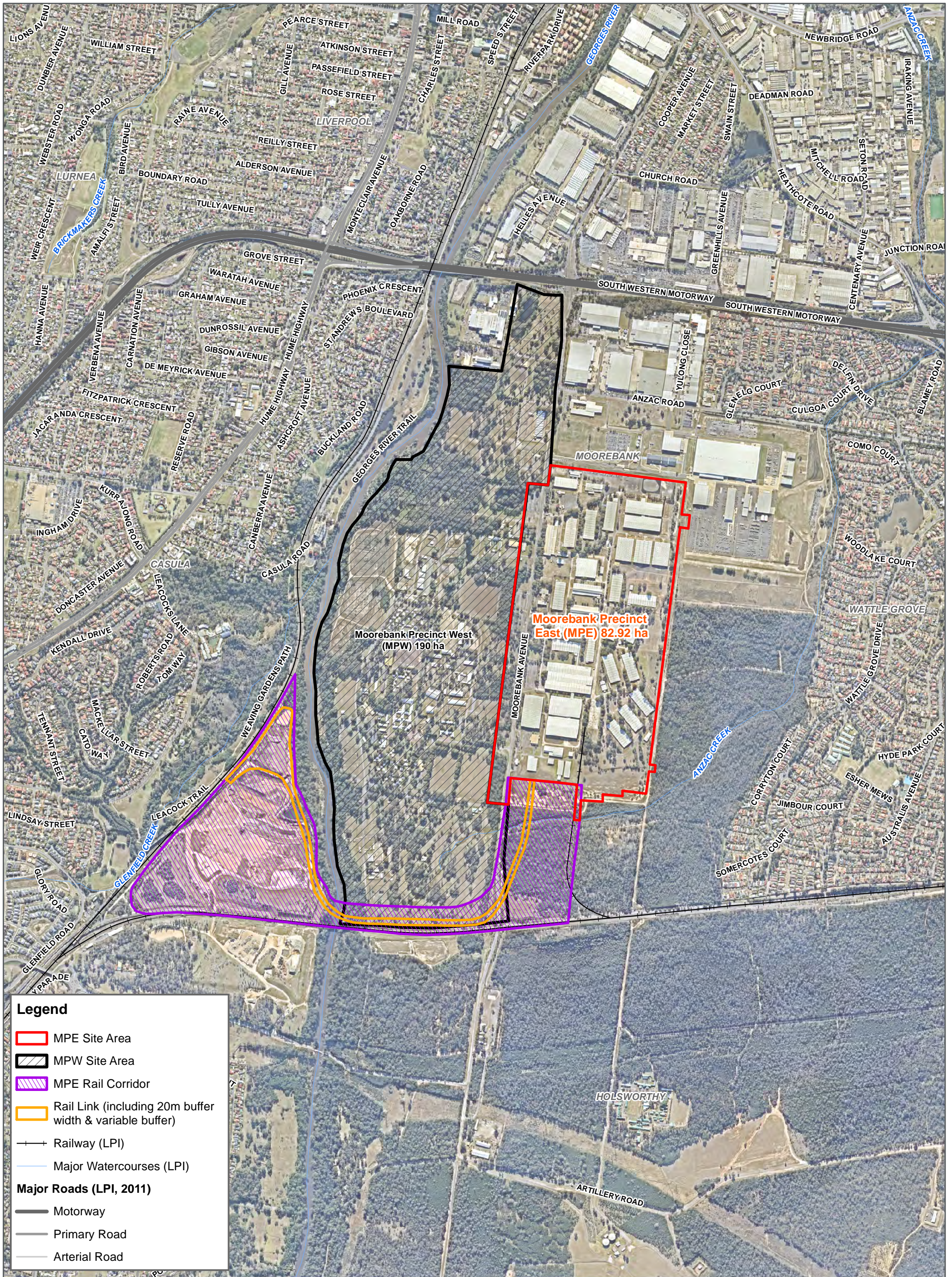
Cardno have previously worked with Council to provide submissions on both the MPE and MPW IMT schemes. Consequently, we are aware of and understand the implications of the planned IMT's both individually and through combined impacts. Due to the large scale of these facilities there are potential impacts at both the local and regional level that requires consideration in the developments entirety.

1.3 Methodology

The tasks identified to meet the Project objectives in **Section 1.2** are:

- > Re-establish the Project team comprising the relevant specialists that undertook the peer review of the MPW Concept Approval.
- > Review the EIS and supporting documentation in the context of the NSW DP&E SEARs and the Concept Approval (MP10_0193) Schedule 3 Future Assessment Requirements and Appendix 1 Statement of Commitments
- > Identify the environmental, social and economic implications of the IMT on the receiving environment, with particular focus given to the impacts on the community and Council assets and in consideration of the proposed MPW development on the adjacent site to the west
- > Identify opportunities and costs associated with the IMT as identified within the EIS and subsequently those mitigation and management measures required to address potential impacts





1.4 Project Team

Cardno has established the same Project team that previously undertook the Stage 1 EIS review placed on public exhibition by NSW DP&E. The Project team includes the following experts:

- > Strategic and Statutory Planning
- > Road Traffic and Transport
- > Noise and Vibration
- > Air Quality
- > Human Health
- > Biodiversity
- > Stormwater and Flooding
- > Geotechnical
- > Contamination
- > Hazard and Risk
- > Visual Amenity
- > Heritage
- > Greenhouse Gas & Ecologically Sustainable Development
- > Property and Infrastructure
- > Waste
- > Socio Economic

1.5 Structure of the Report

This submission has been arranged as follows:

- > **Chapter 2** – identifies the key issues associated with the Project that are applicable across a range of environmental aspects, providing a basis for the subsequent aspect specific reviews undertaken in Chapters 3 and 4.
- > **Chapter 3** – reviews the technical assessments and recommendations contained within the EIS in accordance with legal and best practice guidelines. The potential impact of the scheme, whether they be positive, negative or negligible, with information gaps, mitigation and management measures identified.
- > **Chapter 4** – summarises and concludes the review to establish the potential outcome for Council and the community, as well as providing recommendations for the next step in the assessment process.

1.6 Limitations

This assessment is based on secondary information gathered over a limited period. This information has not been individually verified and is therefore subject to the limitations of its original purpose.

This report does not constitute an alternative environmental assessment of the Project or propose a determination of the application. Rather, it is a peer review to determine if the application has addressed all statutory and legal requirements, and appropriately considered the merits and justifications for the Project. This report is intended to guide further discussion with State agencies, Councils, relevant stakeholders, the community and the applicant.

2 Reoccurring Themes

This section identifies the key reoccurring themes associated with the Project that traverse a number of environmental aspects.

A range of issues were identified during the review, with the key issues being:

- > Concept Approval Modification 2
- > Traffic and Transport
- > Noise
- > Air Quality
- > Local Developer Contributions
- > Visual
- > Heritage
- > Human Health impacts associated with the above.
- > Cumulative Impacts

A review of these issues, alongside those lesser, but still potentially significant issues has been detailed in **Section 3** of this document. During the assessment of these issues a number of reoccurring themes were identified as discussed below. These reoccurring themes either created significant impacts individually, or reoccurred throughout the review resulting in potentially cumulative impacts. These reoccurring themes have been summarised below and require full consideration and review due to their far reaching impacts and potential to affect the legitimacy of the Project.

2.1 Concept Approval Modification 2

A modification to Concept Approval MP10_0193 under Section 75W (repealed), relying on the transitional provisions within Schedule 6A of the EP&A Act has been lodged by SIMTA with DP&E. The modification has a number of aspects including importation of 600,000m³ of fill, expansion of the site and revisions to the internal layout.

The site preparation works and internal layout revisions are critical to the subsequent development of Stage 2. The reliance of Stage 2 on the modifications proposed by the Concept Approval Modification 2 should prevent the Stage 2 assessment from being undertaken before Modification 2 is determined. This is particularly important given the modification does not have a strong legal basis, as it does not satisfy the 'limited environmental consequences' test as identified by the NSW Court of Appeal.

The concurrent Council Submission prepared by Cardno dated February 2017 identifies significant issues with the modification due to the extent of environmental impacts and the associated step change in the scale of the construction works. Furthermore, it is questionable whether these impacts can be mitigated without the identification and preparation of supporting infrastructure, management plans, operating procedures and compensation schemes, which the current scheme and associated assessment fails to do.

The review has identified that the environmental consequences of the proposed modification are not 'limited', comparative to the existing Concept Approved environmental impacts, as required by the Court of Appeal. Consequently, it is not considered that the proposed modification satisfies the legal test for a Section 75W modification, with this pathway being inappropriate.

A formal request for SEARs should be lodged, with a subsequent EIS prepared to fully consider the extent of impact.

Furthermore, it is recommended that a precinct wide, master planned approach to earthworks should be considered. This approach reflects previous comments from the Planning and Assessment Commission and Council, which would allow more orderly development and aid the understanding of the full extent of environmental impacts.

2.2 Traffic and Transport

A number of the assumptions used to inform the environmental assessments are either not identified or not considered rigorous or conclusive enough to fully assess traffic impacts. The Project's traffic and transport assessment is a key consideration with the potential to create impacts across a number of environmental aspects.

The review of the traffic and transport movements associated with the Project identified that the Project would impact on road congestion noise, air quality, visual amenity and subsequently human health in proximity to the site. Therefore, a thorough assessment of the traffic environment and associated impacts is critical for both the construction and operational stages.

Cardno has provided a detailed review of the assessment methodology and assumptions for modelling which are outlined further in **Section 3.3**.

This review found numerous issues with the methodology employed with the primary issues associated with the lack of detail in the assessments conducted. This included;

- > Intersection performance for the M5/Moorebank Avenue interchange, including detailed assessment of each of the entry and exit ramps for both construction and operational phases. This intersection is a key interchange for both MPE and MPW projects, as well as within the region as a whole. Study of this intersection is significantly lacking, with the methodology employed appearing to lessen what are potentially significant impacts.
- > Future impact on the M5/Moorebank Avenue intersection, as well as the Georges River Bridge crossing of the M5 between the Moorebank Avenue and Hume Highway interchanges.
- > Network improvements are assumed to all occur and form the basis of background and cumulative traffic impacts. The details of this modelling are lacking.
- > Intersection performance and Level of Service (LoS) data is incomplete, lacking intersection layouts and back of queue information throughout.
- > Numerous discrepancies between Traffic studies for both the MPE and MPW projects across all stages. Specifically, SIDRA inputs are not conducted in accordance with Roads and Maritime standards.

Overall a range of technical comments have been provided, which should be reviewed and addressed to ensure an accurate model of the impacts is presented. This is critically important considering the interdependencies that other impact assessments have on the data and assessment findings.

The effect on the M5/Moorebank Avenue interchange has been significantly downplayed and requires comprehensive assessment in conjunction with the associated impacts on this intersection caused by the neighbouring MPW project. The impact on these intersection needs to be understood from a Local Government Area (LGA) and Regional perspective.

The increase in anticipated traffic movements entering/exiting the proposed site from surrounding road networks will significantly increase the heavy vehicles in the area, which would then have negative impacts on road maintenance and reduced road safety. The community have also raised significant concerns about increased congestion and associated stressors for commuters and local businesses.

2.3 Noise

The noise impacts assessed in the MPW Stage 2 EIS do not sufficiently consider the extent and impacts of activities identified as highly annoying in the Interim construction noise guideline (ICNG) (DECC 2009), such as vibratory rollers and compactors, excavators with hammers, concrete saws and jackhammers. To verify the findings of the operational noise assessment, additional information would be required to understand the modelling inputs and outputs, which includes.

- > Figures showing source locations adopted during acoustic modelling (construction and operations)
- > A summary table detailing the number as well as type of sources in each model scenario (construction and operations)

- > Assessment of annoying characteristics in consideration of the ICNG (DECC 2009) for particular annoying construction noise sources.

The volumes of traffic within the site was assessed in the MPE report, however the assessed movement of vehicles between the Stage 2 site and the remainder of the IMT, as well as the MPW has not been clarified. Noise contribution from internal truck movements would be expected and could potentially contribute to overall noise emissions.

The level of detail currently provided does not allow for an independent assessment to replicate or authenticate model assumptions or results, therefore:

- > Input data should be presented in greater detail, including number, type, and location of equipment referenced in each assessment scenario, duration adjustments and model assumptions applied should be clearly documented for clarity in the acoustic assessment.
- > Clarification on whether modifying correction factors as defined in the NSW Industrial Noise Policy (EPA 2000) needs to be provided to demonstrate they have been considered in the prediction of operational noise impacts.

2.4 Air Quality

The Air Quality impacts assessed in the MPW Stage 2 EIS are not deemed sufficient to fully estimate the extent of impact from the proposed development.

Information on model emission source configuration is limited to the statement in Appendix 1: “*All emissions source activities for construction and operation are represented by a series of volume sources, located according to site layout*” (Ramboll, 2016b). Accordingly, the assumptions and accuracy of the model configuration have not been reviewed. With regard to this assessment, emission source parameters of interest include:

- > Emission source number and location.
- > Spatial allocation of the emission inventory.
- > Temporal representation of emissions (e.g. hours in which emission sources are active).
- > Modelled pollutant emission rates.

It is noted that the level of detail is not consistent with the reporting requirements outlined within the Approved Methods, and that assumptions around these parameters can have a material influence on the magnitude of modelling predictions. The level of detail should be addressed, with reporting undertaken in accordance with the Approved Methods prior to a determination being made.

Given the absence of detail in the reporting, it was not possible to undertake a detailed review of the assessment of construction impacts. Insufficient detail relating to construction hours, assumed emission reduction rates and assumed haul road emission rates from speed restricted vehicles, as well as the annual emission rates for the construction phase do not match up with the documented assumptions used.

The Air Quality Impact Assessment (AQIA) also does not include a regional assessment of air emissions as is required under the Concept Plan instrument of approval. Rather, assessment is limited to steady-state dispersion modelling of air quality impacts within 1 to 3 km of the Stage 2 Project.

A range of optimistic utilisation rates during operations for items such as forklifts should be more conservative and representative of typical intermodal fleet operations.

The AQIA includes a cumulative assessment of the Stage 1 MPE, Stage 2 MPE and Stage 2 MPW projects. This analysis is reliant on the emission inventories presented in:

- > (Ramboll, 2016b) *Moorebank Precinct West Stage 2 Air Quality Impact Assessment*, Ramboll Environ Australia Pty Ltd, 10 October 2016.
- > (Environ, 2015) *SIMTA Moorebank Intermodal Facility, Air Quality Impact Assessment*, Environ Australia Pty Ltd, 26 May 2015.

A review of the Stage 2 MPW AQIA (Ramboll, 2016b) identified a range of optimistic assumptions, which if changed to use assumptions typical of those adopted within the air quality assessment would potentially

influence the outcomes of the assessment, and the required levels of mitigation. Given the reliance of the cumulative assessment on the Stage 2 MPW emission estimates, the conclusions of the cumulative assessment are not supported until these issues are resolved.

The Concept Approval instrument identifies future assessment requirements for the Project. It is noted that the environmental assessment requirements require that the AQIA include an Air Quality Management Plan (AQMP) that incorporates a range of specific requirements. It is also noted that the provided AQMP does not cover the operational phase of the Stage 2 Project. In addition, as noted above, the AQIA does not include a consideration of regional air quality impacts, nor does it refer to external studies on the issue of regional air quality.

Further details on the review, including a range of recommendations are outlined in the more detailed review provided in **Section 3.5**.

2.5 Local Infrastructure Contributions

A major gap identified in the MPE Stage 2 EIS is a lack of commitment to providing Local Infrastructure Contributions. Consideration was required to be given to the relevant Council's Developer Contributions Plan or equivalent by the SEARs (51 and 52), which highlights specifically that the Prestons Industrial Area development must be considered. The EIS notes that *"Liverpool City Council does not currently have a Section 94 Contributions Plan which relates to industrial development on the Proposal site."* The EIS has also noted that *"there are considerable differences between the Preston's Industrial Release Area and its location to surrounding development, drainage infrastructure, need for transport infrastructure and ownership agreements, which form, amongst other aspects, the basis for developer contributions."* This statement suggests that SMITA believe there are significant differences and that as a result monetary contributions are not required.

It is noted that SMITA has mentioned that developer contributions will be considered once the Precinct Model has been finalised, with a timeline for this being towards the end of 2016 (Footnote 20, page 20-38 EIS). SIMTA and MIC would discuss the apportionment of developer contributions further, and as necessary an agreement would be determined, with both Roads and Maritime and Council once the Precinct Model is finalised. This deferral of commitment suggests that the developer has no intention of paying developer contributions to Council in a timely manner, which Council require to forward fund assets and gaps in infrastructure created by the Project. The lack of commitment to consider entering into an agreement with Council regarding the developer contributions requirements could set an unwelcome precedent for similar size developments in NSW.

Council passed a motion in 2016 to seek Ministerial Approval for a Section 94A scheme for *"established areas"* within the Liverpool LGA. Under this Project the following developer contributions would be required for any development within *"established areas"* (including the Project site):

- > Capital Investment Value \$0 - <\$100,000 – 0% levy
- > Capital Investment Value \$100,000 - <\$200,000 – 0.5% levy
- > Capital Investment Value >\$200,000 – 2% levy

The funds gained from such contributions would give Council the ability to fund projects to maintain infrastructure impacted by the MPE Project and upgrade infrastructure where required by the increased load generated by MPE.

It is recommended that one of two suggested options be chosen by SIMTA to address the current shortcomings, as previously suggested by Council:

- > A Voluntary Planning Agreement (VPA) between SIMTA and Council be prepared to ensure a fair and equitable outcome regarding local infrastructure contributions is achieved. This may involve the payment of a monetary contribution using Council's recent resolution as a basis, the provision of works in kind, or a combination of both. Council has identified that monetary contributions could cater for the long term maintenance or short term upgrades to the transport network, with road infrastructure management examples including the need to preclude heavy vehicle traffic on Nuwarra Road and Governor Macquarie Drive.

- > The determination include a condition under Section 94A of the EP&A Act, in accordance with the provisions listed at Clause 94B (2) of the EP&A Act. This condition may result in a 2% levy being enforced in accordance with Council's recent resolution for the proposed Section 94A Plan.

In summary, there is a lack of commitment from the developer to provide contributions to Council to fund anticipated increases in the required maintenance of local infrastructure. This must be addressed immediately to avoid establishing a damaging precedent for future similar developments.

2.6 Visual Amenity

The Visual Impact Assessment undertaken as part of the MPE Stage 2 proposal is considered to not comprehensively assess the impact on surrounding residents and other sensitive receivers. The methodology employed for this proposal (and all other iterations of both the MPE and MPW projects) employs the same viewpoints as were utilised for the initial concept Approval. Whilst this ensures consistency across stages there is little analysis of the changing environment around the Project site and whether Visual Impacts of the Project are intensifying in different locations with no assessment. Of particular concern is the recently constructed DJLU adjacent to the MPE project to the north. This has seen a significant intensification of land use on this site and the addition of a linear parkland between the DJLU and the neighbouring Wattle Grove residential suburb. The Visual Impact Assessment does not adequately assess how the MPE Stage 2 Proposal will affect this parkland or the residents of Wattle Grove who use this space, which is essential given the construction of Warehouses would be undertaken approximately 200m away.

The assessment of Visual Impact of the future state of the proposal relies upon the creation of photomontages that depict the future development form. There are inconsistencies and inaccuracies within the approach followed. These relate firstly to the rendering of the buildings within Stage 2, with the colour pallet used within the photomontages not matching those found in the colour pallet described in the architectural drawings. The colour pallet used in the photomontages uses a range of muted tones that are designed to blend in with the existing environment with the intention of downplaying the effect that the proposal will have on its surrounds. Secondly, the photomontages inconsistently display the cumulative effect that the MPW project will have on MPE, with MPW shown in some images but not others. It is expected that approved projects also be represented within photomontages so that the public understand the total affect that these projects will have on their day to day lives. It is noted that the images that show the MPW are those where the cumulative impact is only minor with those that could be perceived to show major impacts downplaying the extent of combined development.

These two issues have significant increased impacts on the residents of both Casula and Wattle Grove and warrant further studies to accurately assess the impact of the MPE project (with the associated MPW impact) on these sensitive receivers.

2.7 Heritage

The Aboriginal and non-Aboriginal heritage specialist studies recommend mitigation measures that have not been carried across to the project EIS. These mitigation measures include the use of ongoing consultation with Registered Aboriginal Parties (RAPs) and the use of extensive archival recording, which are in accordance with best practice methods and therefore require inclusion in the Project commitments. In addition to this, the registration of the identified Isolated Artefacts within the Aboriginal Heritage Management System (AHIMS) has not been considered in the Project documentation. Registration in the AHIMS database provides a best practice management approach to ensure adequate records for future generations.

In addition to this, the original SIMTA Concept Plan EIS identified the concept of the Moorebank Cultural Heritage Landscape, which considered the historic relevance of the site in its entirety and as a culmination of both Aboriginal and European history. The identification of this landscape alludes to the fact the impacts to heritage on site would not occur in isolation, but would actually result in a cumulative heritage impact to the landscape in its entirety, as a result of the other projects in the area. The EIS and associated specialists reports for Stage 2 do not mention the landscape values as a whole and as such do not quantify the level of heritage impacts at a cumulative scale. It is recommended the cumulative approach be considered as part of this assessment prior to the approval of this or subsequent stages.

2.8 Human Health

The human health impacts assessed in the Human Risk Assessment (HRA) are used to inform the conclusions within the Air Quality and Noise Impact Assessments. The findings conclude that there are no significant adverse health effects expected in relation to short-term and long-term exposure to key air pollutants associated with the operation of the Proposal alone, as well as through a cumulative assessment scenario.

The HRA used the Noise Impact Assessment findings to conclude that the total noise (cumulative Proposal plus existing background) exceeds the WHO community noise guidelines (WHO 1999) for annoyance, sleep disturbance, and cognitive impairment in all three surrounding suburbs, however the Proposal related noise is expected to have a minimal additional impact on the noise in the local area above existing baseline levels. This assessment outcome is not considered acceptable as continual creep of noise impacts from cumulative developments will contribute to the existing WHO guideline exceedances within the surrounding suburbs of Casula, Glenfield and Wattle Grove. Further assessment and suitable mitigation measures should therefore be proposed to reduce the impacts from this development, which will remain a contributor to the surrounding noise shed impacts if conditions are not improved for this Project.

Due to the complexity of the development, noise monitoring and annual reporting should also be undertaken during the construction and operational phases of the Project and continue for the life of the development.

Air quality and noise/vibration impacts can directly impact on the health and wellbeing of the surrounding community and thus the HRA (Ramboll 2016c) and EIS (Arcadis 2016a) should be reviewed and revised in consideration of any amendments to either the air quality and/or noise and vibration impact assessments.

If the proposed development is to be approved then detailed floor and section plans for food premises in the freight village should also be submitted to demonstrate compliance with the *Food Act 2003*, Australia New Zealand Food Standards Code and Australian Standard (AS) 4674-2004 Design, Construction and Fit-Out of Food Premises.

Air quality and noise/vibration impacts can directly impact on the health and wellbeing of the surrounding community and thus the HRA (Ramboll 2016c) and EIS (Arcadis 2016a) should be reviewed and revised in consideration of any further amendments to either the detailed air quality and/or noise and vibration impact assessments.

Further commitments are required, prior to consent being issued for this proposal, to introduce appropriate mitigation measures to reduce noise exposure to surrounding communities to levels that meet all aspects of the WHO guidelines, irrespective of existing ambient noise levels.

If the Project is approved, comprehensive air and noise monitoring initiatives should be undertaken during the construction and operational phases of the proposed development to facilitate adherence with the Approval, Environment Protection Licences and encourage environmental best practice.

A clear outline and process of site environmental impact management and mitigation responsibilities for prospective tenants will need to be provided by the proponent prior to the project being approved as the proponent acknowledge limitations on SIMTA's control in the future as it is noted that that the responsibility for the ongoing management of emissions associated with warehousing activities during operations.

2.9 Cumulative Effects

The MPE and MPW sites are located adjacent to one another on the eastern and western sides of Moorebank Avenue respectively. Agreement has been reached between MIC and SIMTA for an integrated precinct wide IMT, as identified by the Commonwealth Government press release of 4 June 2015. However, the Projects remain as two separate entities, with no interaction or pooling of resources and infrastructure.

Council previously requested that a master planned approach to the development of the IMT's be considered that looks to quantify resource use and infrastructure provision, along with environmental impacts, prior to examining strategies to minimise these impacts. A consolidated approach would provide more confidence in the level of assessment both for the MPE site as a single entity and the IMT precinct as a whole, as well as confidence for the community in the assessment process.

The EIS does not address the request to combine the two sites through a master planned approach, or acknowledge that the Project should be developed and assessed to establish whether an IMT of this scale at

Moorebank is reasonable. Conversely the EIS (Arcadis, 2016) states that it is SIMTA and MICs intention for the sites to be constructed and operated via progressive individual approvals, with no discussion of an integrated approach. Consequently, the cumulative impacts of the SIMTA site are not clearly articulated and an assessment of whether the significant environmental impacts can be mitigated preferably on land under the proponents control. Based on the information contained within the EIS, it does not appear that this is currently the case.

3 Environmental Impact Assessment

This section reviews the environmental aspects associated with the proposed development.

3.1 Legislative Review

The MPE Stage 2 EIS documentation, prepared by Arcadis (2016a), provides a review of the legislative controls applicable to the proposed IMT.

3.1.1 Proposed Development

The MPE Project is identified as a Major Project, with Concept Approval MP10_0913 obtained on 29 September 2014, with Stage 1 of the Project approved under SSD 14-6766. An EIS is subsequently required to inform Stage 2 of the Concept Plan informed by SEARs (SSD 16-7628). SIMTA subsequently lodged an application to modify the Concept Approval (Modification 1), which was approved on 12 December 2016 for modifications to the VPA and the inclusion of land within the rail corridor.

Modification 2 has subsequently been lodged with DP&E to extend the site boundary to facilitate works on Moorebank Avenue and to the south east of the site, as well as to reconfigure the internal layout and import 600,000m³ of fill. The modification has been concurrently exhibited, with the Stage 2 EIS.

3.1.2 Cardno Assessment

The assessment considers a number of the key aspects associated with the relevant legislation, with this review focusing on the following aspects:

- > Strategic Justification
- > Concept Approval Modification
- > Section 79C Review.

3.1.2.1 *Strategic Justification*

The EIS reviews the strategic planning objectives of key plans identified by the SEARs.

Commonwealth Government in the form of Infrastructure Australia provide strategic support for the MPE through the Australian Infrastructure Plan, 2016 and associated Priority List. The National Land Freight Strategy also supports an IMT at Moorebank.

The Strategic support is consistent with that of Commonwealth Government through their Government Business Enterprise body the MIC. However, it is noted that the strategic documentation identifies a single IMT at Moorebank, rather than the two separate IMT's currently proposed. The support for a single IMT indicates that a consolidated IMT, achieved through a master planned approach would result in an outcome more aligned with both the Australian Infrastructure Plan, 2016 and the National Land Freight Strategy. A master planned approach would reduce resource use and result in more efficient operations, which is likely to reduce the associated environmental impacts on the surrounds, such as congestion, reduced air quality and increased noise.

The State and Local Government strategic justification is less clear. The *NSW State Priorities* (2016), which replaced the initiatives within *NSW 2021: A Plan To Make NSW Number One* (2011), has been prepared to identify quantifiable objectives to reform the economy. Job creation and building infrastructure are incorporated as priorities. Both of these priorities could be considered to be addressed by the MPE Project. However, it is not clear and the Stage 2 EIS does not build a case that an IMT at Moorebank is the highest and best use for the land in relation to job creation and the associated economic growth, as well as infrastructure delivery.

As discussed at **Sections 3.14** and **3.16** jobs created by a large IMT once operational are limited comparative to alternative uses that could feasibly be accommodated by the site, such as high tech manufacturing, along with mixed use residential and commercial space. These uses would bring a much higher and more diverse economic return to the area, than the limited number of employees associated with an IMT.

The MPE Project would lead to investment in infrastructure. However, much of this investment would be associated with retrofitting existing corridors that are highly constrained, resulting in high cost and inefficiencies. The life cycle benefit of these infrastructure investments should be considered when discussing investment, rather than simply the financial input.

A number of previous State freight and logistics plans have supported an IMT at Moorebank. However, while *A Plan for Growing Sydney (2014)* (The Plan) does mention an IMT at Moorebank, the proposed Badgerys Creek IMT is given a significantly more prominent role. Rail freight infrastructure to connect the Badgerys Creek IMT to the rest of the rail network is proposed, with the Badgerys Creek IMT mentioned on numerous occasions, with this location having the potential to be a more suitable location that has not been considered by the EIS. The Moorebank Intermodal is not given great prominence or priority by The Plan. The Liverpool City Centre is also identified as a Regional City Centre by the Plan, which will experience significant growth in population and employment. As this is the most recent policy document released on the subject by the NSW government, it is considered to reflect current priorities and strategy.

Council's strategic vision is articulated through the LEP 2008 and *Liverpool Development Control Plan 2008* (DCP). Part 2.4 of the DCP contains site specific planning guidelines for development across the Moorebank Defence Lands. The site is located within the land to which Part 2.4 applies (refer to **Figure 3-1**).

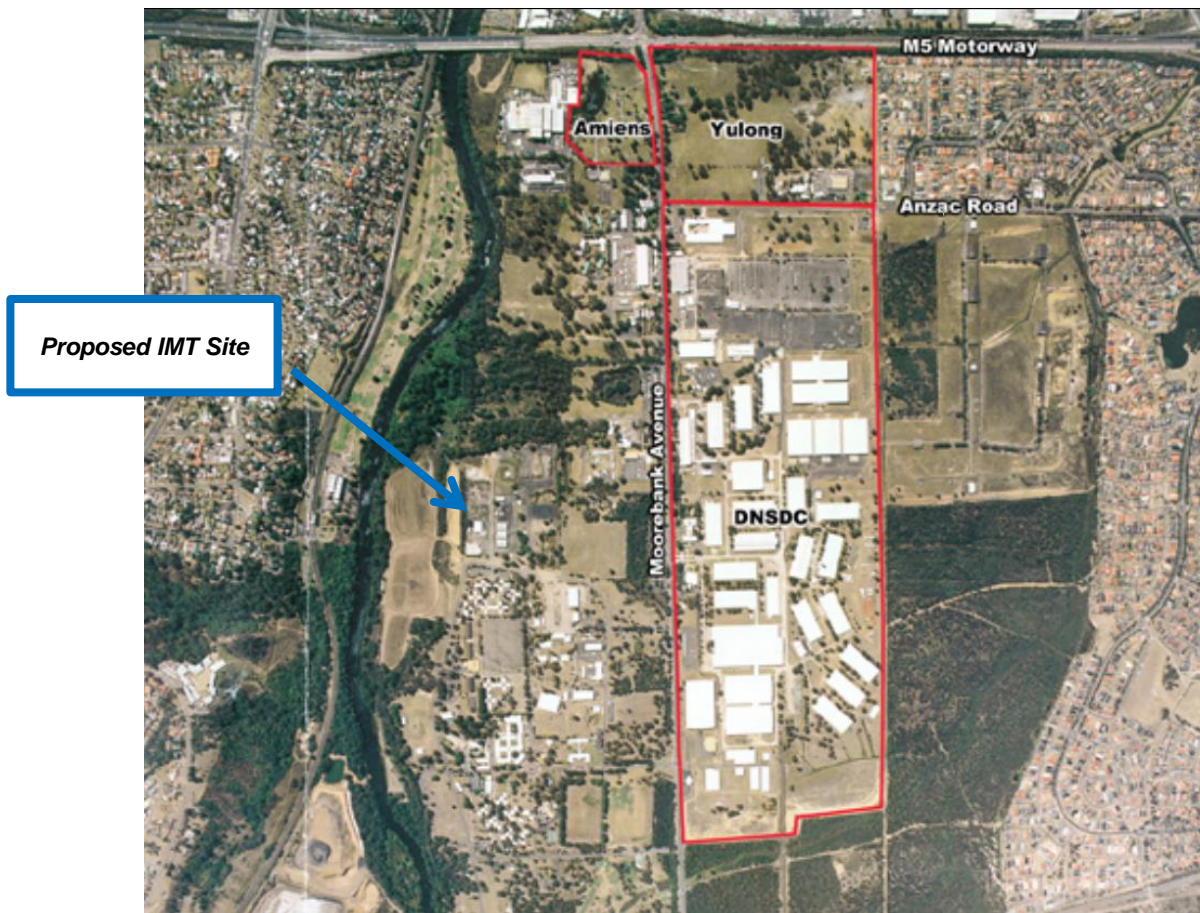
Part 2.4 states that since the 1990's Council has identified the need for additional employment land to provide jobs for the local workforce, as well as higher order jobs in high technology industries. The Defence land at Moorebank, which includes the subject site was seen as suitable for business enterprise due to the proximity to the M5 Motorway and the Liverpool CBD. Part 2.4 includes the following vision statements:

- > *To provide for industrial and business development which contributes to the economic, employment and social growth of the Liverpool Local Government Area, which complements the employment role of Liverpool City Centre, and which due to its nature is not considered suitable for the Liverpool City Centre. To maximise the opportunities for increased use of public transport, bicycles, and walking and reduced use of private cars.*
- > *To make special provisions for industries using and developing advanced technology products and processes.*
- > *To discourage industrial development, which is likely to detract from the amenity of the area by reason of its appearance, noise, emissions and the like.*
- > *To promote a high standard of urban design*

The MPE development provides some direct economic benefits to the LGA in the form of employment. However, the impacts on the surrounding amenity and transport networks, will create indirect impacts on the economy and social fabric of the LGA.

The development does not encourage or allow for the manufacture of advanced technology products and will impact on the amenity of the immediate surrounds, as well as land adjacent to the associated transport corridors. The loss of land due to the scale of the proposal creates a one dimensional development that limits opportunities for a wider range of employment generating activities, while impacting on the amenity of the area. Furthermore, the proposed scheme does not encourage a high standard of urban design, as discussed at **Section 3.11**. Consequently, the MPE scheme is counter to the requirements of the Liverpool DCP Part 2.4. A statement should be prepared identifying how the development satisfies the provisions of the DCP, with this Statement provided to Council for discussion to ensure that it meets the intent of the DCP.

Figure 3-1 Land to which Part 2.4 of the Liverpool Development Control Plan Applies



Source: Liverpool City Council, 2014

In addition to the DCP there are a number of strategic plans of relevance to the MPE site due to their proximity:

- > Council's Vision for the Riverfront Lands, which relates to land along the Georges River foreshore to the north of the M5.
- > Council's Georges River Casula Parklands Draft Master Plan, which relates to land on the western side of the Georges River, directly across from the MPW site.

The strategic direction identified by these plans focuses on increasing the public use and amenity of the foreshore to facilitate residential and commercial development, while retaining and enhancing the visual and ecological quality of the Georges River and foreshore environment. The development of a rail link across the Georges River to service the MPE IMT would create a visual and physical barrier across the Georges River, impacting on the amenity of the area through increased noise, reduced air quality and visual amenity, resulting in impacts to human health. Consequently, the Project is contrary to Council's strategic direction.

3.1.2.2 **Concept Approval Modification**

The MPE Concept Plan Approval MP10_0193 was issued on 29 September 2014 under the now repealed Section 75O of the EP&A Act. The Project is a Transitional Part 3A Project, with the provisions of Section 75W of the EP&A Act applicable. A modification is now proposed subject to Section 75W of the EP&A Act (Modification 2).

Council have prepared a concurrent submission to the proposed Modification 2, which identifies significant issues with the modification due to the extent of environmental impacts and the associated step change in the scale of the construction works. Additionally, the submission questions whether the modification satisfies the legal tests established in the case of *Barrick Australia Ltd v Williams (2009) 168 LGERA 43*, specifically:

The proposed modification must have 'limited environmental consequences beyond those which had been the subject of assessment' (the original project assessment).

The import of substantial amounts of fill, as opposed to the originally approved scheme, which comprised a cut/fill balance for the site would result in an order of magnitude change in the development. The magnitude change is due to the associated truck movements and impacts on amenity and human health. Consequently, the environmental consequences of the proposed modification are not 'limited', comparative to the existing environmental impacts, as required by the Court of Appeal. The environmental assessments undertaken within the Council submission to Modification 2 reinforce the extent of environmental impacts. Consequently, it is not considered that the proposed modification satisfies requirement 2 for a Section 75W modification, as identified by the Court of Appeal.

The import of fill as proposed by Modification 2 to the Concept Approval is essential to the subsequent development of Stage 2. The reliance of Stage 2 on the modification, should prevent the Stage 2 assessment from being undertaken before the modification is determined. This is particularly important given the modification does not have a strong legal basis, as it does not satisfy the criteria of having "*limited environmental consequences beyond those which had been the subject of assessment*".

3.1.2.3 **Section 79C Review**

Development under Part 4 of the EP&A Act is required to consider the provisions of Section 79C of the EP&A Act.

Key matters identified within Section 79C include:

(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality,

The EIS states that '*The assessment of environmental impact presented in this EIS has not identified any significant environmental impacts*'. (Arcadis, 2016a). The extent of the vehicle movements associated with the construction and operational phases of the Project, along with the associated impacts on human health and amenity from noise, air quality and congestion are substantial. Consequently, the Project is considered to significantly impact on the natural and built environment, as well as the social and economic fabric of the locality (refer to the subsections within **Section 3** for further discussion).

(c) the suitability of the site for the development,

The EIS identifies the Concept Approval as providing recognition that the site is suitable for the Project. However, subsequent to the Concept Approval Section 75W modifications have been proposed that would result in substantially greater impacts during the construction phase of the Project, as a result of the magnitude change in fill requirements. The impacts resulting from the large scale vehicle movements associated with the importation of material would result in a further reduction in the amenity of the surrounds, beyond that initially considered by the Concept Plan assessment. Refer to **Section 3.3** for further discussion.

3.1.3 **Recommendations**

The recommendations below are proposed to address the identified impacts associated with the legislative review to allow a comprehensive assessment of the Project:

- > While it is noted that DCPs are not required to be addressed by SSD, the applicant should consider redesign to allow compliance with Council's strategic planning, as illustrated through the controls within Part 2.4 of the DCP to allow the proposal to integrate with the surrounds and future vision for the area.
- > The Stage 2 application should be placed on hold pending the outcome of Modification 2.
- > DP&E should consider the consistency of the Project with the Matters for Consideration within Section 79C of the EP&A Act.

3.2 Consistency with Assessment Requirements

This section reviews and summarises the Concept Approval conditions relevant to this Stage of the development and the SEARs issued for Stage 2, to identify the consistency of this Project with these requirements.

3.2.1 Concept Approval Schedule 3 Review

Schedule 3 of Concept Approval MD 10_0193 identifies the conditions that must be met in any future development applications for MPW. **Table 3-1** below provides a summary of the key aspects of the proposal including an assessment of the adequacy of the EIS in considering the potential interactions between the proposal with Council, the local community and the environment.

3.2.2 Secretaries Environmental Assessment Requirements

SEARs were issued to guide the Stage 2 development of MPE. **Table 3-2** identifies the key requirements of the SEARs and a response identifying whether the conditions have been addressed by the Stage 2 development scheme.

Table 3-1 Concept Approval Schedule 3 - Conditions to be met in future development applications Review

Schedule 3 – Condition of Approval		Response
General requirements		
1	Demonstrate that the project is generally consistent with the requirements of this Concept Plan approval and with the scope and intent of the Concept Plan outlined in the documents under condition 1.1 of this Concept Plan approval	The EIS fails to demonstrate that the project is generally consistent with the requirements of the Approved Concept Plan.
2	Include a detailed project description, including construction, operation, maintenance and staging	
3	Include details of measures to be implemented to avoid, minimize, manage, mitigate, offset and/or monitor the impacts of the project (including, but not limited to, the following listed issues	
4	Include details of the consultation process and outcomes with relevant stakeholders, including (bot not limited to); <div><div>i.</div><div>Relevant government authorities, such as OEH, EPA, DPI, TfNSW and D0E, Liverpool Council, Campbelltown Council, Bankstown council;</div><div>ii.</div><div>Service and infrastructure providers; and</div><div>iii.</div><div>Special interest groups and the public, including adjoining and affected landowners.</div></div>	
Air Quality		
	Any future Development Application shall include a comprehensive air quality impact assessment for each stage of the proposal, including:	Section 3.5 details the failure of the EIS to meet the requirements of the Concept Approval.
5	An assessment in accordance with the Approved Methods for the modelling and Assessment of Air Pollutants in New South Wales (2005) (or its later versions and updates)	
6	Taking into account the final project design with consideration to worst-case meteorological and operating conditions	
7	Qualitatively assessing the prediction emission of: <div><div>i.</div><div>Solid particles;</div><div>ii.</div><div>Sulphur oxides;</div><div>iii.</div><div>Nitrogen oxides; and</div><div>iv.</div><div>Hydrocarbons</div></div>	

Schedule 3 – Condition of Approval		Response
8	Assessing cumulative air impacts at a local level (including but limited to contemporaneous operations such as those of the proposed Commonwealth Government MIT)	
9	<p>A comprehensive air quality management plan that includes at least the following information;</p> <ul style="list-style-type: none"> i. Explicit linkage of proposed emission controls to the site specific best practice determination assessment and assessed emissions; ii. The timeframe for implementation of all identified emission controls; iii. Proposed key performance indicator(s) for emission controls iv. Proposed means of air quality monitoring including (on and off-site), frequency and duration; v. Poor air quality response mechanisms; vi. Responsibilities for demonstrating and reporting achievement of key performance indicator(s); vii. Record keeping and complaints response register; and viii. Compliance reporting. 	
Best Practice Review		
	Any future Development Application shall include the preparation of a comprehensive review of intermodal operational best practice process design, emission control and management measures that might feasibly and reasonably be applied to each stage of the project, and to benchmark those measure against best practice. The review should:	
10	<p>Air Quality:</p> <ul style="list-style-type: none"> a. Clearly demonstrate that the Proponent will at each project stage adopt and implement best practice facility and process design and management measure to the extent that is reasonably practicable, to minimise operational air pollutant and noise emissions at the terminal and on the rail link 	The requirements of Best Practice Review have not been met. Refer to Section 3.4 and Section 3.5 for further details.
11	<ul style="list-style-type: none"> b. Include a detailed evaluation of feasible and reasonable mitigation and management measures including: <ul style="list-style-type: none"> i. Assessment of best practice international emission standards for locomotives and non-road plant and equipment; ii. Assessment of retrofit opportunities for older vehicles, locomotives and equipment; iii. Maintenance and operational practices of vehicles, ,locomotives and equipment iv. Electrification of terminal plant; v. Reduction of 'long-duration' idling of diesel locomotives, prime movers and cargo handling equipment through: 	

Schedule 3 – Condition of Approval		Response
	<ul style="list-style-type: none"> a. Driver/operator training about how to reduce air quality impacts associated with 'long-duration' idling; b. Automatic engine shut down/start up system controls whereby engine stopping and starting is implemented without operator action; vi. 'shore power connection' being electricity mains plug-in points for enabling locomotives and trucks to switch over to mains power and shut down main engines otherwise used to generate power required for: <ul style="list-style-type: none"> a. Transport refrigerated units/containers; b. Cabin climate control; and c. Other accessories and equipment. vii. The application of queuing theory to minimise truck loading/unloading wait times and resultant queueing and idling in the terminal facility and on access roads. 	
12	c. Include predicted annual cumulative, daily and one minute amounts of air pollutants emitted and non-renewable fossil fuel consumed (by typical diesel locomotives, prime movers, fixed body trucks, yard trucks/holsters and cargo handling equipment expected to regularly operate at the terminal) as the basis for defining the term 'long-term' duration idling as it would apply to the terminal facility.	
13	<p>The following noise requirements shall be included in the best practice review:</p> <ul style="list-style-type: none"> a. Assessment of an ongoing noise compliance and response system 	
14	b. Assessment for the need of an automatic rolling stock wheel defect detection and response system	
15	c. Identification of all feasible and reasonable measures to minimize and mitigate noise impacts from the operation of the terminal and rail link	
16	<ul style="list-style-type: none"> d. Site layout and operations to: <ul style="list-style-type: none"> i. Eliminate the need to reverse vehicles and plant (not dedicated to on-site operations; and ii. Where reversing vehicles and plant is unavoidable only reversing such vehicles and plant in noise attenuated enclosures. 	

Schedule 3 – Condition of Approval		Response
17	e. Assessment of alternative options to the use of traditional ‘beeper’ type reversing/movement alarms	
18	f. Framework for on and off-site noise monitoring during operation	
Traffic and Transport		
Any future Development Application shall include a Traffic Impact Assessment that assesses intersection and road network impacts, including impacts on Cambridge Avenue. The traffic assessment shall:		
19	a. Undertake detailed model analysis commensurate with the stage, to confirm network operation and identify intersection upgrade requirements	
20	b. Consider the constructability constraints of proposed upgrade(s) at key intersections, such as vehicle sweep paths, geometry and sight lines	
21	c. Assess construction traffic impacts, including: <ul style="list-style-type: none"> i. The identification of routes and the nature of existing traffic on these routes; ii. An assessment of construction traffic volumes (including spoil haulage/delivery of materials and equipment to the road corridor and ancillary facilities); and iii. Potential impacts to the regional and local road network (including safety and level of service) and potential disruption to existing public transport services and access to properties and businesses. 	The adequacy of the environmental assessment and broader issues relating to Transport and Traffic are further discussed in Section 3.3 .
22	d. Assess operational traffic and transport impacts to the local and regional road network, including: <ul style="list-style-type: none"> i. Changes to local road connectivity and impacts on local traffic arrangements, road capacity/safety; ii. Traffic capacity of the road network and its ability to cater for predicted future growth; and iii. Monitoring of vehicle number on Cambridge Avenue. 	
23	e. Provide an updated Traffic Management and Accessibility Plan including: <ul style="list-style-type: none"> i. Measures to prevent heavy vehicles accessing residential streets to maintain the residential amenity of the local community ii. Public transport 	

Schedule 3 – Condition of Approval		Response
	<ul style="list-style-type: none"> iii. Cyclist facilities; and iv. Driver code of conduct. 	
24	<ul style="list-style-type: none"> f. In particular, the Traffic Impact Assessment must identify upgrade and other mitigation measures required to achieve the objective of not exceeding the capacity of the following intersection and roads: <ul style="list-style-type: none"> i. Moorebank Avenue/ Newbridge Road ii. Moorebank Avenue/ Heathcote Road iii. Cambridge Avenue iv. M5 Motorway/ Moorebank Avenue v. M5 motorway/ Heathcote Road vi. M5 Motorway? Hume Highway 	
Rail		
25	Any future Development Application shall address the requirements of TfNSW and include detailed design and engineering drawings for the rail link and include evidence of consultation with: <ul style="list-style-type: none"> a. TfNSW, particularly in relation to the future Moorebank Station site, use of the existing EHPL corridor and connections to the SSFL 	
26	b. The EPA where the rail line traverses the Glenfield Waste Facility	
27	Any future Development Application shall include an assessment of the impacts of the rail link on the Glenfield Wast Facility, Including: <ul style="list-style-type: none"> a. Details of the quantity of landfilled waste to be removed, the location from where it will be removed, the methodology to be utilized and the estimated timeframe for the removal and reburial 	
28	b. Proposed measures to mitigate odour impacts on sensitive receivers, including an undertaking to apply daily cover to any exposed waste in accordance with benchmark technique 33 of the document Environment Guidelines: Solid Waste Landfills, NSW EPA 1996	
29	c. Any proposed impacts on pollution control and monitoring systems including existing groundwater and landfill gas bores and their subsequent repair/ replacement	
30	d. The proposed methodology to ensure that the landfill barrier system disturbed in the removal process is replaced/ repaired to ensure its ongoing performance. The Proponent should detail matters such as sub grade preparation/ specifications, line	

Not addressed in the Stage 2 EIS

Schedule 3 – Condition of Approval		Response
	installation/ reinstallation procedures and construction quality assurance procedures	
31	e. A commitment to providing the EPA with a construction quality assurance report within 60 days of the completion of the works referred to in (d) above	
32	f. An overview of any access and/or materials/ equipment storage arrangements with Glenfield Waste Facility in relation to the construction of the project	
Noise and Vibration		
Any future Development Application shall include an updated assessment of noise and vibration impacts.		
33	a. The assessment shall;	
	i. Assess construction noise and vibration impacts associated with construction of the intermodal facility including rail link, including impacts from construction traffic and ancillary facilities. The assessment shall identify sensitive receivers and assess construction noise/vibration generated by representative construction scenarios focusing on high noise generating works. Where work hours outside of standard construction hours are proposed, clear justification and detailed assessment of these work hours must be provided, including alternatives considered, mitigation measures proposed and details of construction practices, work methods, compound design, etc.	
34	ii. Assess operational noise and vibration impacts and identify feasible and reasonable measures proposed to be implemented to minimize operational noise impacts of the intermodal facility and rail link, including the preparation of an Operational Noise Management and Monitoring Plan	The adequacy of the environmental assessment and broader issues relating to Noise and Vibration Impacts are further discussed in Section 3.4 .
35	iii. Be prepared in accordance with: NSW Industrial Noise Policy (EPA 2000), Interim Construction Noise Guidelines (DECC 2009), Assessing Vibration: a technical guide (DEC 2006), the Rail Infrastructure Noise Guideline (EPA 2013), development Near Rail Corridors and Busy Roads Interim Guideline (DoP 2008), and the NSW Road Noise Policy 2011.	
36	b. All site-dedicated locomotives must meet EPA Noise Limits for Locomotives contained within the NSW operational rail licences for operation of new or substantially modified locomotives operating on the NSW network	
37	c. Any future application shall include a train noise strategy including, but not limited to, train operational procedures and	

Schedule 3 – Condition of Approval		Response
driver training that minimize noise on the rail link and within the intermodal terminal.		
Soil and Water		
Any future Development Application for stage 1 shall include an assessment of soil and water impacts for the entire site including rail link. The assessment shall:		
38	a. Assess impacts on surface and groundwater flows, quality and quantity, with particular reference to any likely impacts on Georges River and ANZAC creek	<p>The contamination status of the site with respect to the proposal has been assessed to a generally sufficient standard with the exception of a number of omissions. Notable omissions include insufficient information regarding:</p> <ul style="list-style-type: none">• The extend of the assessment of perfluoroalkyl and polyfluoroalkyl substances (PFAS);• The origin and classification of imported fill;• The quality assurance / quality control (QA/QC) measures to address contamination risk associated with importation of fill. <p>The adequacy of the environmental assessment and broader issues relating to contamination are further discussed at Section 3.9.</p>
39	b. Assess flooding impacts and characteristics, to and from the project (including rail link), with an assessment of the potential changes to flooding behavior (levels, velocities and direction) and impacts on beds and bank stability, through flood modelling, including: <ul style="list-style-type: none">i. Hydraulic modelling for a range of flood events;ii. Description, justification and assessment of design objectives (including bridge, culvert and embankment design);iii. An assessment of afflux and flood duration (inundation period) on property; andiv. Consideration of the effects of climate change, including changes to rainfall frequency and/or intensity, including as assessment of the capacity of stormwater drainage structures.	
40	c. Identify and assess the soil characteristics and properties that may impact or be impacted by the project, including acid sulphate soils	
41	d. Include a contamination assessment in accordance with the guidelines made under the Contaminated Land Management Act 1997 and consultation with the EPA for the subject site including the Glenfield Waste Facility. The assessment shall include: <ul style="list-style-type: none">i. The potential environmental and human health risks of site contamination on the project site;ii. A Remediation Action Plan;iii. Considerations of implication of proposed remediation actions on the project design and timing; andiv. A Phase 2 environmental suite assessment of the project site including rail corridor.	
Heritage		
Any future Development Application shall assess heritage impacts of the proposal. The assessment shall:		
42	a. Consider impacts to Aboriginal heritage (including cultural and archaeological significance), in particular impacts to Aboriginal heritage sites identified within or near the project should be	As discussed in Section 3.12.3 , the potential noise and vibration impacts have not been considered for the Glenfield House non-

Schedule 3 – Condition of Approval		Response
	assessed. Where impacts are identified, the assessment shall demonstrate effective consultation with Aboriginal communities in determining and assessing impacts and developing and selecting options and mitigation measures (including the final proposed measures)	indigenous heritage site, and as such Heritage Condition 43(bi) has not been met.
43	<p>b. Consider impacts to historic heritage. For any identified impacts, the assessment shall:</p> <p>i. Outline the proposed mitigation and management measures (including measure to avoid significant impacts and an evaluation of the effectiveness of the measures). Mitigation measures should include (but not be limited to) photographic archival recording and adaptive re-use of buildings or building elements on site);</p> <p>ii. Be undertaken by a suitably qualified heritage consultant(s); and</p> <p>iii. Include a statement of heritage impact.</p>	A number of inconsistencies in the Aboriginal heritage mitigation measures have also been identified in Section 3.12.3 , identifying that further investigations are required to compliance with condition 42a.
Visual Amenity, Urban Design and Landscaping		
Any future Development Application shall include an assessment of visual impacts. The assessment shall:		
44	a. Include a description of the visual significance of the affected landscape	The adequacy of the environmental assessment and broader issues relating to Visual Amenity, Urban Design and Landscaping are discussed in Section 3.11 .
45	b. Assess the visual impact of the project on the landscape character of the area, including built form (material and finishes) and the urban design (height, bulk and scale) of key components including container stacking heights, lighting, bridge crossings, and views to and from the project	
46	c. Include details of hard and soft landscaping treatment and design (including proposed road upgrades relevant to that stage and reinstatement of riparian vegetation).	
Biodiversity		
Any future Development Application shall include a Flora and Fauna assessment. The assessment shall:		
47	a. Assess impacts on the biodiversity values of the site and adjoining areas, including Endangered Ecological Communities and threatened flora and fauna species and their habitat, impacts on wildlife and habitat corridors, riparian land, and habitat fragmentation and details of mitigation measures, having regard to the range of fauna species and opportunities for connectivity (terrestrial, arboreal and aquatic) across the rail link between the site and the EHPL	As discussed in Section 3.7 , there are some small changes to the Concept Approval documented in Arcadis (2016b), although these changes do not impact upon native vegetation and as such no further assessment is required by the FBA.
48	b. Include a Vegetation management Plan that has been prepared in consultation with the NSW office of Water	

Schedule 3 – Condition of Approval			Response
49	c.	Document how impacts to the <i>Persoonia nutans</i> and the <i>Grevillea parviflora</i> subsp. <i>Parviflora</i> flora species have been minimized through the detailed design process	
50	d.	Include the details of available offset measures to compensate the biodiversity impacts of the proposal where offset measures are proposed to address residual impacts, in particular the following should be considered; <ul style="list-style-type: none">i. As stipulated in principle 2 of ‘NSW offset principles for major projects (state significant development and infrastructure)’, for terrestrial biodiversity, established assessment tools, such as the BioBanking Assessment Methodology (BBAM), are considered best practice;ii. The Biodiversity Offset Strategy will be undertaken in accordance with the ‘NSW offset principles for major projects (state significant development and state significant infrastructure)’; andiii. Offsets shall be identified, and demonstrate that they can be secured.	
Section 94 Contributions			
Any future Development Application shall include:			
51	a.	An assessment of the impacts of the project on local infrastructure, having regard to any relevant Council’s Developer contributions Plan (or equivalent document requiring developer contributions)	The adequacy of the environmental assessment and broader issues relating to Section 94 developer Contributions are further discussed in Section 3.14 .
52	b.	Subject to the terms of any applicable Voluntary Planning Agreement, a commitment to pay developer contributions to the relevant consent authority or undertake works-in-kind towards the provision or improvement of public amenities and services. Note: This requirement may be satisfied subject to the terms of any applicable Voluntary Planning Agreement.	
53	c.	A commitment to undertake vehicle monitoring on Cambridge Avenue in accordance with Traffic and Transport requirement	
54	d.	Should any monitoring reveal the need for improvement works within the Campbelltown LGA as a result of the proposal, the Proponent may be required to contribute towards local road maintenance or upgrades.	
Waste			
55	Any future Development Application shall ensure that liquid and/or non-liquid waste generated on the site is assessed and classified and where removed from the site, is directed to a waste management facility lawfully permitted to accept the materials.		The adequacy of the environmental assessment and broader issues relating to Waste management are further discussed in Section 3.15 .

Schedule 3 – Condition of Approval		Response
Hazards and Risks		
56	<p>Any future development Application shall be accompanied by a preliminary risk screening completed in accordance with State Environmental Planning Policy No. 33 – Hazardous and Offensive Development and Applying SEPP 33 (DoP 2011), with a clear indication of class, quantity and location of all dangerous goods and hazardous materials associated with the proposal. Should preliminary screening indicate that the proposal is ‘potentially hazardous,’ a Preliminary Hazard Analysis (PHA) must be prepared in accordance with Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis (DoP 2011) and Multi-Level Risk assessment (DoP 2011). The PHA should:</p> <ol style="list-style-type: none"> Estimate the risks from the facility Be set in the context of the existing risk profiles for the intermodal facility and demonstrate that the proposal does not increase the overall risk of the area to unacceptable levels; and Demonstrate that the proposal complies with the criteria set out in the Hazardous Industry Planning Advisory Paper No. 4 - Risk Criteria for Land Use Safety Planning. 	<p>The adequacy of the environmental assessment and broader issues relating to Hazards and Risks are further discussed in Section 3.10.</p>
Freight Village		
Any future Development Application for the freight village should include:		
57	<ol style="list-style-type: none"> Employee numbers; Details of uses sought Hours of operation for each use; Signage; and Parking (staff and visitor). 	<p>Detail regarding the design and operation of the freight village is contained within the EIS</p>
Bushfire Management		
58	Any future Development Application shall be accompanied by an assessment against Planning for Bushfire 2006 (NSW Rural Fire Service)	
Environmental Risk Analysis		
59	<p>Notwithstanding the above listed issues, future Development Applications shall include an environmental risk analysis to identify potential environmental impacts associated with the project (construction and operation), proposed mitigation measures and potentially significant residual environmental impacts after the application of proposed mitigation measures. Where additional environmental impacts are identified through this risk analysis, an appropriately detailed impact assessment of the additional environmental impacts shall be included as part of the Development Application.</p>	<p>The adequacy of the environmental assessment and broader issues relating to Environmental Risk Analysis are further discussed in Section 3.10.</p>

Table 3-2 Secretaries Environmental Assessment Requirements Review

Secretary's Environmental Assessment Requirement	Response
General Requirements	
<p>The Environmental Impact Statement (EIS) must meet the minimum form and content requirements in clauses 6 and 7 of Schedule 2 the <i>Environmental Planning and Assessment Regulation 2000</i> including but not limited to:</p> <ul style="list-style-type: none"> • a summary of the EIS; • a statement of the objectives of the development, including consideration of the development's consistency with the aims and objectives of relevant State policies and plans; • an analysis of the development, including an assessment, with a particular focus on the requirements of the listed key issues, in accordance with clause 7(1)(d) of Schedule 2 of the Regulation (where relevant), including for normal and worst case scenarios (as relevant); • an identification of how relevant planning, land use and development matters (including relevant strategic and statutory matters) have been considered in the impact assessment (direct, indirect and cumulative impacts) and/or in developing management, mitigation, and monitoring measures, including 79C of the <i>Environmental Planning and Assessment Act 1979</i> (EP&A Act), applicable <i>State Environmental Planning Policies</i> (SEPPs) and the nature and extent of any prohibitions that apply to the development and demonstration that the site is suitable for the proposed use in accordance with SEPP 55; • a compilation of the measures proposed to avoid, minimise, manage, mitigate, offset and/or monitor any adverse effects of the development on the environment and any residual impacts; • likely sub-staging; • a justification of the development taking into consideration the objects of the EP&A Act; and • detail how ESD principles (as defined in clause 7(4) of the Regulation) will be incorporated in each stage of the development. 	<p>The EIS (Arcadis, 2016) has generally satisfied these requirements. The adequacy of the environmental assessment and broader issues relating to the proposal are further discussed in Sections 3.3 to 3.16 of this report.</p>
<p>Notwithstanding the key issues specified below, the EIS must include an environmental risk assessment to identify the potential environmental impacts associated with the development (construction and operation), proposed mitigation measures and potentially significant residual environmental impacts after the application of proposed mitigation measures. Where additional environmental impacts are identified through this risk analysis, an appropriately detailed impact assessment of the additional environmental impacts shall be included as part of the Development Application.</p>	<p>The EIS (Arcadis, 2016) has generally satisfied these requirements with the exception of the recommendations provided in Sections 3.3 to 3.16</p> <p>The adequacy of the environmental assessment and broader issues relating to the proposal are further discussed in Sections 3.3 to 3.16 of this report.</p>

Secretary's Environmental Assessment Requirement	Response
<p>Where relevant, the assessment of the key issues below, and any other significant issues identified in the risk assessment, must include:</p> <ul style="list-style-type: none"> adequate baseline data; consideration of potential cumulative impacts due to other development in the vicinity; measures to avoid, minimise and if necessary, offset the predicted impacts, including detailed contingency plans for managing and significant risks to the environment; and 	
<p>A health impact assessment of local and regional impacts associated with the development including those health risks associated with relevant key issues. The assessment should be undertaken with reference to the Centre for Health Equity Training, research, and Evaluations' practical guide to impact assessment (August 2007) and shall include:</p> <ul style="list-style-type: none"> a discussion of the known potential developments in the local region; an assessment of the impact on the environmental values of public health; and An assessment of local and regional impacts including health risks. 	<p>There are a number of concerns relating to the Human Health Risk Assessment associated with the project, which are discussed further at Section 3.6.</p>
<p>The EIS must be accompanied by a report from a qualified quantity surveyor providing:</p> <ul style="list-style-type: none"> A detailed calculation of the capital investment value (CIV) (as defined in clause 3 of the Environmental Planning and Assessment Regulation 2000) of the proposal, including details of all assumptions and components from which the CIV calculation is derived. The Report shall be prepared on company letterhead and indicate the applicable GST component of the CIV; an estimate of the jobs that will be created by the future development during the construction and operational phases of the development; and Certification that the information provided is accurate at the date of preparation. 	<p>There are discrepancies associated with the Capital Investment Value quoted throughout the EIS, which is further discussed in Section 3.14.</p>
<p>Key Issues - The EIS must address the following specific matters:</p>	
<p>Statutory and Strategic Context – including</p> <p>Addressing the relevant planning provisions, goals and strategic planning objectives in the following:</p> <ul style="list-style-type: none"> NSW 2021; A Plan for Growing Sydney 2014 State Infrastructure Strategy 2012-2032; NSW Freight and Ports Strategy 2013; NSW Long Term Transport Masterplan; and National Land Freight Strategy. 	<p>The EIS (Arcadis, 2016a) addresses the identified documents, with a review provided at Section 3.1 of this document.</p>
<p>Compliance with the Approved Concept Proposal</p>	<p>The proposal is inconsistent with the Concept Approval, due to the reliance of the proposed Stage 2 scheme on the modification to MD 10_0193.</p>

Secretary's Environmental Assessment Requirement	Response
The EIS shall demonstrate that the proposal is consistent with the Concept Plan approval MP 10_0193 dated 29 September 2014 (as modified).	
<p>Air Quality – Including:</p> <p>A comprehensive air quality impact assessment including:</p> <ul style="list-style-type: none"> a) An assessment in accordance with the <i>Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales</i> (2005) (or its later version and updates); b) An assessment of construction related impacts including dust and wind erosion from exposed surfaces and proposed mitigation measures and safeguards to control dust generation and other airborne pollutants and to minimise impacts on nearby receptors; and c) A review of direct and indirect greenhouse gas emissions arising from this development and associated impact mitigation requirements, in reference to the Concept Plan greenhouse gas assessment. 	<p>There are a number of concerns associated with the Air Quality Assessment that do not fully consider the overall impacts associated with the proposed development and that potentially under estimate the emissions to air associated with the project, as discussed at Section 3.5.</p> <p>Furthermore a review of the assessment of Greenhouse Gas emissions has also been undertaken which is discussed at Section 3.13.</p>

Secretary's Environmental Assessment Requirement	Response
<p>Traffic and Transport – including</p> <p>A Traffic Impact Assessment that assesses intersection and road network impacts, including impacts on Cambridge Avenue. The traffic assessment shall;</p> <ul style="list-style-type: none"> a) Take into account the RMS guide to Traffic Generating Developments b) undertake a realistic and justified range of peak hour generation scenarios (to be determined in consultation with TfNSW, RMS and Liverpool City Council) including assumptions about heavy vehicle movements and the percentage of deliveries by railway and road; c) undertake detailed model analysis to confirm network operation and identify intersection upgrade requirements; d) consider the constructability constraints of proposed upgrade(s) at key intersections, such as vehicle swept paths, geometry and sight lines; e) include a draft Construction Traffic Management Plan f) assess construction traffic impacts, which may include a draft Construction Traffic Management Plan including: <ul style="list-style-type: none"> i. the identification of haulage routes and the nature of existing traffic on these routes ii. an assessment of construction traffic volumes (including spoil and fill haulage/delivery of materials and equipment to the road corridor and ancillary facilities) iii. potential impacts to the regional and local road network (including safety and level of service) and potential disruption to existing public transport services and access to properties and businesses g) assess operation traffic and transport impacts to the local and regional road network including: <ul style="list-style-type: none"> i. changes to local road connectivity and impacts on local traffic arrangements, road capacity/safety ii. traffic capacity of the road network and its ability to cater for predicted future growth h) Provide details of site accesses, internal roads and vehicular parking required as a result of the development i) Provide an updated Traffic Management and Accessibility Plan including: <ul style="list-style-type: none"> i. measures to prevent heavy vehicles accessing residential streets to maintain the residential amenity of the local community ii. public transport iii. cyclist facilities iv. driver code of conduct. 	<p>There are a number of concerns associated with the Traffic and Transport Assessment that potentially underestimate the impacts to local traffic networks which will arise from the project, as discussed at Section 3.3.</p> <p>Draft Construction Traffic Management Plans have been prepared for both the construction and operational phases which support the MPE Stage 2 EIS (see Appendix K).</p>
<p>Noise and Vibration – including:</p> <p>An updated assessment of noise and vibration. The assessment shall:</p> <ul style="list-style-type: none"> a) assess construction noise and vibration impacts from construction traffic and ancillary facilities. The assessment shall identify sensitive receivers and assess construction 	<p>There are a number of concerns associated with the Noise and Vibration Assessment that potentially underestimate the impacts associated with the project, as discussed at Section 3.4.</p>

Secretary's Environmental Assessment Requirement	Response
<p>noise/vibration generated by representative construction scenarios focusing on high noise generating works. Where work hours outside of standard construction hours are proposed, clear justification and detailed assessment of these works must be provided, including alternatives considered, mitigation measures proposed and details of construction practices, work methods, compound design, etc;</p> <p>b) assess operational noise and vibration impacts and identify feasible and reasonable measures proposed to be implemented to minimise operational noise impacts of the intermodal facility and rail link, including the preparation of an Operational Noise Management and Monitoring Plan;</p> <p>c) be prepared in accordance with: <i>NSW Industrial Noise Policy</i> (EPA 2000), <i>Interim Construction Noise Guideline</i> (DECC 2009), <i>Assessing Vibration: a technical guide</i> (DEC 2006), the <i>Rail Infrastructure Noise Guideline</i> (EPA 2013), <i>Development Near Rail Corridors and Busy Roads Interim Guideline</i> (DoP 2008), and the NSW Road Noise Policy 2011.</p>	
<p>Infrastructure Upgrades/Contributions – including:</p> <p>a) an assessment of the impacts of the project on local infrastructure demonstrating that satisfactory arrangements are in place to support and mitigate any impacts of Stage 2 on the Concept Plan including applicable costs, timing, TEU thresholds and approval pathways for such measures;</p> <p>b) Consideration of any relevant Council's Developer Contributions Plan (or equivalent document requiring developer contributions), including the contributions plan for Prestons Industrial Area; and</p> <p>c) Consideration of the need to extend the Route 901 bus service.</p>	<p>The adequacy of the environmental assessment and broader issues relating to infrastructure are discussed in Section 3.14 of this report.</p>
<p>Soil and Water – including:</p> <p>An assessment of soil and water impacts for the site. The assessment shall:</p> <p>a) assess impacts on surface and groundwater flows, quality and quantity, with particular reference to any likely impacts on Georges River and Anzac Creek;</p> <p>b) assess flooding impacts and characteristics, to and from the project, with an assessment of the potential changes to flooding behaviour (levels, velocities and direction) and impacts on bed and bank stability, through flood modelling, including:</p> <ol style="list-style-type: none"> hydraulic modelling for a range of flood events; description, justification and assessment of design objectives (including bridge, culvert and embankment design); an assessment of afflux and flood duration (inundation period) on property; consideration of the effects of climate change, including changes to rainfall frequency and/or intensity, including an assessment of the capacity of stormwater drainage structures; and relevant provisions of the <i>NSW Floodplain Development Manual 2005</i>. 	<p>The adequacy of the environmental assessment and broader issues relating to Soil and Water are discussed in Section 3.8 and Section 3.9 of this report.</p>

Secretary's Environmental Assessment Requirement	Response
<ul style="list-style-type: none"> c) assess effects to downstream rivers, wetlands, estuaries, marine waters and floodplain areas, water dependent fauna and flora (including Groundwater Dependent Ecosystems); d) describe and changes to environmental availability e) describe any mitigating effects of the proposed stormwater and wastewater management during and after construction on hydrological attributes such as volumes, flow rates, management methods and re-use options; f) identification of proposed monitoring of hydrological attributes; g) Include and detailed and consolidated site water balance h) address drainage issues associated with the development / site, including the incorporation of Water Sensitive Urban Design measures, stormwater and drainage infrastructure such as on-site detention systems to ensure peak discharges and flow velocities post development shall not exceed existing peak flows and velocities; i) undertake an assessment of surface water quality during construction (including reference to water quality objectives for the relevant catchment where objectives have been determined), including an identification of works that may impact water quality, and a summary of proposed monitoring and mitigation measures in accordance with <i>Managing Urban Stormwater – Soils & Construction Volume 1 2004 (Landcom) and Volume 2 (DECC 2008)</i>; j) consideration of stormwater quality and management (including monitoring) during operation of the site with the objective of maintaining or improving existing water quality taking into account the Water Quality Objectives; k) consider whether the existing sewerage system can cater for the proposal and whether environmental performance of the existing system will be impacted; l) identify and assess the soil characteristics and properties that may impact or be impacted by the project, including acid sulfate soils, salinity, erodibility, unstable or unsuitable ground and unrippable rock; and m) include a bulk earthworks strategy detailing the volume of spoil to be extracted from the site, planned reuse and amount of material to be imported. n) Include a contamination assessment in accordance with the guidelines made under the <i>Contaminated Land Management Act 1997</i> o) Include and assessment of potentially contaminated area in accordance with the <i>National Environmental protection Measure 2013</i> in addition to an assessment of potential area of Perfluorinated Compounds 	
<p>Aboriginal Heritage – including but not limited to:</p> <p>An assessment of the heritage impacts of the proposal. The assessment shall:</p> <ul style="list-style-type: none"> a) consider impacts to Aboriginal heritage (including cultural and archaeological significance), in particular impacts to Aboriginal heritage sites identified within or near the project should be assessed. The identification of cultural heritage values should be guided by the <i>Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (DECCW 2000)</i>. Where impacts are identified, the assessment shall 	<p>A number of inconsistencies in the Aboriginal heritage mitigation measures have also been identified in Section 3.12.3, which are required to be clarified to ensure compliance with condition 42a.</p>

Secretary's Environmental Assessment Requirement	Response
<p>demonstrate effective consultation with Aboriginal communities in determining and assessing impacts and developing and selecting options and mitigation measures (including the final proposed measures) in accordance with <i>the Aboriginal cultural heritage consultation requirements for proponents 2010</i> (DECCW); and</p> <p>b) describe attempts to avoid impacts to cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the EIS must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to OEH.</p>	
<p>Historic Heritage – including:</p> <p>a) consider the impacts to historic heritage. For any identified impacts, the assessment shall:</p> <ul style="list-style-type: none"> i. include a statement of heritage impact; ii. be undertaken by a suitably qualified heritage consultant(s); and iii. outline the proposed mitigation and management measures (including measures to avoid significant impacts and an evaluation of the effectiveness of the measures). Mitigation measures should include (but not be limited to) photographic archival recording and adaptive re-use of buildings or building elements on site). <p>Note: Where historical excavation is proposed, the heritage consultant undertaking the assessment must meet the NSW Heritage Council's Excavation Director criteria</p>	<p>As discussed in Section 3.12.3, the potential noise and vibration impacts have not been considered for the Glenfield House non-indigenous heritage site, and as such Heritage Condition (a) has not been met.</p>
<p>Visual Amenity, Urban Design and Landscaping – including:</p> <p>The assessment shall:</p> <ul style="list-style-type: none"> a) include a description of the visual significance of the affected landscape including an analysis of views from key vantage points; b) include artist's impressions of the development from key vantage points; c) assess the visual impact of the project on the landscape character of the area, including built form (materials and finishes) and the urban design (height, bulk and scale) of the proposal including views to and from the site; d) consider lighting impacts in the local area, analyse and describe the contribution and impacts of the proposed facility on light spill at the local scale and to sensitive receivers; e) include details of hard and soft landscaping treatment and design (including details of suitable landscaping incorporating endemic species); f) ensure the layout and design of the development has regard to the surrounding vehicular, pedestrian and cycling networks; and g) propose management/mitigation measures to address the visual impact of the proposal. 	<p>There are a number of concerns associated with Visual Amenity, Urban Design and Landscaping that may arise from the project, as discussed at Section 3.11.</p>
<p>Biodiversity – including:</p> <p>A Flora and Fauna assessment. The assessment shall:</p> <ul style="list-style-type: none"> a) assess impacts on the biodiversity values of the site and adjoining areas, including Endangered Ecological Communities and threatened flora and fauna species and their 	<p>As discussed in Section 3.7, there are limited biodiversity values protected under the NSW Threatened Species Conservation Act 1995 (TSC Act) within the development site, as such some details are identified that may require further consideration to improve the protection of biodiversity values.</p>

Secretary's Environmental Assessment Requirement	Response
<p>habitat corridors, riparian land, and habitat fragmentation and details of mitigation measures. The assessment shall be undertaken in accordance with the <i>Framework for Biodiversity Assessment</i>, unless otherwise agreed by OEH, by a person accredited in accordance with s142B(1)(c) of the <i>Threatened Species Conservation Act 1995</i>;</p> <p>b) consider of the OEH's Threatened Species Survey and Assessment Guidelines (www.environment.nsw.gov.au/threatenedspecies/surveyassessmentgdlns.htm), any relevant draft or final recovery plans, and Commonwealth <i>Significant Impact Guidelines</i>;</p> <p>c) assess and document impacts related to the proposed project in accordance with the <i>Framework for Biodiversity Assessment</i> (OEH 2014), unless otherwise agreed by OEH, by a person accredited in accordance with s142B(1)(c) of the <i>Threatened Species Conservation Act 1995</i>; and</p> <p>d) include a comprehensive offset strategy, or provide an updated strategy, in accordance with the <i>NSW Biodiversity Offsets Policy for Major Projects including the Framework for Biodiversity Assessment</i> (OEH 2014), consistent with the 'avoid, minimise or offset' principle.</p>	<p>There are some small changes to the Concept Approval documented in Arcadis (2016b), although these changes do not impact upon native vegetation and as such no further assessment is required by the FBA.</p>
<p>Contamination – including:</p> <p>A contamination assessment in accordance with the guidelines under the <i>Contaminated Land Management Act 1997</i>. The assessment shall include the potential environmental and human health risks of site contamination on the project site, a Remedial Action Plan (if required), and consideration of implications of proposed remediation actions on the project design and timing (if relevant).</p>	<p>It is considered that a site specific RAP should be developed for remedial works, which is further discussed in Section 3.9.</p> <p>The report identifies that PFAS in groundwater requires ongoing monitoring through implementation of a groundwater management plan (GMP). The objectives of the GMP are considered generally acceptable, however further discussion is required regarding the potential implications of unacceptable levels of PFAS contamination in groundwater and surface water bodies.</p> <p>The adequacy of the environmental assessment and broader issues relating to contamination are further discussed in Section 3.9.</p>
<p>Hazards and Risks – including:</p> <p>A preliminary risk screening completed in accordance with <i>State Environmental Planning Policy No. 33 – Hazardous and Offensive Development and Applying SEPP 33</i> (DoP 2011), with a clear indication of class, quantity and location of all dangerous goods and hazardous materials associated with the proposal. Should preliminary screening indicate that the proposal is 'potentially hazardous,' a Preliminary Hazard Analysis (PHA) must be prepared in accordance with <i>Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis</i> (DoP 2011) and Multi-Level Risk Assessment (Do 2011). The PHA should:</p> <p>a) Estimate the risks from the facility;</p> <p>b) Be set in the context of the existing risk profiles for the intermodal facility and demonstrate that the proposal does not increase the overall risk of the area to unacceptable levels; and</p> <p>c) Demonstrate that the proposal complies with the criteria set out in the <i>Hazardous Industry Planning Advisory Paper No. 4 – Risk Criteria for Land Use Safety Planning</i>.</p>	<p>The adequacy of the environmental assessment and broader issues relating to hazard and risk are further discussed in Section 3.10 of this report.</p>

Secretary's Environmental Assessment Requirement	Response
<p>Waste – including:</p> <p>An assessment of liquid and/or non-liquid waste generated on the site, how it will be identified, quantified, classified, documented and disposed of. The assessment shall also include a description of measures to be implemented to manage waste in accordance with the waste hierarchy. This assessment shall include waste management measures to ensure that the proposal considers the aims, objectives and guidelines in the <i>NSW Waste Avoidance and Resource Recovery Strategy 2014-2021</i>.</p>	<p>The adequacy of the environmental assessment and broader issues relating to waste are further discussed in Section 3.15 of this report.</p>
<p>Bushfire Management – including:</p> <p>An assessment against the <i>Planning for Bushfire 2006</i> (NSW Rural Fire Service).</p>	<p>The EIS (Arcadis, 2016a) generally provides sufficient discussion of bushfire management of the proposed development.</p>
<p>Property and Infrastructure – including but not limited to:</p> <p>a) Assessing the impacts of the development and subdivision on affected properties and land uses, including impacts relating to access, land use, business activities, future development potential, and property acquisition; and</p> <p>b) Assessing the service demand, capacity and augmentation of existing and proposed utilities and infrastructure, including any relocation as a result of the development.</p>	<p>The adequacy of the environmental assessment and broader issues relating to property and infrastructure are further discussed in Section 3.14 of this report.</p>
<p>Staging</p> <p>The EIS is to include details regarding the staging of the proposed development, including likely timing for construction and operation of the warehousing and distribution facilities.</p>	<p>The EIS (Arcadis, 2016a) generally provides sufficient discussion of staging of the proposed development.</p>
<p>Ecologically Sustainable Development (ESD)</p> <p>The EIS shall detail how the development will incorporate ESD principles in the design, construction and ongoing operation phases of the development.</p>	<p>The adequacy of the environmental assessment and broader issues relating to ecologically sustainable development are further discussed in Section 3.13 of this report.</p>
Plans and Documents	
<p>The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the <i>Environmental Planning and Assessment Regulation 2000</i>.</p> <p>These documents should be included as part of the EIS rather than as separate documents.</p>	<p>The EIS (Arcadis, 2016a) generally provides sufficient plans and documentation.</p>
Consultation	

Secretary's Environmental Assessment Requirement	Response
<p>During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners.</p> <p>In particular you must consult with:</p> <ul style="list-style-type: none"> • local, State or Commonwealth government authorities, including the: <ul style="list-style-type: none"> ○ Commonwealth Department of the Environment; ○ Environment Protection Authority; ○ Office of Environment and Heritage; ○ Transport for NSW; ○ Department of Primary Industries (Fisheries & Water); ○ NSW Rural Fire Service; ○ NSW Health; ○ Sydney Ports Corporation ○ Liverpool City Council; ○ Campbelltown City Council. • Service and infrastructure providers: <ul style="list-style-type: none"> ○ Roads and Maritime Services; ○ Sydney Water Corporation ○ Endeavour Energy; ○ Jemena; ○ Telstra; and ○ AGL Upstream Investments Pty Ltd. • specialist interest groups, including Local Aboriginal Land Councils; and • the public, including community groups and adjoining and affected landowners. <p>The EIS must describe the consultation process and the issues raised, and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided.</p>	<p>Sufficient consultation has been completed during the preparation of the EIS (Arcadis, 2016a) including consultation with local, State and Commonwealth Government authorities.</p>

3.3 Road Traffic and Transport

The MPE Stage 2 documentation, prepared by Arcadis (2016a), provides an assessment of the traffic implications of the proposed Stage 2.

The following documentation was prepared and provided in Appendix Ka, Kb, Kc and Kd of the EIS (Arcadis, 2016a) to support the development application for the MPE Stage 2:

- > Appendix Ka – Construction Traffic Impact Assessment (Arcadis 2016c)
- > Appendix Kb – Operational Traffic and Transport Impact Assessment Report (Arcadis 2016d)
- > Appendix Kc – Preliminary Construction Traffic Management Plan (Arcadis 2016e)
- > Appendix Kd – Preliminary Operational Traffic Management Plan (Arcadis 2016f)

The reports examine the traffic impact of the traffic generated by the Proposal (including the cumulative development impacts on the road network) and assessed the intersections and road network impacts using evidence based on traffic modelling, and identifies mitigation measures to address these impacts.

3.3.1 Revision Appendix Kb – Operational Traffic and Transport Impact Assessment Report

3.3.1.1 *Proposed Development*

MPE Stage 2 (the Project) involves the construction and operation of warehouse and distribution facilities on the MPE site and necessary infrastructure to support the project.

Specifically, the MPE Stage 2 facility comprises the following:

- > Warehousing comprising approximately 300,000m² Gross Floor Area (GFA), additional ancillary offices and the ancillary freight village
- > Establishment of an internal road network, and connection of the Proposal to the surrounding public road network
- > Ancillary supporting infrastructure within the Proposal site, including:
 - Stormwater, drainage and flooding infrastructure
 - Utilities relocation and installation
 - Vegetation clearing, remediation, earthworks, signage and landscaping
- > Subdivision of the MPE Stage 2 site
- > The Moorebank Avenue upgrade would be comprised of the following key components:
 - Modifications to the existing lane configuration, including some widening
 - Earthworks, including construction of embankments and tie-ins to existing Moorebank Avenue road level at the Proposal's southern and northern extents
 - Raking of the existing pavement and installation of new road pavement
 - Establishment of temporary drainage infrastructure, including temporary basins and / or swales
 - Raising the vertical alignment by about two metres from the existing levels, including kerbs, gutters and a sealed shoulder
 - Signalling and intersection works
- > Upgrading existing intersections along Moorebank Avenue, including:
 - Moorebank Avenue / MPE Stage 2 access
 - Moorebank Avenue / MPE Stage 1 northern access
 - Moorebank Avenue / MPE Stage 2 central access
 - MPW Northern Access / MPE Stage 2 southern emergency access

The Proposal would interact with the MPE Stage 1 Project (SSD_6766) via the transfer of containers between the MPE Stage 1 IMT and the Proposal's warehousing and distribution facilities. This transfer of freight would be via a fleet of heavy vehicles capable of being loaded with containers and owned by SIMTA. The fleet of vehicles would be stored and used on the MPE Stage 2 site, but registered and suitable for on-road use. The Proposal is expected to operate 24 hours a day, seven days per week.

The following sections outline the findings from the Operational Traffic and Transport Impact Assessment Report and the Preliminary Operational Traffic Management Plan (Arcadis 2016d, 2016f).

3.3.1.2 **Roadworks – Moorebank Avenue**

The Arcadis Operational Traffic Report (2016d) (Section 1.8) states that the vertical alignment of Moorebank Avenue would be raised by two metres from the existing levels, including kerbs, gutters and a sealed shoulder.

Relevant Issues for Clarification

- > There is no evidence or details of typical schematic cross sections along Moorebank Avenue describing the proposed new road level and integration with the shared path and pedestrian facilities proposed in Section 5.13 of the report.
- > There is no evidence of potential sight distance issues identified at the intersections.
- > It is not clear if share paths and pedestrian facilities would be raised or how the earthworks would impact these provisions.

3.3.1.3 **Reference Traffic Study, Data and Modelling**

The Arcadis Operational Traffic Report (Arcadis 2016d) (Section 1.11) indicates modelling data sources and describes the 'Do Minimum Model Scenario'

Relevant Issues for Clarification

- > Report states in Section 1.11 that Roads and Maritime provided the Aimsun 2026 and 2036 future base models (Do Minimum) and a supplement assessment was undertaken using SIDRA.
Traffic volumes extracted from the Aimsun models 2026 and 2036 and used in the SIDRA assessment are not provided.
- > Traffic assessment methodology for future years 2019 and 2029 is not described. It is not clear if this has been this done as interpolation from the Roads and Maritime Aimsun models or using the listed annual traffic growth.
This is a particular issue when understanding the traffic flows changes in the Aimsun Models with 'do minimum' upgrades in the wider network affecting directly the traffic flows in the local road network.
Traffic flow diagrams for the assessed years showing the traffic outputs extracted from the Aimsun Models and adapted in the SIDRA assessments are required to complete this revision.

3.3.1.4 **Intersection Assessment**

The Arcadis Operational Traffic Report (2016d) (Study Area, Section 2.1 and Exiting Network Performance, Section 3.3) provides a list of 10 key intersections for the road network assessment.

- > I-1 Moorebank Avenue / Anzac Road
- > I-2 M5 Motorway / Moorebank Avenue
- > I-3 M5 Motorway / Hume Highway
- > I-4 Moorebank Avenue / Newbridge Road
- > I-5 Moorebank Avenue / Heathcote Road
- > I-6 M5 Motorway / Heathcote Road
- > I-7 Cambridge Avenue / Glenfield Road
- > I-8 Cambridge Avenue / Canterbury Road.

- > I-A Moorebank Avenue / DJLU Access
- > I-B Moorebank Avenue / MPE Stage 2 Site Access

Relevant Issues for Clarification

- > The intersection assessment of the Moorebank Avenue and Bapaume Road is not included in this assessment. This intersection is proposed to be changed to a left in/ left out access only for the MPW site on the western side. Additional traffic from MPE may affect the performance of this intersection
- > The Summary of SIDRA results are limited to average delay and Level of Service (LoS). There is no information providing details of the back of queue at intersections.
- > The report does not include intersection layouts used in SIDRA for the intersection performance assessment; (existing and future conditions)
- > It was noticed few discrepancies in the previous intersection assessments done by WSP Parsons Brinckerhoff (2014), former Hyder (2015b) and the new Arcadis (2016d, 2016f) results for MPW and MPE. Particularly attention to the SIDRA inputs used for modelling purposes that can be manipulated manually and not in compliance with the Roads and Maritime Standards.
- > To fully assess and review the traffic impacts at the above mentioned intersections, the SIDRA model files are required.

Particular attention should be considered for the interchange (I-2) M5 Motorway / Moorebank Avenue. Assessment omits to provide detailed information of the performance of each entry and exit ramp and how the development has or not direct impact to the capacity, storage length and number of lanes.

The change of traffic patterns and increase traffic volumes due to the Proposal can be diluted in the overall performance of the intersection without considering that one or two particular movements of the interchange are directly impacted by the Proposal.

3.3.1.5 **Peak Hour Volumes**

The Arcadis Operational Traffic Report (2016d) (Peak Hour Volumes, Section 3.2) provides details of the existing peak traffic volumes in the strictly adjacent road network.

Relevant Issues for Clarification

- > Report does not provide peak hour traffic volumes on the M5 and Moorebank Avenue interchange entry and exit ramps. It is not possible to review the capacity of the interchange ramps.

3.3.1.6 **Future Intersection Performance without the Proposal**

The Arcadis Operational Traffic Report (2016d) (Table 4-2 and Table 4-3) provide delay and LoS of the listed key intersections in year 2019 and year 2029 without the proposal.

(Table 5-6 and Table 5-7) provide delay and LoS of the same listed key intersections in year 2019 and year 2029 without the proposal but with the 'Do-Minimum Scenario' based on road network upgrades identified in Table 1-19, Do Minimum Network Improvements.

Relevant Issues for Clarification

- > Summary of results in Table 4-2 and Table 5-6 are identical, same situation for summary of results in Table 4-3 and Table 5-7. It is not clear what traffic flows and road network inputs were considered in the assessment provided in Sections 4 and 5 of the report.

3.3.1.7 **Proposed Site Access and Network Upgrades**

The Arcadis Operational Traffic Report (2016d) (Section 5.4) indicates that there is one site access point proposed for MPE Stage 2 and a second traffic signal intersection access subject to approval for MPE Stage 1.

Relevant Issues for Clarification

- > Proposed location of the site access for MPE Stage 2 (Existing Intersection) and proposed access for MPE Stage 1 on Moorebank Avenue are separated for approximately 180 metres.

SIDRA files or detailed summary of results showing back of queue at the above mentioned intersections are not provided. It is not possible to assess if the short distance between the two proposed site accesses would operate satisfactorily.

- > Lane configuration and length of slip lanes for the proposed site access for MPE Stage 2 are not provided. It is not possible to assess the intersection road design.

3.3.1.8 ***Impact on Network Operation with the Proposal***

The Arcadis Operational Traffic Report (2016d) (Daily Traffic Volumes with the Proposal, Section 5.7.1) describes the increased traffic volumes from the operation of the Proposal along Moorebank Avenue.

Relevant Issues for Clarification

- > It is required to provide details of the increased traffic volumes of the Proposal at the M5 and Moorebank Avenue Interchange entry and exit ramps, (eastbound and westbound)
- > There is a high risk that the capacity of the ramps would be deteriorated by the additional traffic generated by the Proposal.

3.3.1.9 ***Impact on Intersection Performance 2019 and 2029***

The Arcadis Operational Traffic Report (2016d) (Section 5.7.3) indicates that the modelling results show that the additional Proposal traffic does not have an adverse impact on the performance of the study intersections in 2019 and 2029.

Relevant Issues for Clarification

- > The assessment concludes that the Proposal would not directly deteriorate the performance of the study intersection. This statement cannot be confirmed based on the provided information provided and summary of results.
- > Performance of the M5 Interchange ramps is not provided.
- > The Bridge over the Georges River (Bottle neck) on the M5 between the Moorebank Avenue and Hume Highway Interchanges is not described. The area is known for the traffic issues and weaving manoeuvres between the two interchanges.

Considering that the traffic generated from the Proposal; (73% of the total of heavy vehicles and 49% of the total of light vehicles) would use this section of the M5 Motorway, particularly the westbound entry ramp and the eastbound exit ramp, it is not clear how the traffic impacts on the ramp are mitigated.

- > Table E-1, Assumed Network Upgrades, indicates the analysis has identified the need for a number of intersections to be upgraded (in part or full) in order to address the impacts of background and cumulative traffic i.e. not due to the Proposal. For the purpose of the assessment the upgrades (as shown in Table E-1) have been assumed within the modelling, however the upgrades are not nominated for delivery with the Proposal.

The quantitative assessment does not provide a clear understanding of the impacts due to background growth and traffic generated from the Proposal.

The proposed upgrades listed in Table E-1 requires fundamental traffic assessment results and justification as listed in previous section of this revision.

- > Upgrades required on the M5 Motorway and Moorebank Avenue refer to specific improvements in the road network. These improvements are assumed and can only be estimated based on a traffic assessment from modelling results. No information is provided in the report to justify the improvements or to indicate the impact from the background traffic or from the Proposal.

3.3.1.10 Bicycle Facilities Provisions / Cycling Impacts

The Arcadis Operational Traffic Report (2016d) (Section 5.10.2 and Section 5.13.1) provides details of the bicycle facilities within the project. Section 5.13.1 indicates that the proposal would not result in any adverse impact to cycle accessibility.

Relevant Issues for Clarification

- > It is not clear if road safety for cyclists riding along Moorebank Avenue with mixed heavy traffic has been considered in the assessment.

The proposal has not provided details of the shared paths and crossings.

3.3.1.11 Impacts on Crashes/Accidents

The Arcadis Operational Traffic Report (2016d) (Section 5.11.1) indicates that the net impact of the Proposal's traffic would still result in an increase from 10.2 crashes per year to 12.1 crashes per year.

Relevant Issues for Clarification

- > It is not clear if traffic mitigation has been considered to reduce the number of crashes or reduce the severity. The assessment is limited indicating a correlation of ADT, recorded crashes and increased traffic.

3.3.2 Revision Appendix Ka – Construction Traffic Impact Assessment**3.3.2.1 Level of Service at Key Intersections**

The Arcadis Construction Traffic Report (2016c) (Section 5.3) provides details of LoS for the AM and PM peak periods in year 2018.

Table 3-3 of the Operational Traffic Report (Arcadis 2016d) provides details of LoS for the AM and PM peak periods in year 2015.

Relevant Issues for Clarification

- > It appears that the traffic results for year 2018 with the additional background traffic are performing better than in year 2015 and worse than in year 2019 as shown in the Operational Traffic Report. Refer **Table 3.3** below.

Table 3-3 Future Operational Traffic Modelling

	AM Peak		PM Peak	
	Delay (s)	LoS	Delay (s)	LoS
M5 Motorway / Moorebank Avenue Interchange (Without the Proposal)				
2018 Construction Traffic Report – Table 5-3	24	B	30	C
2015 Operational Traffic Report – Table 3-3	31	C	31	C
2019 Operational Traffic Report – Table 4-2	24	B	25	B

- > SIDRA files and complete summary of results are not provided. It is not possible to assess the parameters used in the SIDRA modelling to identify compliance with current Roads and Maritime guidelines and how were applied to the modelling years 2015, 2018 and 2019.

- > SIDRA files are strongly recommended to be provided assessing the performance and discrepancies of the key intersections results.

3.3.2.2 **Peak Hour Traffic Generation**

The Arcadis Construction Traffic Report (2016c) (Section 6.3) indicates that the estimated number of hourly truck movements varies between 44 and 67 truck trips (2-way) depending on the time of day. The highest number of truck trips is expected to be between the hours of 7am and 6pm with 67 truck trips (2-way) per hour. The highest number of light vehicle trips is expected to be 120 light vehicle trips (2-way) per hour between 6am and 7am.

Relevant Issues for Clarification

- > Table 6-2 provides an estimate of construction traffic movements for the AM and PM peak periods. Table 6-2 shows that during the AM peak period car trips are not generated. This appears to be a non-conservative approach assessing the peak hour considering that there would be at least three different construction work activities occurring at the same time; Fill Haulage for MPE Stage 2, Raising of Moorebank Avenue and Warehouse Construction.

3.3.2.3 **Potential Carriageway Closures**

The Arcadis Construction Traffic Report (2016c) (Section 7.4) indicates that there is the potential that a section of Moorebank Avenue would need to be closed from time to time, for short periods, to undertake diversionary works during the Moorebank Avenue upgrade.

Relevant Issues for Clarification

- > Report states that a Construction Traffic Management Plan (CTPM) would define the works for the proposal. It is not clear the frequency and duration of carriageway closures.
- > Based on the information provided in the Operational Traffic report indicating that by year 2019 key intersections would perform with deteriorated level of service (LoS) it is recommended to consider maximum duration of closures and most suitable time of day minimising traffic disruptions.

3.3.2.4 **Mitigation Measures**

The Arcadis Construction Traffic Report (2016c) (Section 8) proposes Review of speed restrictions along Moorebank Avenue and implementation of a maximum 40 km per hour construction zone along Moorebank Avenue along with additional signposting of speed limitations to reinforce reduced speed limits during construction of the Proposal.

Relevant Issues for Clarification

- > The proposed road upgrades along Moorebank road comprises a length of road of approximately 2km. It is not clear if the proposed mitigation measure for a maximum 40 km/h construction zone along Moorebank Avenue would be in place for the entire length of the roadworks.

The NSW Traffic Control at Work Sites Guidelines indicates that the maximum desirable length of roadworks signposted at 40km/h is 500 metres length.

3.3.3 **Cardno Assessment**

3.3.3.1 **Trip generation:**

The proposed development is comprised of approximately 300,000 m² GFA warehousing and additional ancillary offices, and 8,000 m² GFA of a freight village including retail, commercial and light industrial land uses.

Based on trip generation rate for warehouse development specified in *RMS Guide to Traffic Generating Developments*, the proposed development is likely to generate more than 1,540 vehicle trips in peak hour and 12,320 vehicle trips each week day.

However, Appendix Kb (Arcadis, 2016d) estimates that the stage 2 development would generate a total of 564 truck trips and 3,993 car trips each week day. This is an underestimation of the expected traffic generation by using the trip generation rate in the RMS Guide.

Furthermore, the development has proposed a total of 1,474 car parking spaces which is higher than the estimated car parking demand of 1,000 car parking spaces based on car parking provision specified for warehouse use in the Guide. The proposed high car parking provision will attract higher traffic volume.

There is no reference made to support the warehouse truck generation profile in figure 5-1 of Appendix Kb (Arcadis, 2016d).

In the Secretary's Environmental Assessment Requirements (SEARs) (SSD 16-7628), the proponent is required to undertake a realistic and justified range of peak hour generation scenarios (to be determined in consultation with TfNSW, RMS and Liverpool City Council) including assumptions about heavy vehicle movements and the percentage of deliveries by railway and road.

The vehicle trip generation from the IMT developments has not been addressed to Council's satisfaction.

3.3.3.2 **Development impacts**

The proposed development (stage 2) as part of the proposed ultimate developments within Moorebank Intermodal Terminal precinct will significantly increase traffic movements, heavy particularly vehicle movements, on the surrounding road network including M5, Hume Highway, Moorebank Avenue and Newbridge Rd.

The expected traffic flow increase would exacerbate congestions on the surrounding road network.

Appendix Kb (Arcadis, 2016d) has assumed that a number of road improvements including road widening along Moorebank Avenue would be carried out by 2019. However, none of those improvement works have been committed to by the developer or RMS.

It is noted that the SIMTA stage 1 development was approved without any transport improvements. Council, RMS and TfNSW met and discussed the impact of stage 2 development and agreed that any further development shall not be approved until the cumulative impacts of ultimate developments have been completed and funding mechanism agreed with RMS/TfNSW and Council.

As stated in the section 1.9 of the determination to SIMTA Moorebank Intermodal Facility Concept Plan:

Prior to the determination of any future Development Application pursuant to this Concept Plan, the Proponent shall provide written evidence to the Secretary that it has executed a Voluntary Planning Agreement with the relevant authority consistent with terms outlined in the Revised Statement of Commitments, except for the terms relating to road infrastructure upgrades and when they will be carried out.

Hence, the development should not be approved until such time that funding and delivery of the required improvement works are confirmed to Council's satisfaction.

In addition, the subdivision application shall not be approved until an overall infrastructure plan is in place which determines contribution rates for developments on the site.

3.3.3.3 **Public transport provision**

The report indicates that a consultation will be undertaken to extend the 901 bus service. However, there is no confirmation from TfNSW and bus provider(s) with regard to the proposal. The agreement shall be reached between TfNSW, the developer and bus provider(s) prior to the determination of the application.

3.3.3.4 **Internal road and warehouse layout**

Swept path analysis shall be submitted to the Department of Planning and Environment (DP&E) and Council demonstrating that the longest vehicle can undertake the following manoeuvres:

- > Entering and exiting the site in a forward direction
- > Circulating within the subject site and internal road network
- > Manoeuvring into and out of the loading dock

The swept path analysis shall be endorsed by Council and RMS prior to the development application being determined.

3.3.3.5 ***Other comments***

Any proposed modifications to the existing traffic signals along Moorebank Avenue shall be forwarded to RMS for approval.

The section of Moorebank Avenue between M5 and Anzac Road is currently a local road. With the expected increase of traffic, particularly heavy vehicle, Council recommends that the road section shall be reclassified as a state road. Any road works on this section of Moorebank Avenue requires Council and RMS approval.

The proposal shall assess constructability constraints of proposed upgrade(s) at key intersections, such as vehicle sweep paths, geometry and sight lines in accordance with the section (d) of the SEAR. The details shall be submitted to Council for review prior to the determination of the application.

The electronic copy of SIDRA models (Existing & Future) shall be submitted to RMS/Council for review.

Traffic and Transport Section supports all the comments made in Cardno peer review report for SIMTA Intermodal Terminal Project – Moorebank Precinct East Stage 2 dated 7 February 2017.

3.4 Noise and Vibration

The MPE Stage 2 documentation, prepared by Arcadis (2016a), provides an assessment of Stage 2 of the MPE Proposal, comprising the construction and operation of warehouse and distribution facilities.

Specifically, Section 8 and Appendix L – Moorebank Precinct East – Stage 2 Proposal: Noise and Vibration Impact Assessment (NVIA) (Wilkinson Murray 2016) and Appendix N – Moorebank Precinct East – Stage 2 Proposal: Human Health Risk Assessment (Ramboll 2016c) summarise the potential noise and vibration impacts that may occur as a result of Project.

3.4.1 Proposed Development

The Project involves construction and operation of a 250,000 TEU/annum rail to road intermodal terminal with associated rail link and warehousing and distribution facilities, as well as and upgrades to approximately 1.4 kilometres of Moorebank Avenue between the northern MPE site boundary and 120 metres south of the southern MPE site boundary.

Relevant to noise and vibration considerations, the Project will generate emissions from both the construction and operational phases. Key sources include:

Construction phase noise emissions associated with:

- > Vegetation clearance
- > Establishment of construction compounds
- > Remediation works
- > Demolition of existing buildings and infrastructure
- > Earthworks and levelling of the Proposal site
- > Drainage and utilities installation
- > Establishment of hardstand
- > Construction of a temporary diversion road to allow for traffic management along the Moorebank Avenue site during construction
- > Construction of warehouses and distribution facilities, ancillary offices and the ancillary freight village
- > Construction works associated with signage, landscaping, stormwater and drainage works
- > Construction traffic noise generation

Noise emissions from the operational phase, associated with:

- > Operational heavy and light vehicle traffic generation within the warehousing area and freight village
- > Operation of reach stackers (for loading and unloading intermodal containers) and forklifts within the warehousing area
- > Internal vehicle movements between the IMT and warehouse area.

3.4.2 Cardno Assessment

Cardno commissioned Pacific Environment (PE) to undertake a review of the noise and vibration assessment for the Project. Details of this review are provided in the following sections.

3.4.2.1.1 Construction Noise Criteria

Details of the sound power spectra of the construction fleet are provided in Section 6.3 of the NVIA. It is not clear if consideration has been given to activities identified as highly annoying in the ICNG (DECC 2009), such as vibratory rollers and compactors, excavators with hammers, concrete saws and jackhammers.

Out of standard hours (OOH) noise criteria should consider background noise levels relative to the out of hours period. RBLs adopted should consider background noise conditions specific to the OOH period for each noise catchment area and whether lower ambient levels occur during the specific OOH period when a greater proportion of residents are typically home.

3.4.2.1.2 Noise Modelling Inputs

The operational noise assessment provides detail of the noise sources and model assumptions applied. However, to verify the findings of the assessment, additional information would be required to understand the modelling inputs and outputs.

Aspects requiring clarification include:

- > Figures showing source locations adopted during acoustic modelling (construction and operations)
- > A summary table detailing number as well as type of sources in each model scenario (construction and operations)
- > Assessment of annoying characteristics in consideration of the ICNG (DECC 2009) for particular annoying construction noise sources.

The attenuation effects of warehousing buildings has been included and described, and stated to provide sufficient attenuation to nearby receivers such that further noise attenuation is not required. This specifically relates to the requirement of a 5 m high noise wall on the western site boundary which was recommended in the MPW Stage 2 NVIA and included in the SOC's for the MPE Concept Plan.

The volumes of traffic within the site was assessed in the MPE report, however the assessment of movement of vehicles between the site and the IMT and MPW has not been clarified. Noise contribution from internal truck movements would be expected and could potentially contribute to overall noise emissions.

3.4.2.1.3 Road Noise

The road noise assessment for external roads provides sufficient detail to assess the results presented.

3.4.3 Recommendations

The recommendations below have been identified to allow a comprehensive assessment of noise impacts from the MPE Project:

- > Input data should be presented in greater detail, including number, type, and location of equipment referenced in each assessment scenario, duration adjustments and model assumptions applied should be clearly documented for clarity in the acoustic assessment. The level of detail currently provided does not allow for an independent assessment to replicate or authenticate model assumptions or results.
- > Clarification on whether modifying correction factors as defined in the NSW Industrial Noise Policy (EPA 2000) have been considered in the prediction of operational noise impacts.

3.5 Air Quality

The MPE Stage 2 documentation, prepared by Arcadis (2016a), provides an assessment of Stage 2 of the MPE Proposal, comprising the construction and operation of warehouse and distribution facilities.

Specifically, Section 9 and Appendix M – Moorebank Precinct East – Stage 2 Proposal: Air Quality Impact Assessment (AQIA) (Ramboll 2016b) summarise the potential air quality impacts that may occur as a result of proposal.

3.5.1 Proposed Project

As outlined within the AQIA the Stage 2 Project involves the following:

- > Site preparations including vegetation clearing, remediation of contaminated land, demolition of existing buildings and infrastructure, earthworks, signage and landscaping.
- > Construction and operation of approximately 300,000 m² (30 ha) of warehousing including ancillary offices and freight village including:
- > Approximately 1,100 heavy vehicle movements per day during the operational phase.
- > Construction and operation of internal road networks and associated connections to the public road network.
- > Construction and operation of stormwater, drainage and flood management infrastructure.
- > Subdivision of the Stage 2 Site.
- > External road and intersection upgrades.

The Stage 2 Project would interact with the Stage 1 Project via the transfer of containers from the Stage 1 terminal area. The Stage 2 Project is also proposed to operate in conjunction with the MPW Stage 2 project.

3.5.2 Cardno Assessment

Cardno have commissioned Pacific Environment (PE) to undertake a review of the air quality assessment for the Project. Detail of this review is provided in the following.

Insufficient Reporting Detail

Within the AQIA, information on model emission source configuration is limited to the statement in Appendix 1: *"All emissions source activities for construction and operation are represented by a series of volume sources, located according to site layout"*. Accordingly, the assumptions and accuracy of the model configuration have not been reviewed.

With regard to this assessment, emission source parameters of interest include:

- > Emission source number and location.
- > Spatial allocation of the emission inventory.
- > Temporal representation of emissions (e.g. hours in which emission sources are active).
- > Modelled pollutant emission rates.

It is noted that the level of detail is not consistent with the reporting requirements outlined within the Approved Methods, and that assumptions around these parameters can have a material influence on the magnitude of modelling predictions. The level of detail should be addressed, with reporting undertaken in accordance with the Approved Methods prior to a determination being made.

Assessment of Construction Impacts

Given the absence of detail in the reporting, it was not possible to undertake a detailed review of the assessment of construction impacts. With regard to the detail that is provided, the following is noted:

- > Within the emission inventory, the assumed construction operating hours are 11 hours per day, despite the proposed construction hours of 6 am and 10 pm (Wilkinson Murray 2016), which equates to a total of 16 hours. Given that no detail is provided, it is not possible to understand whether emissions have been modelled after sunset, which given the prevalence of stable conditions in the region, could result in significantly higher predictions. The presence of trucks hauling and dumping fill during these hours should be specifically addressed. In addition, the ancillary equipment associated with these operations is not outlined (e.g. dozers to manage dump piles).

- > The AQIA adopts a 40% emission reduction for the restriction of vehicle speeds to less than 40 km/h. It is noted that this emission reduction is not considered appropriate for use in the assessment, given the absence of speed dependence in current unsealed haul road emission factors.
- > Annual emission rates for the construction phase do not agree with the documented assumptions. As an example, a TSP dozer emission rate of 2.6 kg/hr is estimated based on the equations provided in Appendix 5 of the AQIA and an assumed control of 50%. Annual dozer TSP emissions are documented within Table 5-1 to be 10,483 kg/annum. At the calculated emission rate, this implies a total of 4,031 hours of dozer operations per annum. This is not consistent with the documented assumption of 4 dozers operating 11 hours per day at an utilisation 70%, which would equate to 11,242 dozer hours per year. This value is approximately 2.8 times higher than that documented within the AQIA. Whether the AQIA estimate reflects a short term period of dozer operation is unclear. In addition, the emission rates for the estimation of 24 hour and annual averages are not provided, nor are when the emissions were modelled to occur.

Regional Assessment

The AQIA does not include a regional assessment of air emissions as required under the instrument of approval for the Concept Plan approval. Rather, assessment is limited to steady-state dispersion modelling of air quality impacts within 1 to 3 km of the Stage 2 Project.

Emissions from Excavation and Remediation of Contaminated Land

The AQIA makes assessment of the requirements for managing the mobilisation of contaminants during excavation and remediation of soils at the site. Within the site contamination summary (JBS&G, 2016) it is identified that asbestos, heavy metals, as well Non-Aqueous Phase Liquid (NAPL) hydrocarbons present within soil and/or groundwater on the Site. Given the presence of intrusive works and remediation activities, these issues should be identified and assessed such that risks can be managed appropriately.

Operational Impacts

The application of 50% utilisation to forklifts is considered potentially optimistic. Values in the vicinity of 85% would be considered more consistent with typical intermodal fleet operations. As an example, adoption of an 85% fleet utilisation would result in an increase of 70% of LNG forklift emissions which are a significant emission source within the AQIA.

Cumulative Assessment

The AQIA includes a cumulative assessment of the Stage 1 MPE, Stage 2 MPE and Stage 2 MPW projects. This analysis is reliant on the emission inventories presented in:

- > (Ramboll, 2016b) *Moorebank Precinct West Stage 2 Air Quality Impact Assessment*, Ramboll Environ Australia Pty Ltd, 10 October 2016.
- > (Environ, 2015) *SIMTA Moorebank Intermodal Facility, Air Quality Impact Assessment*, Environ Australia Pty Ltd, 26 May 2015.

A review of the Stage 2 MPW AQIA (Ramboll, 2016b) identified a range of optimistic assumptions, which if changed to use assumptions typical of those adopted within the air quality assessment would potentially influence the outcomes of the assessment, and the required levels of mitigation. A summary of these changes is outlined in **Table 3.4**, whilst further detail can be found in the Council's submission on the Stage 2 MPW project approval.

Table 3-4 Potential underestimation of MPE Stage 2 emissions (as relevant to cumulative assessment).

Source Group	Change	Increase relative to Site Stage 2 MPE Inventory Total	
		NO _x	PM _{2.5}
Locomotives	<ul style="list-style-type: none"> - Adoption of average locomotive fuel consumption from the Environ (2015), AECOM (2010), SKM (2003). - Adoption of average locomotive numbers (as defined in the noise assessment). 	+60%	+34%
Reach Stackers	<ul style="list-style-type: none"> - Nominal (85%) fleet utilisation for reach stackers. 	+19%	+32%
LNG Forklifts	<ul style="list-style-type: none"> - Nominal (85%) fleet utilisation for LNG forklifts. - Revision of LNG forklift calculations to reflect reported inputs. 	+3%	+6%
Truck Idling	<ul style="list-style-type: none"> - 4 minutes idling for each truck vehicle movement^{1,2}. 	+1%	+3%
Total Increase (Stage 2 MPW)		+83%	+74%

The changes outlined in **Table 3.4** are considered to be potentially material with regard to the prediction of compliance with air quality criteria, and identification of the required levels of mitigation. Given the reliance of the cumulative assessment on the Stage 2 MPE emission estimates, the conclusions of the cumulative assessment are not supported until these issues are resolved.

3.5.3 Consistency with the Concept Approval

The Concept Approval instrument identifies future assessment requirements for the Project. It is noted that the environmental assessment requirements require that the AQIA include an AQMP that incorporates a range of specific requirements. It is also noted that the provided AQMP does not cover the operational phase of the Stage 2 Project. In addition, as noted above, the AQIA does not include a consideration of regional air quality impacts, nor does it refer to external studies on the issue of regional air quality.

3.5.4 Recommendations

The following recommendations are made in order to allow a comprehensive assessment of the proposal:

- > In accordance with the concept plan instrument of approval, the assessment should include a cumulative operational air quality assessment for the Moorebank intermodal facilities when operating at design capacity. The assessment should assess local and regional air quality impacts of the facilities including the following:
 - Incorporation of emission estimates that reflect the extent of air emissions that are proposed as part of the Project, including an allowance for peak levels of activity that would occur under routine operations.
 - Qualification of the scale of emissions from the facilities in the context of regional emission inventory (e.g. those for the Local Government Area).

¹ NO_x emission factors from: PIARC 2012 *Road Tunnels: Vehicle Emissions and Air Demand for Ventilation*, PIARC Technical Committee C4 Road Tunnels Operation, PIARC 2012

² PM emissions factors from Environ 2008 *Revised Port of Oakland 2005 Seaport Air Emissions Inventory*, prepared for the Port of Oakland, Environ International Corporation, March 14, 2008

- Addressing of regional impacts with a consideration of potential impacts on regional ozone exceedances as well as assessment methods outlined in (Environ, 2011) *Tiered Procedure for Estimating Ground-level Ozone Impacts from Stationary Sources*.
- Reporting in accordance with the requirements of the Approved Methods.
- > Requirements for assessment of these contamination-related air quality issues be incorporated into the SOC's for the concept approval, such that subsequent planning processes can incorporate the appropriate consideration of environmental and human health risks, including quantitative assessment as required.
- > Specific assumptions for the modelling undertaken to inform the assessment should be identified and reviewed prior to any determination. These assumptions should then be and incorporated into the AQMP's and SOC's for the Construction Environmental Management Plan's (CEMPs).

3.6 Human Health

The MPE Stage 2 documentation, including the EIS prepared by Arcadis (2016a), provides an assessment of the proposed IMT development.

Specifically, *Section 10* of the EIS provides a summary of the *Human Health Risk Assessment (HRA)* prepared by Ramboll (2016c) (see Appendix N in the EIS), which assesses potential human health impacts that may occur as a result of development.

3.6.1 Proposed Development

The Project is seeking to build and operate the IMT facility under the MPE Stage 2 Project. As such a reassessment of human health considerations is appropriate for this proposed development. These elements were assessed against the SEARs and REMMs identified in the Concept Approval.

The main human health impacts are expected to arise from noise/vibration and air quality emissions and associated impacts to the surrounding community from activities involving road transport during both construction and ongoing operations. The proposed development is situated in an area with existing levels of noise and air pollution and traffic congestion and therefore any additional pressures and impacts arising from the proposed development can directly affect the health and wellbeing of the broader community.

3.6.2 Cardno Assessment

The EIS (Arcadis 2016a) provides an overarching review and assessment of factors affecting human health and is also supported by the HRA prepared by Ramboll (2016c), which was prepared to assess potential health risks posed by air and noise emissions on the surrounding community arising from the construction and operation of the Project. Ramboll (2016c) noted the HRA was prepared using information about pollutants to estimate a theoretical level of risk for people who might be exposed to defined levels of these substances. The objective of the HRA is to assess potential health risk posed by the air emissions and noise on the surrounding community.

The HRA (Ramboll 2016c) was also prepared in accordance with the *Health Impact Assessment - A Practical Guide- Centre for Health Equity Training, Research and Evaluation (CHETRE, 2007)* and *Environmental Health Risk Assessment: Guidelines for Assessing Human Health Risks from Environmental Hazards (enHealth, 2012)*.

A Health Impact Assessment (HIA) was not conducted for the proposed development as a HIA was previously undertaken for the MPE Stage 1 Project by Pacific Environment in 2015 and for the MPW Concept Plan Approval by EnRisks in 2014. It was also stated that the community consultation underpinning these previous HIAs, and their conclusions still remain applicable and relevant to the MPE Stage 2 Proposal.

The human receptors of concern included commercial/industrial workers, residents, school or day care students and recreational users located in the suburbs of Casula, Wattle Grove, Glenfield, and Moorebank. Annual average ground level concentrations (GLCs) of chemicals of potential concern (COPCs) emitted from operation of the Proposal were predicted by air modelling in the local air quality assessment. A cumulative Proposal scenario was also considered for concurrent operation of the Proposal, the MPE Stage 1 Project and the MPW Stage 2 Project.

Health endpoints and associated exposure-response relationships were previously approved by NSW Health as part of the consultation undertaken for MPE Stage 1, and are therefore also adopted for this HRA. The air quality HRA evaluated a range of health endpoints associated with the key air pollutants, including increases in mortality and morbidity as well as excess lifetime cancer risks.

The EIS (Arcadis 2016a) and HRA (Ramboll 2016c) were restricted to health risks associated with human exposure to noise and air emissions from the Project. Council's Environment and Health Section has also expressed support for a comprehensive review of the EIS and Health Risk Assessment by NSW Health.

3.6.2.1 Air Quality

Existing air quality in the local area has been evaluated in the AQIA prepared for the Proposal (refer to Chapter 9 and Appendix M of the EIS). Local air quality is influenced by a number of industrial and non-industrial sources, vehicle emissions from the existing road network, locomotive emissions from the East Hills Rail Line

(south of the site) and the SSFL / Main Southern rail line (to the west), and emissions from aircraft using Bankstown Airport (northeast of the site).

Although PM_{2.5} concentrations for Liverpool do not currently comply with the NEPM AAQ standards, regulatory initiatives such as the NSW EPA Clean Air Plan outline potential actions for wood heaters and transport emission are expected to play a role in reducing ambient concentrations by 2027.

Arcadis (2016a) notes that the key air pollutants evaluated were considered as COPCs in the HRA. From a toxicity perspective, the Volatile Organic Compounds (VOCs) most relevant to the HRA were identified as benzene and 1,3-butadiene. Carcinogenic PAHs were assessed as a group using the toxicity equivalent factor (TEF) approach, consistent with the *National Environment Protection (Assessment of Site Contamination) Measure* (NEPC, 2013). Diesel particulate matter (DPM) was not specifically modelled, but DPM was part of the PM_{2.5} assessment for emissions from diesel trucks and non-diesel light vehicles. The HRA conservatively assumed that 100 percent of the incremental PM_{2.5} is derived from diesel sources, even though the Proposal includes emissions from light vehicles and natural gas combustion associated with warehousing. The HRA also assumes that all NO_x is NO₂, which is also a conservative approach because ambient NO₂ is typically only about 70 percent of NO_x.

Arcadis (2016a) also recognised in Section 10.3 of the EIS that community health is influenced by a complex range of socioeconomic factors. Hence, a review of the existing health statistics, air quality and ambient noise levels for the local area surrounding the Proposal was undertaken, and compared to general regional statistics to appropriately evaluate the susceptibility of the community to potential health risks imposed by the Proposal.

The HRA assessed that short-term and long-term exposure to PM₁₀ and PM_{2.5} result in low health impacts in the surrounding communities (i.e., fewer than one increased case per year of premature mortality, hospital admissions, and emergency department visits associated with cardiovascular and respiratory diseases or asthma). Short-term and long-term exposure to NO_x, following adjustment for the fraction attributable to NO₂, result in low health impacts in the surrounding communities (i.e. less than or equal to one increased case per year of premature mortality, hospital admissions, and emergency department visits associated with cardiovascular and respiratory diseases or asthma).

The HRA also found that short-term exposure to SO₂ and CO results in negligible impacts in the surrounding communities (i.e. orders of magnitude below the acceptable risk of one increased case per year, for premature mortality, hospital admissions, and emergency department visits associated with cardiovascular and respiratory diseases or asthma). Excess lifetime cancer risks for residents/school students, commercial/industrial workers, and recreational populations within the study area are below levels of acceptable risk (i.e. within or below the established acceptable cancer risk range of 10⁻⁶ to 10⁻⁴).

In summary, the HRA used the AQIA findings to conclude that there are no significant adverse health effects expected in relation to short-term and long-term exposure to key air pollutants associated with the operation of the Proposal alone, as well as through a cumulative assessment scenario.

Although not duly appreciated by the consultant, the implementation of a comprehensive air quality monitoring program during the construction and operational phases of the Project would assist in measuring air quality trends and compliance rates during these periods. The Environment and Health Section from Council supports comprehensive monitoring initiatives during the construction and operational phases of the proposed development to facilitate adherence with the Approval, Environment Protection Licences and encourage environmental best practice.

3.6.2.2 **Noise and Vibration**

Exposure to noise can be associated with direct auditory and non-auditory health effects, including cardiovascular disease, cognitive impairment, sleep disturbance, tinnitus, annoyance and hearing impairment (WHO, 2011). Sleep disturbance is one of the most common complaints raised by noise exposed communities and can have a significant impact on health and quality of life. Children may be particularly vulnerable to the effects of noise on cognitive impairment and noise may interfere with learning at a critical developmental stage.

Similar to the Concept Plan Modification application, an inconsistency was noted in the 'MPE Stage 2 Noise & Vibration Impact Assessment (Report No. 12186-S2, Version C) prepared by Wilkinson Murray (2016). Table 6-9 of the aforementioned report indicates that construction noise levels at Wattle Grove are predicted to exceed the noise management level during the out-of-hours (OOH) period 2 (6.00pm – 10.00pm weekdays) by 1 dB.

However, according to the consultant, these results indicated that 'construction noise levels in Wattle Grove, Wattle Grove North and Casula were not predicted to exceed applicable NML at sensitive receivers during OOH Period 2, 3 or 4'. These findings contradict the consultant's following sentence which stated that 'construction noise levels during OOH Periods 2, 3 or 4 are predicted to exceed the NML in Wattle Grove by up to 1 dB'.

Worst-case cumulative construction noise levels are also predicted to exceed the NML at the most affected residential receivers in Casula by up to 2 dB. Although the consultant reported that these exceedances are negligible, this advice serves as a forewarning and acknowledgement that noise limits are likely to be exceeded during out-of-hours construction periods.

Furthermore, a marginal exceedance was also noted at Wattle Grove where L_{Amax} noise levels are predicted to exceed the sleep disturbance criteria by 1 dB. Although considered 'negligible', these marginal exceedances may gradually lead to increased background noise levels in the surrounding area. Instead, the applicant should be required to identify opportunities to mitigate noise impacts arising from the Proposal to strengthen compliance with the Noise Management Levels and prevent background noise creep.

As local residents are currently exposed to unacceptable levels of noise in the surrounding area, which are understood to be above World Health Organisation community noise guideline criteria, it is implied that the community is able to tolerate future noise level exceedances. If existing project noise is identified as an issue for sensitive receivers, it is concerning that further intensive development in this region is likely to result in background noise creep which may lead to a greater potential for annoyance and impacts on amenity.

A review of "*Recommended safe working distances for vibration intensive equipment*" was also undertaken in Table 8-5 of the EIS (Arcadis 2016a), which indicates that human comfort vibration impacts at surrounding residences would be negligible during construction activities. The EIS also states that the nearest residential receiver is situated far enough for impacts to be minimal in all circumstances (approximately 360 m) and therefore no further assessment of construction vibration was undertaken.

In summary, the HRA used the Noise Impact Assessment findings to conclude that the total noise (cumulative Proposal plus existing background) exceeds the WHO community noise guidelines (1999) on annoyance, sleep disturbance, and cognitive impairment in all the three surrounding suburbs, however the Proposal related noise is expected to have a minimal additional impact on the noise in the local area above existing baseline levels. This assessment outcome is not considered acceptable as continual creep of noise impacts from cumulative developments will contribute to the maintaining of the existing WHO guideline exceedances within the surrounding suburbs of Casula, Glenfield and Wattle Grove. Further assessment and suitable mitigation measures should therefore be proposed to reduce the impacts from this development which will remain a contributor to the surrounding noise shed impacts if conditions are not improved for this development proposal.

Due to the complexity of the development, the Environment and Health Section of Council believes that noise monitoring and annual reporting shall be undertaken during the construction and operational phases of the Project and continue for the life of the development.

3.6.2.3 **Additional Considerations**

Air quality and noise/vibration impacts can directly impact on the health and wellbeing of the surrounding community and thus the HRA (Ramboll 2016c) and EIS (Arcadis 2016a) should be reviewed and revised in consideration of any amendments to either the air quality and/or noise and vibration impact assessments.

The assessment of site landscape and visual character, local ecology, traffic congestion, road safety, pedestrian and cycle accessibility, flood control, water quality, land contamination and waste management were all considered independently in the MPE Stage 2 EIS, however many of these aspects which can also relate to human health were not reviewed in the HRA as only assessments of air and noise impacts were provided relating to health impacts.

It was also noted in the AQIA that supports the EIS that the operation of the warehouses on the MPE Stage 2 site would not be controlled by SIMTA as the Proponent, and precinct wide air quality management and monitoring requirements for prospective tenants would not be enforced. The same would potentially apply for noise impact monitoring and impact mitigation. It is noted that the responsibility for the management of emissions associated with warehousing, including forklifts and gas heating / cooling, would therefore fall with

each tenant. It recommended that clear lines of ongoing control and responsibilities of impact monitoring and management across the site should therefore be confirmed by DP&E prior to this project being determined.

Detailed floor and section plans for food premises in the freight village shall be submitted to the Department prior to the issue of the construction certificate. The plans shall demonstrate compliance with the Food Act 2003, Australia New Zealand Food Standards Code and Australian Standard (AS) 4674-2004 Design, Construction and Fit-Out of Food Premises. Additionally, the Department shall confirm whether regulated systems as defined under the Public Health Act 2010, such as warm water or water-cooling systems will be installed on the premises.

3.6.3 Consistency with Concept Approval

A review of the approved Concept Approval has been undertaken to identify if there are any inconsistencies in relation to thorough assessment of human health impacts.

The HRA notes that mitigation measures and monitoring are considered in the AQIA and Noise Impact Assessment, in accordance with the MPE Concept Plan Approval and Statement of Commitments.

3.6.4 Recommendations

The recommendations below are identified to address the identified human health impacts and to allow a comprehensive assessment of the Project:

- > Air quality and noise/vibration impacts can directly impact on the health and wellbeing of the surrounding community and thus the HRA (Ramboll 2016c) and EIS (Arcadis 2016a) should be reviewed and revised in consideration of any further amendments to either the detailed air quality and/or noise and vibration impact assessments.
- > Further commitments are required, prior to consent being issued for this proposal, to introduce appropriate mitigation measures to reduce noise exposure to surrounding communities to levels that meet all aspects of the WHO guidelines, irrespective of existing ambient noise levels.
- > Due to the complexity of the development, noise monitoring and annual reporting shall be undertaken during the construction and operational phases of the Project and continue for the life of the development.
- > If the Project is approved, all best practice and mitigation measures outlined in the AQIA (Appendix M of the EIS) should be implemented to further reduce air pollution levels and the associated health risks.
- > If the Project is approved, all best practice measures and mitigation measures outlined in the Noise and Vibration Impact Assessment (Appendix L of the EIS) should be implemented to further reduce noise and vibration impacts and the associated health risks to the community.
- > If the Project is approved, comprehensive air and noise monitoring initiatives should be undertaken during the construction and operational phases of the proposed development to facilitate adherence with the Approval, Environment Protection Licences and encourage environmental best practice.
- > A comprehensive review of the EIS and Health Risk Assessment should be undertaken by NSW Health.
- > A clear outline and process of site environmental impact management and mitigation responsibilities for prospective tenants will need to be provided by the proponent prior to the project being approved as the proponent acknowledge limitations on SIMTA's control in the future as it is noted that that the responsibility for the ongoing management of emissions associated with warehousing activities during operations.
- > The proponent should also submit detailed floor and section plans for food premises in the freight village to DP&E prior to the issue of the construction certificate. The plans shall demonstrate compliance with the *Food Act 2003*, Australia New Zealand Food Standards Code and Australian Standard (AS) 4674-2004 Design, Construction and Fit-Out of Food Premises. Additionally, DP&E shall confirm whether regulated systems as defined under the *Public Health Act 2010*, such as warm water or water-cooling systems will be installed on the premises.

3.7 Biodiversity

The MPE Stage 2 EIS (Chapter 11), prepared by Arcadis (2016a), provides an assessment of the IMT development proposed. Specifically, Arcadis (2016g) have prepared a *Biodiversity Assessment Report* (BAR) (Appendix O of the EIS) and *Biodiversity Offset Strategy* (BOS) in accordance with the *Framework for Biodiversity Assessment* (FBA) (OEH, 2014a), which is the methodology specified for assessing impacts to biodiversity. Some additional assessment is included in the report pertaining to Groundwater Dependant Ecosystems, although this is not formally assessed by the FBA.

3.7.1 Proposed Development

On 29 September 2014, a Concept Plan Approval (MP 10_0193) was granted for the development of the MPE Project. The biodiversity impacts of the MPE Concept Plan and Stage 1 were assessed in an EIS (Hyder Consulting, 2013) prepared for the MPE Concept Plan EIS, and an assessment of values under the FBA prepared for the MPE Stage 1 EIS (Hyder Consulting, 2015a).

The BAR and BOS prepared by Arcadis (2016g), includes ecological data collected and presented in these biodiversity assessments of the site and builds on the assessments, providing:

- > Additional field assessment of flora and fauna values of the site,
- > A revised calculation of the biodiversity impacts within the Moorebank Development Site;
- > A separate assessment of additional impacts from Concept Plan Modification 2 (Arcadis, 2016b) as a result of additional design development for the Project.

3.7.2 Cardno Assessment

Review of the BAR and BOS has identified there are limited biodiversity values protected under the NSW *Threatened Species Conservation Act 1995* (TSC Act) within the development site, although some details are identified that may require further consideration, as outlined below.

Ecosystem credits – under the FBA, ecosystem credits are a measurement of the value of EEC, CEECs and threatened species habitat for species can be reliably predicted to occur within a Plant Community Type (PCT). PCT's are defined by OEH (2016), and are the effective trading unit for 'offsets' using biodiversity credits in NSW. The following comments relate to the assessment of ecosystem credits within the BAR and BOS (Arcadis, 2016g):

- > There is relatively small amount of mapped native vegetation in the development site by Arcadis (2016g) (~0.16 ha), consisting of three Plant Community Types
 - o Hard-leaved Scribbly Gum – Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin (0.10 ha)
 - o Broad-leaved Ironbark – *Melaleuca decora* shrubby open forest on clay soils of the Cumberland Plain, Sydney Basin Bioregion (0.05 ha)
 - o Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion (0.01 ha)
- > As this was a desktop review, field validation of the vegetation classification and mapping boundaries provided in Arcadis (2016g) was not undertaken, although this review was supplemented by analysis of regional vegetation mapping, aerial photography and Google Street view. These PCT's are known from the area and vegetation mapping is most likely to be accurate.

Species credits – this class of biodiversity credit is required for impacts on threatened species that cannot be reliably predicted based on habitat surrogates. It is of most relevance to threatened flora, but some cryptic or rare threatened fauna are also considered to be 'species credit species'.

- > Flora: The Arcadis (2016g) assessment identifies the presence of four species credit species in the land directly adjacent to the southern boundary of the development site, known as The Boot land. These are, *A. pubescens*, *Persoonia nutans*, *Grevillea parviflora* subsp. *parviflora* and *Hibbertia puberula* subsp. *puberula*. A 10m vegetated buffer has been recommended as a 'mitigation measure' to avoid indirect impacts to these species. This may be sufficient to reduce edge effects such as weed invasion and changes in hydrology as suggested, but there is no discussion on where this 10m

buffer is derived from. For example, by reference peer reviewed publications or to the relevant Recovery Plans or Environmental Impact Assessment guidelines (NPWS 2003, 2002, 2004, DEC 2005). Further, this area is currently cleared of native vegetation and whilst there is a recommendation for a Flora and Fauna Management Plan as a mitigation measure, it is not specified whether this is to include revegetation along the southern boundary.

- > Further, there is no discussion of the critically endangered plant species, *Hibbertia fumana*. This is recently rediscovered species (OEH 2017; RBGDT 2017), known from only one location directly adjacent to the proposed development, in the area recognised as The Boot. For a species of such high conservation significance, this seems a large oversight and further discussion of adequate survey, and avoidance and mitigation that are considered appropriate should be provided in the BAR.
- > Green and Golden Bell Frog: it is uncertain whether appropriate survey for this species has been undertaken, as there is not discussion of climatic conditions during the time of nocturnal survey. Ideal survey conditions for Green and Golden Bell Frogs are warm, wet nights following prolonged periods of rainfall. There is no discussion on whether the surveyors checked a reference site to determine if the species was calling at the time of survey. There is however some impact to the habitat of this species, as it is noted in Table 9.3 (Arcadis 2016g) that habitat in MEME003 and ME003. There is also further comment about constructed drainage areas outside of the mapped native vegetation, although this has not been mapped.

3.7.3 **Consistency with Concept Approval**

There are some small changes to the Concept Approval documented in Arcadis (2016b), although these changes do not impact upon native vegetation, rather it is described as 'planted/disturbed' vegetation. As such, no further assessment is required by the FBA.

3.7.4 **Recommendations**

The recommendations below are identified to address the identified ecological impacts to allow a comprehensive assessment of the Project:

- > Further justification that proposed mitigation measures to avoid 'indirect impacts' to species credit species recorded along the southern boundary should be provided.
- > Further survey and justification should be discussed in detail for the critically endangered *Hibbertia fumana*, given the high conservation significance of the species, which is known from only one site which is highly likely be indirectly impacted from the proposal assessed in the BAR.
- > Further justification of whether the GGBF survey was undertaken in appropriate climatic conditions should be provided along with if the reference site was checked to determine whether this species was indeed active during the survey period.

3.8 Stormwater and Flooding

The MPE Stage 2 documentation, prepared by Arcadis (2016a), provides an assessment of the IMT development proposed.

Stormwater (quantity and quality) and flooding are specifically addressed within section 12 and *Appendix P – Stormwater and Flooding Report* (Arcadis 2016h) of the MPE Stage 2 EIS.

3.8.1 Proposed Development

The MPE Stage 2 project involves the construction and operation of warehouse and distribution facilities on the existing MPE site. The Stage 2 works also include road and drainage upgrades to approximately 1.5km of Moorebank Avenue. As such a reassessment of hydraulic, flooding and water quality considerations is appropriate for Stage 2 of the MPE project. These elements were assessed against the SEARs and REMMs identified in the Concept Plan approval.

3.8.2 Cardno Assessment

Following a comprehensive review of the Stormwater and Flooding Report (Arcadis 2016), several clarifications and comments have been compiled, as follows;

- > Although the EIS and the Stormwater and Flooding Report provide details of Erosion and Sediment Control (E&SC) criteria, guidelines etc. no concept plan has been provided. A preliminary E&SC plan (or Stormwater Management Plan (SWMP)) providing details on treatment measures should be provided for review.
- > Sediment basins are proposed to capture and treat sediment laden water during construction. The local soils have been confirmed by Arcadis as Type F soils (which are fine grained and require long residence times to settle from suspension). Flocculation is recommended for all proposed basins prior to discharge (pumping). Details of potential flocculants should be included as part of the E&SC strategy.
- > Section 5.3 of the Stormwater and Flooding Report states that the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) model layout is provided in Appendix C. Appendix C is not included in the Stormwater and Flooding Report. The Stormwater and Flooding report was downloaded from the EIS documents on the DP&E Major Projects Assessment website. The MUSIC model layout provides a visual representation of the proposed water quality treatment devices and should be reviewed.
- > Section 4.1.1 provides details on twin culverts (2.1m x 2.0m) which convey flows from the MPE site under Moorebank Avenue, into an open channel and finally to the Georges River. These culverts have been identified as susceptible to blockage. Options to alleviate the blockage at these locations should be explored.
- > Section 4.1.3 provides details of a concrete lined trapezoidal channel that conveys flows from the MPE site through the MPW site and into the Georges River. The concrete channel has catastrophically failed at a location approximately halfway between Moorebank Avenue and the Georges River. The failed section of the channel should be rectified.
- > Section 4.2.5.3 provides details of an OSD/open channel system used to provide flood mitigation and conveyance. A minimum grade of 0.5% has been specified for this channel. Some consideration should be given to increasing the grade of this channel as due to construction tolerances there could be some areas of localised ponding / wet areas once the channel is built.

3.8.3 Recommendations

The recommendations below are identified to address the identified impacts associated with stormwater and flooding to allow a comprehensive assessment of the Project:

- > Given that the development works area far exceeds 2,500 m², development of a SWMP would be appropriate, rather than an E&SC plan, as per guidance contained within the Blue Book (Landcom, 2004).

- > A SWMP typically provides more detail than an E&SC plan. As such, the following should be included in the SWMP, or additional supporting documentation provided in the report as necessary:
 - High-flow bypass weir designs for sediment basins.
 - Sediment basin overflow discharge locations and connections. The note provided advising that this be determined by the contractor is not considered to be sufficient for a project of this scale and significance.
 - Expected clean-out frequency of basins.
 - Flocculation details
 - Clean and dirty water drains.
- > Further consideration the current condition of existing drainage infrastructure downstream of the subject site (culvert outlets, trapezoidal channel etc.) and potential upgrades / rectification to improve stormwater conditions in the local area.

3.9 Soils and Contamination

The MPE Stage 2 documentation, prepared by Arcadis (2016), provides an assessment of the proposed IMT development.

Specifically, *Section 13* and *Appendix Q* of the EIS provide detail of the potential contamination impacts and considerations that may occur as a result of the proposed development.

3.9.1 Proposed Development

The proposed development will require demolition of existing buildings and structures, major earthworks and ground disturbance and importation of approximately 690,000 m³ of fill from offsite sources.

The proposed activities have potential to create and/or interact with contamination as described below:

- > Demolition of existing buildings and structures could result in the release of hazardous building materials such as asbestos fibres, lead-based paint and PCB containing capacitors.
- > Major earthworks could result in disturbance of unexpected areas of contamination such as burial sites. Additionally, chemicals required during earthworks, such as fuels, could result in contamination during uncontrolled releases or spillages.
- > Importation of fill from offsite sources could result in importation of undesired contaminant impacted material.

3.9.2 Cardno Assessment

Cardno completed a review of the MPE Stage 2 Proposal EIS (Arcadis, 2016) to assess the adequacy of the document and the potential impact resulting from the proposal. It is noted that the EIS was prepared in consideration of the SEARs (SSD_16-7628).

Below is a summary of the Stage 2 Proposal EIS with regard to contamination and geotechnical considerations:

- > The nature and extent of contamination at the site has been investigated extensively, however, Section 13.2 of MPE Stage 2 Proposal EIS (Arcadis, 2016) does not provide sufficient context or a list of relevant reports associated with previous contamination assessments, remediation and validation. It is noted that a more complete list of historic assessments is provided in Appendix Q.
- > Section 13.3.1 of the EIS provides mitigation measures that would be implemented during the construction phase of the proposal, including preparation and implementation of a contamination management plan (CMP). The CMP (or similar) should also be considered as a mitigation measure during the operational phase of the proposal to manage ongoing monitoring requirements / obligations such as regulatory groundwater monitoring associated with storage of dangerous goods for example underground and/or aboveground petroleum storage tanks. The EIS lacks discussion of management of potential contamination producing activities during the operational phase.
- > Section 13.2.3 of the EIS states that aqueous film forming foam (AFFF) compounds, which contain PFCs, were present in soils and groundwater at some locations, however, concentrations were typically low and below the nominated investigation levels. The EIS, including Appendix Q, does not detail the extent of the assessment undertaken such as the number of groundwater monitoring events completed and whether concentrations of PFCs are decreasing, stable or increasing.
- > Section 13.2.4 of the EIS states that the construction of the Proposal will have the potential to release and/or expose existing sources of contamination into the surrounding environment through disturbance of soils and groundwater. The wording of the sentence makes it seem that there are existing sources of contamination at the site that have potential to release and/or expose contaminants. If existing contamination sources are known to exist at the site then they should be specifically identified and considered for remediation.
- > The EIS summary provided at the front of the document states that 680,000 m³ of clean fill would be imported to site, whereas, Section 13 of the EIS states that 690,000 m³ of clean fill would be imported.
- > The EIS states that “clean fill” (volume TBC) would need to be imported to the site. The term “clean fill” is indistinct and unclear. It is recommended that the EIS include a specific definition of clean fill that describes what soil types are considered suitable for importation to the site. The definition should

include reference to any relevant NSW EPA guidelines. To address contamination risk associated with importation of fill, the EIS should contain a section describing a suitable fill management protocol that would ensure appropriate quality assurance / quality control (QA/QC) measures that satisfy the expectations of the NSW EPA, Council and Australian Standards.

- > The EIS states “clean fill” would be imported to the site and used as fill material. Importation of soil from offsite sources carries risk of possible introduction of contamination such as but not limited to asbestos and acid sulfate soils. The EIS should include a detailed description of the desired fill type and the process/procedure that will be implemented to ensure an adequate assessment of contamination has been undertaken. The EIS should provide an indication of the possible source(s) of imported fill e.g. surplus spoil generated during local civil construction projects.
- > Section 14 of the EIS discusses the presence, nature and proposed management of hazardous building materials including asbestos containing material (ACM) in eight (8) existing structures and soil. Due to the potential for airborne asbestos fibres during demolition of structures known to contain ACM there should be a more detailed discussion of the associated contamination risk in Section 13 of the EIS.
- > Section 13 of the EIS does not include sufficient discussion of the risk of exposing contamination beneath the footprints of existing buildings and concrete slabs. It is common to identify areas of contamination and filling beneath existing buildings and structures, particularly if the building was utilised in a commercial / industrial setting.

3.9.3 **Recommendations**

The recommendations below are to address the identified impacts associated with contamination that have not been addressed by the Stage 2 Proposal EIS:

- > In order to provide context and an understanding of historic investigations, Section 13 of the EIS should provide a list of relevant reports associated with previous contamination assessments, remediation and validation at the site. It is noted that the list of historic assessments is provided in Appendix Q.
- > The CMP (or a separate document) should also be considered as a mitigation measure for the operational phase of the proposal that manages any required ongoing monitoring such as monitoring associated with and NSW EPA environment protection licence (EPL) or regulatory groundwater monitoring associated with storage of dangerous goods for example underground and/or aboveground petroleum storage tanks.
- > The EIS should include more detail regarding the extent of the PFC assessment, including specifying the areas assessed, the number of groundwater monitoring events completed and whether concentrations of PFCs are decreasing, stable or increasing.
- > Section 13.2.4 of the EIS states that “construction of the Proposal will have the potential to release and/or expose existing sources of contamination into the surrounding environment through disturbance of soils and groundwater”. This sentence makes it appear that existing sources of contamination at the site have potential to release and/or expose contaminants. The EIS should be updated to include further detail of the remaining sources of contamination.
- > The volume of fill that is expected to be imported to site during the proposal should be confirmed. The EIS currently quotes 680,000 m³ and 690,000 m³.
- > The EIS should include a specific definition of “clean fill” that describes what soil types are considered suitable for importation to the site. The definition should include reference to any relevant NSW EPA guidelines.
- > To address contamination risk associated with importation of fill, the EIS should contain a section describing a suitable fill management protocol that would ensure appropriate quality assurance / quality control (QA/QC) measures that satisfy the expectations of the NSW EPA, Council and Australian Standards.
- > Due to the potential for airborne asbestos fibres during demolition of structures known to contain ACM there should be a more detailed discussion of the associated contamination risk in Section 13 of the EIS.

- > The EIS should include a discussion of the risk of exposing contamination beneath the footprints of buildings and structures during demolition.

3.10 Hazard and Risk

The MPE Stage 2 documentation, prepared by Arcadis (2016), provides an assessment of the proposed IMT development. Specifically, *Section 14* of the EIS summarises the potential hazards and risks that may occur as a result of development. A hazard and risk impact assessment has also been prepared for the Project, in accordance with the *State Environmental Planning Policy No. 33- Hazardous and Offensive Development* (SEPP 33).

3.10.1 Proposed Development

The Project is seeking to build and operate the IMT facility under the MPE Stage 2 proposal. As such a reassessment of risk and hazard considerations is appropriate for this revised development extent. These elements were assessed against the SEARs and REMMs identified in the Concept Approval.

The IMT facility will contain a range of future tenants who will have operational activities that have the potential to introduce a range of hazards and risks to the environment and surrounding community. The EIS notes that the specific details of future tenancies is not known however they will involve freight transfer, unloading and repacking activities on the site.

3.10.2 Cardno Assessment

The EIS notes that the hazards and risks assessment for the MPE Stage 2 Proposal has included the following key activities:

- > A desktop review and collection of background information to identify potential hazards and risks associated with the Proposal in the context of the broader MPE site and surrounding environment.
- > A preliminary risk screening of the Proposal in accordance with Applying SEPP 33: Hazardous and Offensive Development Application Guidelines (Department of Planning, 2011).

Section 14.3.2 summarises the existing hazards present at the proposal site which include:

- > Asbestos containing material (ACM) in existing structures and soil
- > Soil and groundwater contamination from previous activities.

Construction

Section 14.4 identifies potential impacts associated with the construction phase of the development which include:

- > Potential impacts on human health and/or the environment resulting from the accidental release or improper transport, handling and storage of hazardous substances relating to the Proposal.
- > The potential for asbestos fibres to become airborne during demolition and excavation activities.
- > Additional hazardous materials that may be transported to and used on the Proposal site to facilitate construction may include, but not be limited to:
 - Diesel fuels
 - Oil, grease and lubricants
 - Gases (oxy-Acetylene) (Class 2.1)
 - Bitumen (Class 3 PGIII)
 - Paints and epoxies (Class 3 PGII and Class 3 PGIII)
 - Herbicides (Class 6.1 PGII).

The EIS states that the majority of these compounds would be stored within the Main Warehousing Compound (refer to Figure 4-6 for location). The storage, handling and use of these materials would be undertaken in accordance with the *Work Health and Safety Regulation 2011* and the 'Storage and Handling of Dangerous Goods Code of Practice' (WorkCover NSW, 2005).

Operations

As outlined in *Hazardous and Offensive Development Application Guidelines - Applying SEPP 33*, the first step to determine if a PHA is required is to undertake screening tests, such as dangerous goods quantity or distance thresholds. Hazardous materials are defined as substances which fall within the classification of the ADG Code.

As detailed in Table 14-4 of the EIS, there is the potential for six classes of dangerous goods to be transported to or from, and stored within, warehouses on the MPE Stage 2 site. Notwithstanding this, in accordance with the MPE Concept Plan Approval an operational decision has been made by SIMTA as the Proponent that the Proposal would not receive or store the six classes of dangerous goods identified in Table 14-4 in quantities greater than the screening thresholds identified in *Applying SEPP 33*. On this basis, a PHA is not required for the Proposal at this stage.

Should an increase in quantities of any Hazardous Materials be required over and above the quantities assessed to date, then a PHA will need to be prepared and issued to relevant authorities for endorsement prior to allowing these materials on site.

The Proposal involves the operation of warehouses and distribution facilities, namely infrastructure to support container freight transport to and from the MPE site. As such, there is the potential for the Proposal to require the transport of dangerous goods:

- > To and from the MPE Stage 2 site
- > Between the MPE Stage 2 site and the IMT facility (i.e. MPE Stage 1)
- > Temporarily within warehouses on the MPE Stage 2 site prior to distribution.

The EIS notes that as part of the Proposal, full containers would be transferred from the MPE Stage 1 site to the warehouses on the MPE Stage 2 site by trucks, where the contents would be unloaded in the warehouses by means determined by the future tenant. The goods stored within the warehouses would then be transported to market via other heavy vehicles which would enter the site and be packed separately.

As the customers and proposed tenancies of warehouses have yet to be confirmed, the quantities and types of goods transported to, and stored temporarily on the site cannot currently be quantified, nor the possibility of transport or storage of dangerous goods at the MPE Stage 2 site be excluded. Depending on their type and quantity, dangerous goods have the potential to pose a risk to the health and safety of employees and contractors on the MPE Stage 2 site, the local community and the environment if not handled correctly, as they may be explosive, flammable, combustible, spontaneously combustible, oxidising, water-reactive, toxic or corrosive.

The handling of chemicals on the MPE Stage 2 site would constitute the greatest hazard with regards to the transport and storage of dangerous goods. The NSW Ports Trade report 2012 /2013 notes that in 2012 / 2013, Port Botany handles 144,779 TEU of containerised chemicals, an increase of 6.8 % from 2011/2012, and represented 13.6 % of total imported commodities for 2012/2013. Of these chemicals, the most prominent imported commodities were:

- > Plastic materials and artificial resins – 53,896 TEUs
- > Oils, perfumes and cleaning materials – 33,840 TEUs
- > Chemical materials and products – 20,738 TEUs.

The EIS notes that within the PHA for the Port Botany Expansion EIS (SPC/URS, 2003), an analysis of dangerous goods trade passing through Port Botany showed that approximately 96 per cent of containers did not carry dangerous goods. On this basis, only four per cent of containers did carry dangerous goods.

The more recent NSW Freight and Ports Strategy (Transport for NSW, 2013) notes that rail is used for 14 per cent of the container movement task to and from Port Botany. Cardno notes that this means that approximately 0.56% of all rail movements from Port Botany will contain dangerous goods.

The EIS also notes that as SIMTA represents one of several existing and proposed IMTs within the Sydney region, the quantity of containers carrying dangerous goods would be small and would present a low risk to site personnel, the local community and the environment. Cardno believes that further quantification of the risk associated with dangerous goods being transferred to the MPE Stage 2 site be undertaken. Even though

the percentage of dangerous goods being transported may be small the consequences from an incident can be catastrophic to the environment or the community if a transport incident were to occur.

3.10.3 Consistency with Concept Approval

The MPE Concept Plan EA identified the following key potential hazards and risks as potentially arising during the construction and operation of the MPE Project, including during the Proposal:

- > Potential for soil and groundwater contamination as a result of previous activities on the MPE site including unexploded ordnance
- > Presence of asbestos in existing structures and soil on the MPE site
- > Potential transport, storage and handling of dangerous goods
- > Bushfire.

The *Hazards and Risks Assessment* provided a number of conclusions and recommendations to be implemented during construction and operation of the MPE Project, including a number of management procedures, and some further investigations to address the potential risks and hazards identified.

- > A Phase 2 ESA and Phase 3 risk assessment (Cardno has assumed this is referring to a Remediation Action Plan / remedial works) would be undertaken where required prior to the commencement of construction to delineate the presence and/or extent of soil and groundwater contamination present. Where required, approval would be obtained in accordance with SEPP 55 for remedial works (refer to Chapter 13 (Soils, groundwater and contamination) for more information)
- > An asbestos management plan will be developed, containing a risk assessment undertaken in accordance with the Code of Practice for the Safe Removal of Asbestos (NOHSC, 2005), including the development of an asbestos removal control plan and emergency plan (refer to Section 14.5 for more information)
- > A preliminary hazard assessment (PHA) would be undertaken during project application approval stages or by tenants during the operational phase of the development, as required by SEPP 33. Once the level of risk has been identified, the aim would be to reduce the risk to as low as reasonably possible through the application of specific operational management procedures that would form part of a framework for managing risks, captured within the facility's Hazard and Risk Management Plan and Emergency Response Plan. Should unacceptable levels of risk be identified during the PHA, future potential tenants would be required to demonstrate the measures to reduce the risk to an acceptable level prior to acceptance of tenancy (refer to Section 14.4 for more information).
- > SIMTA as the Proponent would be required to disclose the type and quantity of goods entering the MPE site, prior to the commencement of tenancy. Prior to the lease (of any warehouse) on the MPE site, all tenants that would handle dangerous goods would be required to sign on to SIMTA's Hazard and Risk Management Plan and the Emergency Response Plan for the MPE site. These plans would be reviewed regularly and updated as goods entering the MPE site change with tenancies. As a minimum, the requirements in the Code of Practice for storage and handling of dangerous goods (WorkCover NSW, 2005) would be adopted in these plans (Section 14.5 of the EIS provides more information regarding operational mitigation measures).

The *Hazards and Risks Assessment* has acknowledged that it is not possible to quantify the operational risks relating to the transport, storage and handling of dangerous goods to, from and within the MPE site in the absence of further details regarding future proposed tenancies. Arcadis noted that where information is available, the operational hazards and risks associated with the Proposal were updated and are described in Section 14.4 of the EIS.

3.10.4 Recommendations

The recommendations below are identified to address the identified impacts associated with Hazard and Risk to allow a comprehensive assessment of the Project:

- > The mitigation measures for construction and operational stages outlined in Section 14.5 should be committed to and should also be included within a risk register for the construction and operational phases of the Project.

- > Should an increase in quantities of any Hazardous Materials be required over and above the screening thresholds identified in *Applying SEPP 33*, then a PHA will need to be prepared and issued to relevant authorities for endorsement prior to allowing these materials on site.
- > The *Hazards and Risks Assessment* has acknowledged there are limitations to the level of assessment to quantify the operational risks relating to the transport, storage and handling of dangerous goods to, from and within the MPE site. DP&E should therefore require that approval be conditional upon receiving further details fully assessing hazards and risks associated with future operations from any future tenancies on the site, prior to any operational activities commencing in that particular area of the site.
- > The Pollution Incident Response Management Plan should be prepared in accordance with the Environmental Guidelines: *Preparation of Pollution Incident Response Management Plans* prepared by the NSW Environment Protection Authority dated 2012.
- > Considering the potential risks and hazards to the local community and environment, in the event that the Proposal is approved, Council should be provided with draft copies of all site emergency management plans (including the Pollution Incident Response Management Plan) for review to allow any comments to be provided prior to construction and operations commencing as part of the construction certificate requirements.

3.11 Visual Amenity, Urban Design and Landscape

The MPE Stage 2 documentation, prepared by Arcadis (2016), provides an assessment of the proposed IMT development.

Specifically, *Section 15, Appendix E – Landscape Design Statement* and *Appendix R – Visual Impact Assessment* address the potential visual impacts that may occur as a result of development.

3.11.1 Proposed Development

The Visual Impact Assessment (VIA) has been conducted in order to satisfy the requirements detailed in the Conditions of Approval and SEARs. The VIA methodology involved:

- > **Viewpoint Identification** – Selected to recreate and match those used in the MPE Concept Plan EIS.
- > **Site Inspection** – To assess the relevance of each viewpoint location used in the MPE Concept EIS and to assess the visual impacts of the Project on that location.
- > **Visualisation of the Development** – Artist three dimensional model developed of the Project and added to viewpoints in order to create a before and after visualisation for assessment.
- > **Assessment of Visual Impact** – Qualitative assessment of the Project of the visual impacts on each viewpoint.

The qualitative criteria used to assess each viewpoint included:

- > Site context
- > Setting
- > Site elements
- > Site character
- > Adjacent development
- > Distance to view (foreground, middle-ground, background)
- > Land use
- > Visual prominence
- > Potential changes of the view setting

All of these parameters were used to generate an assessment of the Project both during construction and operation. This process highlighted 14 viewpoints where visual impact is likely, these are identified in **Figure 3-2** and their associated assessment in **Table 3-5**.

3.11.2 Cardno Assessment

The methodology utilised in the EIS is based on a review of various views to the site and associated infrastructure, with assessment of these views then made based on Visual Sensitivity and Visual Adaptation to establish an overall Visual Impact.

Figure 3-2 VIA Viewpoint locations and directions



Table 3-5 Viewpoints where Visual Impact likely

Viewpoint ID	Location	Type
04	West of site, Carroll Park, Casula	Public Space
05	West of site, Carroll Park, Casula	Public Space
08	North of site, Corner of Yulong Close and ANZAC Road	Public road/Industrial
09	North of site, Corner of Greenhills Road and ANZAC Road	Industrial
10	North-East of site, ANZAC Road	Residential/Industrial

11	North-East of site, Castlerock Court, Wattle Grove	Residential
12	East of site, Martindale Court, Wattle Grove	Residential
13	East of site, Martindale Court, Wattle Grove	Residential
18	South of site, Moorebank Avenue	Road
19	South of site, Moorebank Avenue	Road
20	West of site, Moorebank Avenue looking north	Road
21	North-West of site, Moorebank Avenue	Road
22	North of site, Corner of Moorebank Avenue and ANZAC Road	Road
23	Corner of Moorebank Avenue and road marked as DS NNSW LMA	Road

Assessments were then conducted for both construction and operational scenarios. The results of the assessments can be seen below in **Table 3-6**.

Table 3-6 Summary of Visual Assessments

Construction			
Viewpoint ID	Visual Adaptation	Visual Sensitivity	Visual Impact
04	Low/Moderate	Moderate/High	Moderate/High
05	Moderate	Low	Low/Moderate
08	Low/Moderate	Low	Low/Moderate
09	Low	Low	Low
10	Low	Low/Moderate	Low/Moderate
11	Low	Moderate	Low/Moderate
12	Low	Moderate	Low/Moderate
13	Low	Moderate	Low/Moderate
18	Moderate	Low	Low/Moderate
19	Moderate	Low	Low/Moderate
20	Moderate	Low	Low/Moderate
21	Moderate	Low	Low/Moderate
22	Moderate	Low	Low/Moderate
23	Moderate	Low	Low/Moderate
Operation			
Viewpoint ID	Visual Adaptation	Visual Sensitivity	Visual Impact
04	Low	Moderate/High	Moderate
05	Low/Moderate	Low	Low/Moderate
08	Low/Moderate	Low	Low/Moderate
09	Low	Low	Low
10	Low	Low/Moderate	Low/Moderate
11	Low	Moderate	Low/Moderate (Moderate/High)
12	Low	Moderate	Low/Moderate (Moderate/High)
13	Low	Moderate	Low/Moderate
18	Moderate	Low	Low/Moderate

19	Low/Moderate	Low	Low/Moderate
20	Moderate	Low	Low/Moderate
21	Moderate	Low	Low/Moderate
22	Moderate	Low	Low/Moderate
23	Moderate	Low	Low/Moderate

The methodology utilised for the VIA conducted for this EIS favours the Project and downplays the significance of the changes to the Visual Amenity associated with the Proposal. The methodology was centred on the maintenance of previously used viewpoints established within the Concept Plan approval stage of the MPE Project. Whilst this may have been appropriate for that stage of the process it doesn't allow for changes in the urban environment that have occurred since the first VIA was conducted in June 2011. Viewpoints 09 and 13 are reflective of this issue and can be better located to address public concern for the scale of the development.

Viewpoint 09 is located to the north of the site and was located adjacent to residential land. Since this viewpoint was initially identified Defence has developed the DJLU to the north the MPE site. The development of the DJLU site saw the removal of a significant amount of vegetation directly to the north of the MPE site improving sight lines. The positioning of viewpoint 09 is on the Corner of ANZAC Road and the Greenhills Road reserve, a dirt track servicing the rear of industrial sites. This viewpoint would be better placed 85 meters further east on the corner of ANZAC Road and Delfin Drive as this is a major entry point of the residential subdivision to the north of the DJLU site.

Viewpoint 13 was established as the only new viewpoint for this EIS. This was undertaken due to the opening of a linear parkland surrounding ANZAC creek to the East of the DJLU site and adjacent to the residential development of Wattle Grove. Viewpoint 13 was positioned to the west of viewpoint 12 from in the new parkland. The selection of this viewpoint was in appropriate as the photographer was positioned directly behind some foreground vegetation where there was scope to move further west to the main pathway through the park that lies adjacent to the western fencing. This position provides uninterrupted views to the MPE site and the Stage 2 works would be clearly visible to all the public users of the walking path.

The perspectives created by viewpoints 04, 05 and 06 are misleading as they do not directly look at the works undertaken as part of MPE Stage 2. Viewpoints 04 and 05 are looking at the southern end of the MPE site and show the Stage 1 works but do not show the full extent of the development and therefore the full impact to the public from these two vantages points. Viewpoints 04 and 05 are located in Casula Park and locations where a wide segment of the public would be exposed to the development. Viewpoint 06 is not even directed towards the MPE site and therefore misleads the public as the extent that the development will affect residents within this area of Casula. These three viewpoints should be directed towards the development site and it is anticipated that the Visual Impact would be increased negatively.

Viewpoints 04 and 05 are inconsistent in their assessment of Visual Sensitivity. This criteria focused on the likely duration of views and number of observers from a given viewpoint. This criteria is independent of the 'prominence' of the Proposal. Viewpoints 04 and 05 are both located with Casula park but receive very different weightings for Visual sensitivity, with assessments of Moderate/High and Low respectively. If the viewpoint 05 assessment was amended to match viewpoint 04 for both the construction and operation stages of the project then Visual Impacts would change from Low to Moderate/High.

The interrelationship of the MPE and MPW IMT facilities is inconsistently applied. Viewpoints 04 and 05 show the MPW site as a green shaded plane whilst showing the MPW development extent in viewpoints 19, 20, 21, 22 and 23. As the MPW Concept Plan has been approved the extent of this development should be included in all photomontages, including viewpoints 04 and 05 in Casula Public Park, to enable the public to be able to fully appreciate the effect of both developments.

The vegetation modelling in the photomontages shows mature tree plantings. Consequently, the image of the proposal site, is as it would be once the plantings within the Landscape plan have reached maturity. It is expected that this process will occur over a 20 to 30 year time frame. The VIA should take this timeframe for vegetation maturation into account and provide Visual Impact assessments for the short and medium term.

The rendering and colour choices used in the construction of the photomontages for the extent of the development is misleading. Overly the MPE development is constructed in a muted colour pallet with the

intention of downplaying the extent of the overall development at the EIS stage. This is particularly evident in the rendering of the IMT facility with containers not stacked to their full height or coloured in standard shipping container colours. There are further inconsistencies in the rendering of the numerous warehouses as part of Stage 2 of the MPE project. The architectural drawings detail a specific green colour pallet for the external surfaces of the warehouses. The rendering used in the production of the photomontages use a muted red colour pallet which has the effect of disguising the development buildings behind the vegetation buffer, further misleading the public view on the extent of the proposal.

3.11.3 Consistency with Concept Approval

The assessment conducted for this EIS has varying consistency with the assessment conducted for the MPE Concept Approval, with the visual impacts downgraded for a number of the assessed viewpoints for this EIS submission.

The Concept Approval found that the operational visual impacts ranged from Negligible to Moderate/High, however the highest operational visual impact in the Stage 2 EIS is Moderate, which demonstrates a reduction in visual impact between assessments. Moderate/High impacts were assessed for two significant viewpoints adjacent to residential development in Wattle Grove in the Concept Approval due to the development being relatively prominent at this location. The EIS assessment does not have any viewpoints rated Moderate/High for visual impact, with the two Moderate/High assessments downgraded to Low/Moderate. This downgrade was assessed as a linear parkland along ANZAC creek has been established since the initial Concept Plan approval was sought, introducing a vegetation corridor between the residential area of Wattle Grove and the proposal site. The VIA undertaken for this EIS failed to take into account what the effect of this development would be on the users of the new linear park. This parkland increases the number of residents that would be able to observe the development from this site and should be taken into account as part of any VIA undertaken.

3.11.4 Recommendations

The recommendations below are identified to address the identified impacts associated with visual assessment to allow a comprehensive assessment of the Project:

- > The selection and utilisation of Viewpoints for inclusion with the VIA needs to be conducted on an individual stage basis. The utilisation of previous viewpoints, whilst being consistent, does not account for the change in land uses surrounding the site. A comprehensive assessment must be undertaken for each stage, using previous iterations as a starting point, to determine a range of assessment locations to adequately assess the impact of the proposed development on all sensitive receivers. A review of all viewpoints utilised should be conducted to determine adequacy in utilisation for this proposal
- > The VIA conducted in the linear park located between Wattle Grove and the DJLU site along ANZAC Creek was incomplete and requires further assessment as direct views to the proposal site exist from this location and were not assessed.
- > Inconsistency exists in the rendering of the approved components of the MPW project within the photomontages for the MPE proposal. This exclusion downplays the full extent of development within the Moorebank Precinct that residents will be exposed to. All photomontages should include the extent of existing and approved projects so that all sensitive receivers can appreciate the full impact of development on appropriate locations selected for VIA.
- > Rendering of construction is inconsistent with colour pallets identified within architectural drawings. All photomontages should be updated to reflect the proposal colour pallet detailed, with all ancillary infrastructure and freight (containers) depicted in a manner that reflects actual IMT facilities.
- > Modelling of vegetation should be depict the growth at various stages of maturity. This should include short and medium term photomontages in addition to full maturity which would only be reached after 30 years of operation of the facility.
- > Impacts of cranes required for construction should be assessed to capture their visual impact during construction.

3.12 Heritage

The MPE Stage 2 documentation, prepared by Arcadis (2016), provides an assessment of the proposed IMT development.

Specifically, Section 16 and Appendix S summarise the potential Aboriginal Heritage impacts; and Section 17 and Appendix T summarise the potential Non-Indigenous Heritage Impacts that may occur as a result of development.

3.12.1 Proposed Development

The proposed development will include the following construction works:

- > Vegetation clearing
- > Remediation works
- > Demolition of existing buildings and infrastructure
- > Earthworks and levelling

Works will encompass the construction area of the proposed development, as identified in Figure 0-1 of the EIS.

No construction works are proposed in the George River Riparian Corridor as part of the MPE Stage 2 proposal.

Archaeological investigations within the proposed site boundary have identified a number of Aboriginal and European sites and objects located within and adjacent to the Project boundary. The following Aboriginal sites or objects are proposed to be impacted as part of the proposed Stage 2 construction works:

- > Isolated Artefact 1 – a mudstone flake, located within the south-eastern portion of the MPE site
- > Isolated Artefact 3 – red/black silcrete, possible core with one negative flake scar, located near the vehicle access track in mud, to the south of the MPE site
- > Isolated Artefact 4 – Chert core with eight negative flake scars, located near the vehicle access track in mud.

Of these, Isolated Artefact 1 was assessed as having low archaeological significance and was noted to appear to no longer be present. As such no mitigation measures are proposed for this site. Isolated Artefact 3 and 4 would be protected through the use of an exclusion zone fencing during construction and operation and so is not proposed to be damaged or disturbed. The EIS states that the Proposal would not impact any areas of archaeological potential or any Aboriginal sites of high, moderate or unknown archaeological and cultural significance.

Additional mitigation measures proposed in the EIS to protect Aboriginal Heritage include the inclusion of Aboriginal heritage management in the project CEMP and in induction for all relevant personnel and contractors. The EIS states that no mitigation measures related to impacts of Aboriginal heritage are required for the operation of the proposal.

In regards to non-Aboriginal heritage, the EIS states that the former DNSDC site upon which the proposal is located was formally listed on the Commonwealth Heritage List however, upon termination of Defence's lease of the site the listing is no longer applicable. No sites included on the National Heritage List, Section 170 list or the State Heritage Register were identified within the Proposal site. The closest site listed on the State Heritage Register is located at Glenfield Farm which is southwest of the Proposal site.

The Liverpool LEP lists the former DNSDC as being of local significance as well as the SME which is located west of Moorebank Avenue as being of local significance.

The key impacts to the DNSDC, SME and Glenfield Farm are identified in the EIS as:

- > The removal of heritage values from the former DNSDC site and the loss of heritage significance
- > The removal of original roads and open drain alignments running through the Proposal site
- > Impacts to potential archaeological material associated within former structures located within the Proposal site

- > Impacts to the curtilage of the SME site to the west as a result of Moorebank Avenue upgrade
- > Cumulative visual impacts of the Proposal with the MPW and MPE stage 1 Proposal on heritage view sheds to and from Glenfield Farm.

The EIS noted Glenfield Farm to be a substantial distance from the construction works (~1,700m) and therefore construction impacts are likely to be minor and temporary in nature.

3.12.2 Cardno Assessment

A review of the EIS and Appendix S identified a number of inconsistencies between these documents which required clarification prior to determination. The EIS states that Isolated Artefacts 1, 3 and 4 are within the stage 2 area where as Isolated Artefact 2 is outside the proposal site. However, in Appendix S it states that Isolated Artefacts 1, 2 and 3 are within the Stage 2 area with Isolated Artefact 4 outside the proposal site. The definition of the project boundary in relation to these sites should be confirmed in order to ensure that adequate protection is provided for the sites within the area to be approved.

In addition to this, Appendix S recommends that consultation be maintained with the RAPs during the finalisation of the Aboriginal Heritage Impact Assessment report for the Proposal, however this is not included within the EIS. Ongoing consultation with RAPs is important to ensure adequate respect of the heritage context of the land is maintained during the development.

The use of fencing as a mitigation measure also seems to be inconsistent within the EIS as the duration of the erection of the exclusion fence in EIS Section 16.4.1 is defined as being maintained during construction and operation, where as in EIS Section 16.5.2 it is stated that no mitigation measures are proposed during operations. To ensure adequate protection exclusion fencing should be maintained throughout operations to ensure that the artefacts are not damaged or destroyed.

In Appendix S, a lack of justification has been provided as to why none of the artefacts within the stage 2 boundary have been registered within AHIMS. AHIMS is an important tool of site registration which ensured the registration and documentation of Aboriginal sites and object. Appendix S includes no discussion as to why the use of this best practice system has not been utilised suggesting that a key mitigation measure for the project would be the registration of these sites.

The EIS non-Aboriginal heritage chapter and Appendix T are not consistent in approach to the mitigation of the site. Appendix T recommends the archival recording of the entire former DNSDC site including the relationship between the structures and landscaping, which should be completed as part of the Stage 1 works. The EIS makes no mention as to whether this work has been undertaken or if it will be undertaken.

In reference to potential visual impacts to Glenfield Farm, Appendix T refers to Appendix R of the EIS for an assessment of the associated visual impacts. The only mention of this in Appendix R is a statement which dismisses visual impacts due to “the surrounding conditions and proximity to the Proposal... Glenfield Farm being within proximity only to views that assess the impact of rail”. None of the view analysis include or demonstrate this suggesting that further analysis is needed to draw any conclusions regarding the visual impacts to Glenfield House.

3.12.3 Consistency with Concept Approval

Isolated Artefacts 3 and 4 are located in an area which is outside of the Concept Approval boundary. This boundary has been revised as part of a Modification to the concept which is currently on exhibition, but has not yet been approved. Until that modification to the concept is approved these sites which require modification are subject to mitigation measures which have not yet been approved through the concept process and so are not consistent with the project concept. As with Appendix S, the modification EIS states that Isolated Artefact 2 is within the project boundary and 4 is outside which is not consistent with the Stage 2 EIS. Other mitigation measures regarding Aboriginal heritage appear to be consistent.

The Concept Approval requires that the EIS “*Consider impacts to historic heritage*” (Heritage Condition (a)). The potential noise and vibration impacts have not been considered for the Glenfield House non-indigenous heritage site, with this requirement not met.

3.12.4 Recommendations

The recommendations below are identified to address the potential impacts associated with Indigenous and non-Indigenous heritage to allow a comprehensive assessment of the Project:

- > Due to the location of the isolated artefacts outside the existing concept boundary, this EIS should not be assessed until the modification EIS is determined.
- > Clarity should be sought regarding the isolated artefacts to be protect by the exclusion fence and their location within or outside the project boundary to ensure consistency between documentation.
- > Justification should be provided as to why the isolated artefacts site have not been registered within the Aboriginal Heritage Information Management System.
- > A commitment to complete the archival recording of the entire DNSDC site prior to work commencing should be made as it is not clear as to whether this was completed as part of the Stage 1 works.
- > A view shed analysis should be undertaken of Glenfield Farm to determine the level of visual impact to the site instead of basing conclusions on the level of assessment on assumptions of the surrounding conditions.

3.13 Greenhouse Gas and Ecologically Sustainable Development

The MPE Stage 2 documentation prepared to support the EIS (Arcadis, 2016), provides an assessment of the proposed IMT development. Specifically, Section 18 of the EIS and the *Greenhouse Gas and Climate Change Impact Assessment* (Arcadis 2016) presented as Appendix V of the EIS provides an assessment of potential greenhouse gas (GHG) impacts that may occur as a result of development.

3.13.1 Proposed Development

The proposed development involves construction and operation of an IMT with associated warehouse (approx., 300,000m² GFA) and distribution facilities, ancillary offices, a freight village (ancillary site and operational services), stormwater, landscaping, servicing and associated works. The Proposal would interact with the MPE Stage 1 Project (SSD_6766) via the transfer of containers between the MPE Stage 1 IMP and Proposal's warehousing and distribution facilities. The transfer of freight would be via a fleet of heavy vehicles loaded with containers and owned by SIMTA. The fleet of vehicles would be stored and used on the MPE Stage 2 site, but registered and suitable for on-road use. The Proposal would operate 24 hours a day, seven days per week.

The MPE project is proposed to be developed in four key stages which includes construction and operational of the following:

- > Stage 1 – IMT facility and rail ling
- > Stage 2 – Warehouse and distribution facilities
- > Stage 3 – Extension of the IMT facility
- > Stage 4 – Completion of warehouse and distribution facilities.

Relevant to GHG emission considerations, the Project will generate emissions from both the construction and operational phases. Key GHG emission sources include:

GHG emissions from the construction phase are outlined in Section 4 of the *Greenhouse Gas and Climate Change Impact Assessment* (Arcadis 2016), and are associated with:

- > Vegetation clearing
- > Remediation works
- > Intersection upgrades
- > Demolition of existing redundant buildings and infrastructure
- > Earthworks and levelling activities
- > Drainage and utilities installation
- > Establishment of hardstand across the site. Including the Terminal hardstand
- > Construction of temporary diversion road to allow for traffic management along Moorebank Avenue during construction.
- > Construction of warehouses and distribution facilities, ancillary offices and the ancillary freight village
- > Construction works associated with signage, landscaping, stormwater and drainage works.

GHG emissions from the operational phase are outlined in Section 6 of the *Greenhouse Gas and Climate Change Impact Assessment* (Arcadis 2016), and are associated with:

- > Electrical consumption (kWh/yr)
- > Fuel combustion for machinery and equipment fleet (LNG and Diesel)
- > Waste decomposition
- > Refrigerant (HFC R134a) leakage.

3.13.2 Cardno Assessment

Arcadis (2016) has provided an assessment of Scope 1, Scope 2 and Scope 3 GHG emissions from the Proposal to quantify carbon dioxide (CO₂) and other non- CO₂ emissions, including methane (CH₄), nitrous oxide (N₂O), and refrigerant HFC-134a (CH₂FCF₃). These gases were converted into carbon dioxide equivalents (CO₂-e) as specified under the Kyoto Protocol. The Global Warming Potential (GWP) adopted for each GHG have been defined using the latest available 2016 National Greenhouse Gas Assessment (NGA) Factors.

3.13.2.1 **Assumptions**

The accuracy of parameter assumptions used in calculations of GHG emissions can have a material influence on the magnitude of emission predictions and therefore the findings of the GHG assessment. Therefore the accuracy of assumptions is critical to the accurate assessment of emission impacts.

Construction of the Proposal is assumed to take between 24 and 36 months, commencing in the final quarter of 2017. It is noted that the final construction program would depend on market demand for warehouses to be constructed on site. It is also noted that the assumed 24 month construction program is subject to confirmation from a construction contractor. In addition the following assumptions were also outlined in the GHG assessment:

- > Construction work hours were assumed to be 12 hours per day and 5.5 days per week
- > Distances for material suppliers, recyclers and waste disposal facilities were identified through desktop searches, and associated distances used in calculations
- > Only plant and equipment that would significantly contribute to CO₂-e emissions were considered in the assessment
- > All cleared vegetation would be composted and used for landscaping purposes onsite.

Although the structure of the assessment and the assumptions provided are considered a reasonable approach to assessing the quantum of emissions, the basis for many of the assumptions used in the GHG assessment calculations are not provided. Therefore it is difficult to cross check the assumptions and correlations between the assumptions used in other key impact assessments such as for traffic and air quality to ensure consistency of data inputs which are used for the GHG assessment.

To allow a comparative review of project specific emissions against the National and State Greenhouse Gas Inventory, which are the latest available emission estimates obtained from the 2012-13 financial year and which were reported in 2014.

The construction phase of the project would generate approximately 8,884 tCO₂-e over the 24 month construction period. Scope 1 emissions would generate 73% of total construction emissions with the bulk earthworks (in Works Period D) would generate the greatest proportion of emissions (24%).

Arcadis also identified a number of key pieces of infrastructure associated with the proposal as likely to embody the majority of emissions associated with materials used. The total GHG emissions in construction materials were calculated to be 137,774 tCO₂-e, or approximately 15.5 times the estimated GHG emissions from the construction phase (excluding material impact). The use of concrete was identified as the greatest source (approx. 79%) of embodied GHG emissions. The embodied energy within construction materials were estimated to be the equivalent of less than two years of operation.

Substitution of construction materials has been considered as part of the GHG assessment and some opportunity have been identified to utilise alternative non-standard blends of concrete which could significantly reduce embodied emissions. Therefore, should the proposal be approved then a condition of consent should include a detailed review and specification of alternative low embodied energy construction materials (including but not limited to low embodied energy concrete and recycled steel materials) should occur as part of procurement policies and be considered during detailed design and prior to construction, to ensure embodied energy and resulting GHG emissions are minimised.

The operational phase of the project would generate approximately 118,733 tCO₂-e per annum, including 16,202 tCO₂-e of Scope 1 emissions, 72,799 tCO₂-e of Scope 2 emissions and 29,733 tCO₂-e of Scope 3 emissions. Electricity demand within the warehouses and freight village has been identified as the largest contributor to GHG emissions as they would account for approximately 70% of total operational emissions.

It is also noted that GHG emissions from end of life of the Proposal have been excluded from the assessment due to large uncertainties in terms of degree of reuse of facilities and infrastructure, as well as degree of reuse, recycling and disposal of construction materials.

Arcadis (2016) have also correctly noted that corporate emissions over 50,000 tCO₂-e/year would trigger reporting requirements under the National Greenhouse and Energy Reporting (NGER) Act 2007. The Proposal would generate over 50,000 tCO₂-e/year, however obligations under the NGER Act are based on which members have operational control over facilities, that meet a facility threshold or that contribute to meeting a corporate level threshold. The Proposal has noted models of tenant occupation of warehouses are currently not defined and therefore there is a potential that liability under the NGER Act may be apportioned between multiple controlling members. It will therefore be important for this model to be clarified to the Department of Planning and Environment prior to operation commencing, so that potential liabilities under the NGER Act are identified and formally confirmed to determine any ongoing requirements for monitoring or reporting.

The economic and emission benefits from application of additional emission abatement technology options outlined in have also been assessed in Section 9 of the Greenhouse Gas and Climate Change Impact Assessment (Arcadis 2016). Here it has been identified that potential cost/savings of reducing GHG emissions by 27% would equate to average annual savings of approximately \$8.7 million per year (if all costs are assumed to be averaged over the life of a technology), with an average saving of \$273 per tCO₂-e abated. The analysis indicated that the implementation of the cost saving technologies alone (electric forklifts, waste diversion and solar panels) would achieve a saving in GHG emissions of 16,676 tCO₂-e or 14 per cent reduction in total annual operational emissions (118,733 tCO₂-e). Consequently these technologies alone achieve more than half of the targeted 27 per cent reduction. The use of electric forklifts alone would save approximately 9,230 tCO₂-e. Therefore, should the proposal be approved all recommended emission abatement opportunities identified should be implemented to ensure that the environmental and cost benefits can be achieved.

The climate change risk and adaptation assessment outlined in Section 10 of the Greenhouse Gas and Climate Change Impact Assessment (Arcadis 2016) identified a total of 13 climate change risks for the Proposal. If these risks are unmitigated the assessment found that there would be two high, ten medium, and one low uncontrolled risks by 2090 as a result of potential climate change impacts. A range of adaptive responses for treatment of the climate change risks identified would be incorporated into the design and operation of the Proposal to promote resilience to projected future climate change. Once implemented the engineering design and procedural responses for treatment of climate change risks would result in lowered residual risks; such that no high risks remained.

3.13.3 Consistency with Concept Approval

The SEARs require “An updated assessment/review of direct and indirect greenhouse gas emissions arising from this development and associated impact mitigation requirements, in reference to the Concept Plan greenhouse gas assessment”.

The Concept Approval conditions of consent do not include any specific requirements in relation to GHG emissions however the supporting environmental assessment includes a range of assessment details, best practices and mitigation measures in relation to GHG emissions, which form the basis of the Concept Approval. These aspects have been considered in the review above and recommendations below.

A mitigation strategy and specific mitigation measures have been included in Section 8 of the Greenhouse Gas and Climate Change Impact Assessment (Arcadis 2016), which are generally sound and includes the preparation of a GHG Management Plan, in accordance with the Concept Plan Approval.

A preliminary climate change risk assessment (Hyder Consulting, 2013b) was undertaken as part of the Concept Approval EA for the SIMTA Project. The current climate risk assessment found in Section 10 of the Greenhouse Gas and Climate Change Impact Assessment (Arcadis 2016) builds on the findings of this earlier study supported by more current climate change projection data.

3.13.4 Recommendations

Based on this review, the following recommendations are made in relation to the GHG assessment for the Project:

- > The *Greenhouse Gas and Climate Change Impact Assessment* (Arcadis 2016) presented as Appendix V of the EIS, should be reviewed and revised in the event that updates are made to either the traffic or air quality impact assessment for the MPE Stage 2 Proposal.
- > Should the proposal be approved then a condition of consent should include a detailed review and specification of alternative low embodied energy construction materials (including but not limited to low embodied energy concrete and recycled steel materials) should occur as part of procurement policies and be considered during detailed design and prior to construction, to ensure embodied energy and resulting GHG emissions are minimised.
- > Should the proposal be approved then the Proponent will need to prepare and implement a GGHG Management Plan as per details outlined in Section 8.1 of the *Greenhouse Gas and Climate Change Impact Assessment* (Arcadis 2016) prior to construction and operations commencing.
- > Should the proposal be approved then the Proponent will need to ensure all GHG emissions reduction and mitigation measures as outlined in Section 8.2 of the *Greenhouse Gas and Climate Change Impact Assessment* (Arcadis 2016) are implemented prior to construction and operations commencing.
- > Should the proposal be approved then the Proponent will need to ensure that the GHG emission abatement options outlined in Section 9 of the *Greenhouse Gas and Climate Change Impact Assessment* (Arcadis 2016) should be implemented into the detailed design prior to construction commencing. The procurement of any materials and equipment should also follow these recommendations.
- > Should the proposal be approved then the Proponent will need to ensure that the GHG climate change risk and adaptive responses outlined in Section 10 of the *Greenhouse Gas and Climate Change Impact Assessment* (Arcadis 2016) should be implemented prior to operations commencing.
- > As the Proposal would generate over 50,000 tCO₂-e/y there are liabilities under the NGER Act that the Proponent will need to meet. Should the proposal be approved then the proponent should clarify how these obligations will be met to the Department of Planning and Environment prior to operations commencing.

3.14 Property and Infrastructure

The MPE Stage 2 documentation, prepared by Arcadis (2016), provides an assessment of the proposed IMT development.

Specifically, *Section 20.3 Property and Infrastructure* and *Appendix F Utilities Strategy Report* summarises the potential property and infrastructure impacts that may occur as a result of the development.

3.14.1 Proposed Development

The proposed development involves a change of land use from Defence (existing) to Industrial (proposed) through the construction of an IMT and specifically the MPE discussed in the EIS (Arcadis, 2016). The proposed Stage 2 MPE development would involve the removal of existing structures and construction of integrated warehousing facilities with the IMT approved in Stage 1.

The Stage 2 MPE works also include the construction of an 8,000m² freight village to service the development and surrounding area. This village would include retail space in conjunction with office space and associated parking facilities, internal roads, site offices and employee amenities.

The MPE Stage 2 proposal has identified the affected properties located with **Table 3-7** through the construction and operational stages of the development.

Table 3-7 Property Identified as Impacted

Site	Lot Number	Ownership	Current Land Use
The MPE site	Lot 1, DP 1048263	SIMTA (Qube Holdings and Aurizon Holdings)	Land was previously used by the Department of Defence as the DNSDC for industrial storage and logistic purposes. MPE Concept Plan Approval (MP 10_0193) was granted for the development of an IMT.
Moorebank Avenue	Lot 2, DP 1197707	Commonwealth of Australia and Liverpool City Council.	Moorebank Avenue currently runs between the M5 intersection to the North and Cambridge Avenue to the south. The road is currently available for public use. North of Anzac Parade, Moorebank avenue is owned and maintained by the RMS/Liverpool City Council. South of Anzac Parade the road is owned by the Commonwealth of Australia and is a private road, available for use by the public.
Defence Joint Logistics Unit (DJLU)	Lot 3002, DP 1125930	Commonwealth of Australia	Land occupied by the DJLU for the storage, maintenance distribution and management of defence resources. A drainage channel runs parallel to the Proposal's northern and eastern boundary that drains to ANZAC creek
Boot Land	Lot 4, DP 1197707	Commonwealth of Australia	The land is located north of the East Hills rail line, east of the MPW proposed site and south of the MPE site. This land is mostly undisturbed, however a small area has been cleared and used for rail activities, including a spur of the East Hills rail line.
The MPW site	Lot 1, DP 1197707	Commonwealth of Australia	The MPW site was previously occupied by the Department of Defence as the School of Military Engineering. It has been vacated and has received concept approval to be developed as an IMT.

Other sensitive properties and infrastructure were also identified within the local site area which include;

- > All Saints College, approximately 1,500m west of the MPE Stage 2 site.
- > Casula Powerhouse, approximately 950m west.
- > Glenfield Farm listed on the State Heritage Register, approximately 1,550m west.
- > Holsworthy Military Area, approximately 670m south.

Residential suburbs in close proximity to the Proposal site were identified with distances to nearest sensitive receivers indicated.

- > Wattle Grove, 360m to the north-east.
- > Moorebank, 1,300m to the north.
- > Casula, 820m to the west.
- > Glenfield, 1,830m to the south-east.

The EIS has also identified adjacent properties to the Project that will be very closely affected by the proposed development, including;

- > The recently constructed DJLU site located directly adjacent to the MPE site to the north and north-east.
- > The ABB site, directly adjacent to the MPW site to the north, located approximately 280m to the north-west.
- > The Moorebank Business Park, located north of the DJLU site on Moorebank Avenue. The Moorebank Business Park is current tenants include BMW, Toyota and Electrolux, among others.

The provision of services from public utility networks to the proposal site is currently through connections that are Commonwealth owned assets. These connection would be disconnected, with the redundant infrastructure decommissioned, as part of the Stage 2 works. Utility connections would be made to the MPE Stage 2 site through connections with the MPE Stage 1 site via application to the relevant utility providers. No direct connections from the Proposal to any authority mains would be required.

By progressing with the Project, the EIS has identified that there will be increased demand on the existing infrastructure and utilities. These effects include;

- > Increased vehicle movements (in particular heavy vehicle movements) along Moorebank Avenue, due to trucks entering and exiting MPE.
- > Increased electrical energy consumption above the existing site usage.
- > Increased potable water consumption above the existing site usage.
- > Increased sewer requirements above the existing site requirements.
- > No major increased demand on communication infrastructure.
- > No increased demand for natural gas services.

By observing the above

- > The Project would increase the demands on existing utilities infrastructure systems within the area. The increased demands identified are not insignificant and engagement with utilities providers should be conducted. These increased demands include;
 - 564 new truck and 3,993 new light vehicle round trip external movements per day.
 - 124kL/day, ultimate additional potable water capacity.
 - 99kL/day, ultimate additional waste water capacity.
 - 8.1MVA, additional electrical power requirement per day.

3.14.2 **Cardno Assessment**

The EIS identified impacts to the existing property resulting from the MPE Stage 2 project. The impacts have been categorised into Construction and Operational impacts. **Table 3-8** highlights the affected properties identified in the EIS.

Table 3-8 Summary of impacts on affected properties

Impact on Existing State	Construction	Operation
Site		
MPE Stage 2 Site	Impact	Impact
Moorebank Avenue	Impact	Impact
Defence Joint Logistic Unit	Impact	No Impact
Boot Land	Impact	Impact
MPW Site	Impact	Impact
Land Ownership		
MPE Stage 2 Site	No Change	No Change
Moorebank Avenue	No Change	No Change
Defence Joint Logistic Unit	No Change	No Change
Boot Land	No Change	No Change
MPW Site	No Change	No Change
Land Use		
MPE Stage 2 Site	Impact	Impact
Moorebank Avenue	Impact	No Impact
Defence Joint Logistic Unit	Impact	No Impact
Boot Land	Impact	No Impact
MPW Site	Impact	Impact

As **Table 3-8** highlights there are significant impacts to large areas of property if the Proposal was to move to construction. This would involve major changes to the land use of the proposed MPE site which would change from Defence to Industrial and would require the demolition of all existing buildings and vegetation and a significant amount of construction activities to complete, significantly intensifying land use on the site.

Although some of the surrounding properties are not directly influenced, their impacts have been lightly touched on, with respect to:

- > Traffic
- > Air Quality
- > Noise and Vibration
- > Visual
- > Socio-economic

In some cases the indirect impacts should not be considered insignificant. For example the impacts of the Proposal on the new linear park that runs along ANZAC creek located adjacent to the DJLU and the residential suburb of Wattle Grove, which will have its visual amenity greatly impacted by the development of the Project.

The proposal has identified the requirement for changes to some existing infrastructure to ensure sufficient service is provided to the proposed development. Such infrastructure includes intersection upgrades as discussed earlier in the traffic assessment and augmentation to Sydney Water and Endeavour Energy utilities. The EIS has not identified specific contributions that the developer will provide to these organisations and has highlighted that the contributions will be addressed when required. This is vague and creates uncertainty as to the general scope of developer contributions. The framework for developer contributions should be mentioned and estimated costs quantified to give Council, Sydney Water and Endeavour Energy an understanding of anticipated contributions to infrastructure upgrades.

3.14.2.1 **Alternative IMT Sites**

Consideration in the EIS has not been given to alternative locations for an IMT or for alternative uses of the Project site. Consideration should be given to alternative locations that may require less capital investment and will have reduced environmental impacts. This could be achieved through upgrading of existing IMT sites that are currently operational. Proposed alternative locations for an IMT hub are detailed below:

Badgerys Creek/Western Sydney Airport

The development of a Western Sydney Airport will result in major government infrastructure investment within the area and Badgerys Creek becoming a focus of the Western Sydney Region. The area will be required to become a transport hub and with immediate access to air freight, provides a great alternative location for an IMT facility. The *Plan for growing Sydney* (DoP 2014) places a significantly higher importance on the Badgerys Creek location for development of an IMT, with associated rail freight infrastructure proposed that it will be sufficiently isolated from residential areas and communities, limiting the impacts of noise, vibration, reduced air quality, etc., to members of the community. The Badgerys Creek option will be reliant on access to Port Botany via rail, however with the development of the Western Sydney Airport, it provides further justification for the expansion of the South West Rail Link.

Enfield

Prior to construction, the Enfield site was originally proposed as a 500,000 TEU facility, however this was reduced to 300,000 TEU after community consultation. As a result the current operating site has been design for potential future expansion. The Enfield site has greater rail access compared to the MPW site as it is located approximately 17kms from Port Botany and has double track rail access for the full distance, compared to approximately 40kms of mixed single and double rail track access along the SSFL for the MPW site. The potential community and environmental impacts of expanding the Enfield site should be justified against the impacts of the MPW Project in order to fully understand the benefits of a potential upgrade.

Chullora

The Chullora IMT facility has the capability to increase its capacity from 300,000 to 600,000 TEU. Historically Chullora has been the major interstate rail freight IMT hub for Sydney. With the surrounding area containing many industrial sites and with existing rail sidings, repurposing this site into a larger IMT facility would have minimal environmental impact. Chullora has the advantage of not being dependent on one individual intersection for its road traffic and as a result has a strategical advantage flexibility over the MPW site.

Smaller Existing IMT Facilities

Currently small IMT facilities exist in Villawood, Yennora, Cooks River, Minto, Leumeah and Ingleburn. Upgrading all of these existing facilities could realise a potential increased throughput of 500,000 TEU per annum. If this approach was taken, impacts would be spread over the Sydney region rather than focused on one greatly impacted site.

With the exception of constructing an IMT hub at Badgerys Creek, upgrades to existing facilities would involve much less capital investment compared with the estimated cost of the MPW site.

3.14.2.2 **Developer Contributions**

The MPE Stage 2 EIS includes discussion on the requirement of SIMTA to provide developer contributions as part of the MPE Stage 2 proposal. The SEARs require that considerations of any relevant Council's Developer Contributions Plan (or equivalent document requiring developer contributions), including the contributions plan for Prestons Industrial Area. The EIS considers Council's Section 94 Contributions Plans detailing that there is not one in place that covers the MPE site (due to its historic use by the Commonwealth). Due to this, SIMTA has used the Liverpool Contributions Plan 2009, in particular the Prestons Industrial Release Area, as a basis to formulate the requirement to pay developer contributions.

The EIS indicates that there are three areas that SIMTA should consider developer contributions are required from. These include Transport due to the requirement to upgrade a number of intersections in the area due to increased traffic, Drainage through the impacts of the proposal on stormwater management and on Landscape Buffer areas around the new development. The consideration contained in the EIS indicates that some form of developer contribution is required for transport but does not detail to what amount,

differing this decision to the completion of a Moorebank Precinct Model which is envisaged to be available towards the end of 2016 (as yet not released).

The capital investment values of the project has been inconsistently reported throughout the EIS documentation prepared for the MPE Stage 2 proposal. The executive Summary indicates that the proposal has a capital investment value of \$454 million while it is detailed as \$356 million within section 1.7 of the EIS. This is a considerable variation in proposal costing and accuracy is essential in Council's determination of developer contributions that are required to be paid for by the proponent. The assessment of capital investment value appears to lack rigour and a thorough assessment must be undertaken prior to determination of this proposal.

The continued deferral of detail on developer contributions for not only this proposal but for the entire Moorebank Precinct creates continued uncertainty for Council and the various other organisations that provide essential services to this precinct. The framework for developer contributions should be detailed and estimated costs quantified to give Council, Roads and Maritime and Sydney Water an understanding of anticipated contributions to infrastructure upgrades.

3.14.3 Consistency with Concept Approval

The Infrastructure and Property assessment is mostly consistent with the Concept Approval, with respect to the assessment of Stage 2 for the MPE site.

Generally the Project is consistent with the utilities requirements of the Concept Approval for the planning stage of the Project. The main Concept Approval requirement during planning, is to undertake an investigation into the services that exist on site and assess if they are adequate for the proposed development and if not detail how they will be upgraded to achieve the site demands.

The SEARS requires for service demand, existing capacity and future demands to be detailed within the Stage 2 EIS, which has been achieved.

The SEARs requires consideration to be given to the Liverpool City Council's Developer Contributions Plan including giving special attention to the contributions plan for the Prestons Industrial Area. Consideration has been given, however there is no commitments to developer contributions. It has been identified that the Preston Industrial Area has significant differences with the current Proposal and as a result the developer contributions for the Preston Industrial Area may not be appropriate for this Proposal. Major aspects of the Preston Industrial Area contributions, including but not limited to; location to surrounding developments, drainage infrastructure, need for transport infrastructure and ownership agreements differ from this Proposal and may require different developer contributions.

3.14.4 Recommendations

The recommendations below are identified to address the identified impacts associated with existing and future infrastructure to allow a comprehensive assessment of the Project.

- > A rigorous determination of capital investment value be undertaken to inform Council's requirements for developer contributions associated with this stage of the proposal.
- > As previously mentioned in past assessments, a large deficiency in developer contributions exist, which should be addressed prior to determination. The EIS has identified that Council does not have a contributions framework in place for this type of development. It is recommended that a VPA be established between Council and SMITA to ensure developer contributions towards existing infrastructure is captured.

3.15 Waste

The MPE Stage 2 documentation, prepared by Arcadis (2016), provides an assessment of the proposed IMT development.

Specifically, Section 20.1 of the EIS (Arcadis, 2016) summarises the potential waste impacts that may occur as a result of development and an outline of proposed impact mitigation measures is also provided.

3.15.1 Proposed Development

The Project is seeking to build and operate the IMT facility under the MPE Stage 2 proposal. A range of waste generating activities will occur as part of the construction and operations phases of the overall Project and therefore a reassessment of waste considerations is appropriate for this revised development extent. These elements were assessed against the SEARs and REMMs identified in the concept plan approval.

3.15.2 Cardno Assessment

A review of the EIS (Arcadis, 2016) and supporting documentation has identified some key aspects relating to waste management that are either deficient or require further work by the Proponent. Types of waste have been characterised and quantified within the EIS and opportunities to minimise, reduce, reuse, and recycle waste materials associated with the Project have also been identified during both the construction and operational stages.

The SEARs require the environmental assessment to review and consider the *NSW Waste Avoidance and Resource Recovery Strategy 2014-2021* and associated requirements. Cardno has reviewed the range of waste management aspects identified in both the construction and operational phases and provides the following comments, especially in relation to the Mitigation Measures outlined in Section 20.1.4 of the EIS (Arcadis 2016).

Construction

- > Education initiatives – all waste management implementation plans designed to deliver the *NSW Waste Avoidance and Resource Recovery Strategy 2014-2021* targets need to include an education and behaviour change element. Therefore further details should be incorporated in the CEMP on how education and training programs will be provided and waste management objectives are communicated to all staff working on the site. This should include information in formal training and induction programs for all personnel, provision of appropriate waste bins and signage providing clear communications on where and how recyclable, reusable and waste material should be stored and managed.

Operations

- > Targets for reuse and recycling of waste – further detail needs to be provided in the EIS and Operation Environmental Management Plan (OEMP) to better outline how performance targets will be set, monitored and reported on during operations.

3.15.3 Consistency with Concept Approval

A Waste Management Strategy (WMS) was prepared by Hyder Consulting (2013c) for, and appended to, the EA for the MPE Concept Plan Approval. The WMS identified a number of re-use opportunities for waste generated by the Proposal within its key stages, including demolition, construction and operation. The purpose of the WMS was to promote re-use to minimise the amount of waste taken to landfills and thereby reduce environmental impacts associated with the MPE Project. The WMS also identified the type of waste and materials that would be produced at each phase of the SIMTA Project and included a number of strategies for waste management and minimisation.

A comparative review of the Concept Approval (SSD 5066) has confirmed that the EIS has generally addressed the requirements for waste management as specifically noted in the following consent conditions:

B13 - The reuse and/or recycling of waste materials generated on site shall be maximised as far as practicable, to minimise the need for treatment or disposal of those materials off site;

B14 – All liquid and/or non-liquid waste generated on the site shall be assessed and classified in accordance with Waste Classification Guidelines (Department of Environment, Climate Change and Water 2009); and

B15 – All waste materials removed from the subject site shall only be directed to a waste management facility or premises lawfully permitted to accept the materials.

Also, consent condition D20 (e), (iii) is associated with requirements in the CEMP which need to include:

“measures to monitor and manage waste generated during construction including but not necessarily limited to: general procedures for waste classification, handling, reuse, and disposal; use of secondary waste material in construction wherever feasible and reasonable; procedures for dealing with green waste including timber and mulch from clearing activities; and measures for reducing demand on water resources (including potential for reuse of treated water from sediment control basins)”

However some further improvements to the management of waste during the Project, especially in relation to specification of waste reduction targets and the education of personnel (including sub-contractors) involved in the construction and operational phases.

3.15.4 Recommendations

The recommendations below are identified to address the identified impacts associated with waste management to allow a comprehensive assessment of the Project:

- > Education initiatives during construction – All waste management implementation plans designed to deliver the *NSW Waste Avoidance and Resource Recovery Strategy 2014-2021* targets need to include an education and behaviour change element. Therefore further details should be incorporated in both the CEMP and OEMP to provide details on how education and training programs will be provided and waste management objectives are communicated to all staff working on the site. This should include information in formal training and induction programs for all personnel, provision of appropriate waste bins and signage providing clear communications on where and how recyclable, reusable and waste material should be stored and managed.
- > Targets for reuse and recycling of waste – further detail needs to be provided in the EIS and OEMP to better outline how performance targets will be set, monitored and reported on during operations.

3.16 Socio Economic

The MPE Stage 2 documentation, prepared by Arcadis (2016), provides an assessment of the proposed IMT development.

Specifically, *Section 20.5* summarises the potential socio-economic impacts that may occur as a result of the Proposal. This section assess the impact that the Proposal will have on the socio-economic issues, both regionally and locally during construction and operation of Stage 2 of the MPE facility.

3.16.1 Proposed Development

The Proposal has been identified as having both positive and negative socio economic impacts on the community. The EIS has identified that the Proposal is to be constructed within the Liverpool LGA, with its local footprint encompassing the adjacent suburbs of Moorebank, Wattle Grove, Glenfield and Casula. Moorebank and Wattle Grove have been identified to have higher socio economic advantage than the NSW and Australian averages, with Glenfield being consistent with the average. Casula was identified to have a lower level of socio-economic advantage than the average. The EIS also identifies that the employment levels within the adjacent suburbs of Casula and Wattle Grove are greater than the Sydney average of 94.3%, while Moorebank and Glenfield have lower than average employment. The top three professions within the local area include clerical and administration, professional and technical and trade services.

Throughout the construction phase of the Proposal both positive and negative impacts have been identified. Positive impacts include, the creation of 200 jobs during peak construction and the potential for increased trade to local business. Negative impacts include, decreased access to surrounding roads such as Moorebank Avenue, increased disruption and disturbance to local business and residence, decreased air quality, increased noise levels, decreased visual amenity, increased heavy vehicle movements along surrounding roads and decreased community perception.

Similarly to the construction phase, both positive and negative impacts have been identified for the operation of the Project. The EIS has identified that long-term, positive impacts are anticipated to be experienced at a regional level and the short-term positive and negative impacts are expected to be experienced on a local level. Positive impacts include, the creation of approximately 1,400 jobs at the facility, the site being situated in an ideal location for such a facility (adjacent to a dedicated freight rail line and a major Sydney freeway), the regional reduction of road freight traffic and the anticipated increase in economic development of the area through increased competition and trade to businesses within the local area. The negative impacts include, increased stress and anxiety experienced by the community, decreased air quality (considered negligible), increased road traffic and facility noise (considered negligible), decreased visual amenity and increased light pollution and decreased health outcomes due to air quality and noise impacts (considered negligible). Increased crime was identified as a potential negative impact, however this is expected to be “prevented to the greatest possible extent” (Arcadis 2016).

3.16.2 Cardno Assessment

The Socio-economic impacts assessment has used both quantitative and qualitative information to support finding of the Project assessment. Specifically, the assessment identified potential impacts to traffic, employment, noise and vibration, air quality, crime, human health and visual amenity on the general socio-economic status of the local community.

The construction phase impacts on access arrangements, community perception, air quality, noise, visual amenity and traffic/transport would occur for a period of between 24 and 36 months (duration of construction). These impacts are classed in the EIS as “negative short-term”. However, with the construction anticipated to be conducted for a period up to 36-months, it is more appropriately categorised at a minimum as medium-term. The EIS has identified that these impacts will only be temporary, however due to the anticipated duration of the construction phase these impacts should be considered as significant. This is compared with the positive impacts of increased employment which is only classified as “positive”. As both positive and negative impacts of construction occur over the same duration, they should be consistently referred to in their duration.

Similar to the above, the cumulative impacts of the Proposal with the additional activities proposed to take place in the surrounding area have also been downplayed. There may be some truth in the assessment that the Stage 2 Proposal along with associated other operations will not increase the severity of the identified socio-economic impacts on the community, it is likely that together the impacts are experienced more regularly than if all of the proposed operations were developed in isolation. This increase in frequency as a result, is unsuitably categorised as negligible and would be more appropriately categorised at a minimum as slight.

A positive identified is the decrease of road freight on a regional level. This reduction, however must be considered against the large increase in the road freight that would be anticipated around the proposed site within the Liverpool LGA. There is anticipated to be an increase of approximately 1,022 round trip truck movements per day entering/exiting the proposed site during construction. This is a significant increase of heavy vehicles in the area which will have negative impacts on road maintenance and increased road safety risks. This can also be considered significant during the operation of the MPE site. The operation of the IMT will directly result in a significant increase in heavy vehicle movements within the local road network which will further increase road safety risk and reduce the design life of the existing roads. When this is cumulatively observed with the proposed MPW site operation, which is aiming to utilise the same local road network the impacts are negatively compounded.

A positive aspect of the Proposal is the access to technical and trade services from the local community. With technical and trade services being identified as one of the top local professions it has been mentioned that these roles may be filled from the local area. Although this is mentioned, there have been no commitments made to utilising local workforce for permanent or contract employment and as a result there is potential for the economic benefit to be spread across the greater region, rather than the benefits being received by the community within the Liverpool LGA.

As discussed in **Section 3.14** (Property and Infrastructure section) there are numerous benefits to the Socio-economic status of the Liverpool LGA through the relocation of the proposed IMT TEU capacity to other sites within Sydney and utilising the MPE site in other ways, such as Residential Development, a High Tech Innovation Centre or an Education Precinct. As detailed above these alternative developments could have far greater positive Socio-economic outcomes for the area, while greatly reducing the negative impacts. The suggested alternative will still give the Sydney region the required increased TEU processing capabilities, provide greater net benefits for the Liverpool LGA, for a similar capital investment.

3.16.3 Consistency with Concept Plan

The Stage 2 EIS is generally consistent with the Concept Plan.

The Stage 2 EIS and the Concept Plan have similar findings with respect to socio-economic impacts. Both submissions anticipate that the Proposal will have positive impacts on local employment and minimal changes to the areas demographic. The Concept Approval identifies that the South-West Sydney region is anticipated to experience higher than NSW average growth and identifies that there is a need for employment options to also grow through out that time. The Stage 2 EIS also reflects the negative impacts are expected on social amenity (noise, traffic, air quality, and vibration) and no direct impacts to businesses within the local area have been identified.

The Concept Plan highlights some key community initiatives as part of the whole SIMTA development that may benefit the greater community, however they have not be committed to as part of the Stage 2 EIS. These include increase in cycleway/pedestrian access as part of upgraded recreational facilities along the Georges River, additional recreational facilities like walking tracks, gyms and exercise areas to benefit the employees and the greater community and the addition of facilities such as a childcare facilities to enable parents of young children increased accessibility to employment. These initiatives have not been committed to as part of the Stage 2 EIS.

A major difference between the Concept Plan and the Stage 2 EIS is the level of detail involved in the mitigation measures. The Concept Plan states specific mitigation measures such as increasing the landscaping to minimise visual impact and consideration the potential to include social service facilities on-site. These such initiatives are much more specific when compared to the Stage 2 EIS, where a large emphasis is places on community consultation taking place as part of the Construction Environment Management Plan and Operation Environment Management Plan. Stating that mitigation of socio-economic issues will take place as part of a CEMP and OEMP is not recommended, because it does not allow for ease of changes to the Proposal to mitigate identified issues, due to construction and operation already taking place.

Neither the SEARs nor the Conditions of Approval require an assessment of the Socio-economic impacts of the Project and this assessment has been included in the EIS to ensure a thorough investigation.

The Development Consent for the Proposal requires that a community consultation strategy be included as part of the approval process, which has been addressed in the Stage 2 EIS.

3.16.4 Recommendations

The recommendations below are identified to address the identified impacts associated with Socio-economic to allow a comprehensive assessment of the Project:

- > The negative socio-economic construction impacts have been down played, by suggesting that they will only be experienced temporarily. More focus should be given to mitigation measures of these expected negative impacts prior to approval being granted.
- > It is recommended that a tracking system be developed as part of the CEMP and OEMP, to ensure all community feedback and complaints are captured, assessed and the appropriate action taken. This can be covered by a Statement of Commitments to demonstrate how all negative impacts to the local community will be mitigated during construction and operation of the Project.
- > Commitments should be made to employ 25% of the construction and operational workforce from within the Liverpool LGA to ensure that the identified positive socio-economic impacts are realised.
- > Any assessment of operational workforce should account for future trends and emerging technologies in optimisation and automation of similar facilities to accurately capture life-cycle employment levels of the facility during operation.
- > The developer should provide a register of preferred suppliers to ensure that procurement of workforce and sub-contractors comes from local businesses. This will ensure identified positive socio-economic impacts are realised in the local area.
- > As economic conditions are fluid, anticipated employment numbers and greater economic impacts should be reassessed prior to construction approval being granted to ensure that an accurate representation of the employment and local socio-economic impacts can be reviewed.
- > A full net economic assessment of the Liverpool LGA should be conducted and provided to ensure that negative impacts like increased road maintenance, increased congestion, decreased air quality can be quantified against social and economic benefits.
- > A Statement of Commitment should be prepared to detail how the developer is going to mitigate anticipated negative impacts to noise and vibration, air quality, visual amenity and traffic will be carried out.
- > The developer should investigate the potential for local TAFE and University campuses to conduct employment development training courses to encourage local community members to enrol and improve their personal skills. This could lead to an improved skilled workforce within the local community, which will be able to service the expected employment requirements.

4 Conclusions & Recommendations

This section provides a summary of findings and overall conclusion to the study, along with associated recommendations.

A review of the Moorebank Precinct East (MPE) Stage 2 development proposal has been undertaken to inform the Liverpool City Council (Council) submission to the public exhibition of the Environmental Impact Statement (EIS) (Arcadis, 2016a). The review considered Stage 2 in the context of Concept Approval (MD 10_0193) for MPE, along with the associated Conditions contained within Schedule 3 that are of relevance to Stage 2, the Revised Statement of Commitments (SOCs) and the Secretaries Environmental Assessment Requirements (SEARs).

Stage 2 provides for the warehousing and associated facilities to support the Intermodal Terminal (IMT) approved under stage 1 of the MPE project. This stage of the proposal is also dependant on the approval of a Section 75W modification to the Part 3A project approval which is subject of a separate submission prepared by Council. The focus of the review is on Stage 2 of the MPE project, however, given the proximity of the Moorebank Precinct West (MPW) site to MPE and similarity of use, there is the potential for large scale and wide ranging cumulative environmental impacts.

The review has identified that environmental impacts of the proposal are extensive and primarily focused on the area immediately surrounding Moorebank and the key transport routes servicing the site. The review of the EIS and supporting documentation has identified that the MPE Stage 2 Proposal raises a number of concerns due to the range of impacts on the environmental, social and economic fabric of the locality. Many of these concerns have previously been raised by Council and are yet to be adequately addressed.

The gaps in assessment are particularly evident when viewed in the context of the SEAR's and the Conditions of Approval Schedule 3. The SEARs and Schedule 3 were specifically identified previously by the proponent and the Department of Planning and Environment (DP&E) respectively to limit the impacts of the project on the surrounds. Impacts including traffic, noise, air quality, biodiversity, visual and heritage are not addressed to a degree that would allow a determining authority to make a decision on such a significant development with confidence.

The flaws in the EIS analysis and residual impacts which have not been mitigated suggest that the proposal should not be approved in its current form.

Key issues identified by Cardno's submission included:

- > **Many of the impacts previously identified in the Council review of the Concept and Stage 1 Approval are yet to be adequately assessed and mitigated to an acceptable level.**
- > **A modification to Concept Approval SSD_5066 under Section 75W of the *Environmental Planning & Assessment Act 1979* (EP&A Act) has been lodged by SIMTA and is yet to be determined. Stage 2 is reliant on the earlier stages progressing. Consequently, Stage 2 assessment should be held in abeyance pending the outcome of the modification.**
- > **Traffic congestion and associated impacts on amenity due to additional vehicles on the road network. These impacts are anticipated to be greater than predicated in the EIS due to the methodology and associated assumptions used.**
- > **Noise and Air Quality impacts on human health during construction and operations, which are likely to be greater than identified in the EIS due to the traffic assumptions used.**
- > **Critically endangered plant species in the form of *Hibbertia fumana* has recently been rediscovered directly adjacent to the proposed development, in the area recognised as The Boot. Further discussion of adequate survey, avoidance and mitigation should be provided in the Biodiversity Assessment Report.**

Cumulative impacts remain insufficiently addressed despite ongoing requests from agencies and the community to undertake a precinct wide master planned approach. It is essential that a precinct-wide planning process be undertaken, informed by the agreement between Sydney Intermodal Terminal Alliance (SIMTA) and Moorebank Intermodal Company (MIC) as to the extent of cooperation and integration of the two proposed IMT's, while also considering Council's strategic intent for the site and surrounds. Inputs would also be required from other stakeholders including the DP&E, Transport for NSW and RMS.

4.1 Recommendations

Cardno's review has identified a number of recommendations that include additional assessment requirements, identification of management plans and operational procedures and firmer commitments relating to compensation schemes and long term environmental monitoring.

The Section 75W modification to the Concept Approval should be determined prior to any further consideration of the Stage 2 Proposal, due to the reliance of Stage 2 on the Concept Approval and associated early works. Prior to the issue of an Occupation Certificate (Interim or Final), written certification from a suitably qualified person(s) shall be submitted to the Principal Certifying Authority and Consent Authority stating that all works/methods/procedures/control measures/recommendations approved by the Consent Authority in the following reports (including but not limited to) have been completed:

- > Environmental Impact Statement
- > All other Environmental Assessment reports supporting the application.

The preparation of a precinct wide master plan for the Moorebank Area (inclusive of the MPE and MPW sites, as previously recommended by the PAC, is an overarching recommendation that is necessary, justified and in the public interest. The outcome of the master planning process would provide additional certainty for the community and would address the currently unmitigated residual impacts.

Due to Council's concerns in relation to resourcing the regulation of the development, the EPA (with support of other State and Federal Government agencies) is the most appropriate regulatory authority for the proposed development and associated activities, should approval be granted.

Overall, in its current state, the Project Application does not adequately address a number of key environmental matters which, if left unchecked, have the potential to cause significant impacts to the built and physical environment of the locality and wider region. Consequently, it is recommended that the MPE Stage 2 Project Application not proceed in its current state.

5 References

- AECOM (2010). *Air Quality Impact Assessment – Mayfield Port-Related Activities Concept Plan*
- Arcadis (2016a). *Moorebank Precinct East – Stage 2 Proposal: Environmental Impact Statement*
- Arcadis (2016b). *Moorebank Precinct East – Concept Plan Modification 2 (MP10_0193_MOD2)*
- Arcadis (2016c). *Moorebank Precinct East – Stage 2 Proposal: Construction Traffic Impact Assessment*
- Arcadis (2016d). *Moorebank Precinct East – Stage 2 Proposal: Operational Traffic and Transport Impact Assessment*
- Arcadis (2016e). *Moorebank Precinct East – Stage 2 Proposal: Preliminary Construction Traffic Management Plan*
- Arcadis (2016f). *Moorebank Precinct East – Stage 2 Proposal: Preliminary Operational Traffic Management Plan*
- Arcadis (2016g). *Moorebank Precinct East – Stage 2 Proposal: Biodiversity Assessment Report*
- Arcadis (2016h). *Moorebank Precinct East – Stage 2 Proposal: Stormwater and Flooding Report*
- Centre for Health Equity Training, Research and Evaluation (CHETRE) (2007). *Health Impact Assessment: a practical guide*. Department of Health: North Sydney, NSW.
- Department of Environment and Climate Change (DECC) (2009). *Interim Construction Noise Guideline*.
- Department of Environment and Conservation (DEC) (2005). *Persoonia nutans. R Br (Nodding Geebung) Recovery Plan*. NSW Department of Environment and Conservation, Hurstville NSW.
- Department of Planning & Environment (2014). *A Plan for Growing Sydney*.
- enHealth (2012). *Environmental Health Risk Assessment: Guidelines for assessing Human Health Risks from environmental Hazards*.
- Environ (2011). *Tiered Procedure for Estimating Ground-level Ozone Impacts from Stationary Sources*
- Environ (2015). *SIMTA Moorebank intermodal Facility – Stage 1: Air Quality Impact Assessment*. Prepared for Hyder Consulting.
- Environmental Protection Authority (EPA) (2000). *NSW industrial Noise Policy*
- Hyder Consulting (2013). *Transport and Accessibility Impact Assessment: Volume 1*
- Hyder Consulting (2015a). *SIMTA Intermodal Terminal Facility – Stage 1: Environmental Impact Statement*
- Hyder Consulting (2015b). *SIMTA Intermodal Terminal Facility – Stage 1: Traffic & Accessibility Impact Assessment*
- JBS&G (2016). *Moorebank Precinct East – Stage 2 Proposal: Contamination Summary Report*. Prepared for Arcadis
- National Environment Protection Council (NEPC) (2013). *National Environment Protection (Assessment of Site Contamination) Measure*.
- NSW National Parks and Wildlife Service (2002). *Environmental Impact Assessment Guidelines: Grevillea parviflora subsp. parviflora*. NSW National Parks and Wildlife Service.
- NSW National Parks and Wildlife Service (2003). *Downy Wattle (Acacia pubescens) Recovery Plan*. NSW NPWS, Hurstville, NSW.
- NSW National Parks and Wildlife Service (2004). *Environmental Impact Assessment Guidelines: Acacia pubescens*. NSW National Parks and Wildlife Service.
- NSW National Parks and Wildlife Service (2004). *Environmental Impact Assessment Guidelines: Persoonia nutans. R Br (Nodding Geebung)*.

- NSW Royal Botanic Gardens and Domains Trust (RBGDT) (2017). *PlantNET: NSW Flora Online*. Accessed at: <http://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Hibbertia-fumana>
- Office of Environment and Heritage (OEH) (2014). *Framework for Biodiversity Assessment: NSW Biodiversity Offsets Policy for Major Projects*.
- Office of Environment and Heritage (OEH) (2016). *NSW Guide to Surveying Threatened Plants*.
- Office of Environment and Heritage (OEH) (2017). *Threatened species profile: Hibbertia fumana*. Accessed at: <http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=20323>
- Parsons Brinckerhoff (2014). *Technical Paper 1: Traffic and Transport Impact Assessment*. Prepared for Urbis
- Ramboll (2016a). *Moorebank Precinct East – Stage 2 Proposal: Noise and Vibration Impact Assessment*. Prepared for Arcadis
- Ramboll (2016b). *Moorebank Precinct East – Stage 2 Proposal: Air Quality Impact Assessment*. Prepared for Arcadis
- Ramboll (2016c). *Moorebank Precinct East – Stage 2 Proposal: Human Health Risk Assessment*. Prepared for Arcadis
- SKM (2003). *Port Botany Expansion – Air Quality Study*
- Wilkinson Murray (2016). *Moorebank Precinct East – Stage 2 Proposal: Noise and Vibration Impact Assessment*. Prepared for Arcadis
- World Health Organization (WHO) (2011). *Burden of disease from environmental noise*
- World Health Organization (WHO) (1999). *Guidelines for Community Noise*