

# Moorebank Precinct West Intermodal Terminal Facility

Concept Plan Approval (SSD 5066)  
Modification



**SIMTA**

SYDNEY INTERMODAL TERMINAL ALLIANCE

Part 4, Division 4.1, State Significant  
Development



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# SYDNEY INTERMODAL TERMINAL ALLIANCE

## Moorebank Precinct West Concept Plan and Early Works Modification

Section 96(2) Application to Modify SSD 5066

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## GLOSSARY OF KEY TERMS

Term	Definition
AAQ NEPM	National Environment Protection (Ambient Air Quality) Measure
ACM	Asbestos containing material
AEP	Annual exceedance probability
AHIMS	Aboriginal Heritage Information Management System
AQIA	Air Quality Impact Assessment
area of impact	All areas seeking approval for impact under the Modification Proposal covering an area of 66.3 ha including the primary earthworks area, haul roads, erosion and sediment controls, establishment of site compounds and ancillary facilities.
B99	Building 99
CBD	Central business district
CHMP	Construction Heritage Management Plan
CNVMP	Construction Noise and Vibration Management Plan
CTAMP	Construction Traffic and Access Management Plan
CUST	Cullen Universal Steel Truss
dBA	Decibel
DCP	Development Control Plan
DMP	Dust Management Plan
DPE	Department of Planning and Environment
Early Works	Works approved under Stage 1 of the MPW Concept Plan Approval (SSD 5066), within the MPW site, including: establishment of construction compounds, building demolition, remediation, heritage impact mitigation works and establishment of the conservation area.
Early Works Approval	Approval for the Early Works (Stage 1) component of the MPW Project under the MPW Concept Plan Approval (SSD 5066) and the (yet to be granted) MPW EPBC Approval. Largely contained in Schedule 3 of the MPW Concept Plan Approval.
Early Works area	Includes the area of the MPW site subject to the Early works approved under the MPW Concept Plan Approval (SSD 5066).
EDD	Explosive detection dog
EEC	Endangered Ecological Communities
ENM	Excavated Natural Material
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPA	Environmental Protection Authority
EPBC Act	<i>Environment Protection Biodiversity Conservation Act 1999</i>
EPL	Environmental Protection Licence
GFA	Gross Floor Area
GMR	Greater metropolitan region
ICNG	Interim Construction Noise Guideline

Term	Definition
IMT	Intermodal Terminal
LA <sub>eq</sub> , 15min	The notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the A - weighted fluctuating sound measured over that period.
LA <sub>max</sub>	The maximum A - weighted sound pressure level recorded over the period stated. LA <sub>max</sub> is often used as a measure of the most obtrusive facet of the noise, even though it may only occur for a very short time and is the level of the maximum Root Mean Square reading.
LEP	Local Environment Plan
LGA	Local Government Area
LMARI	Liverpool Moorebank Arterial Road Investigations
LOS	Level of Service
MCoA	Modification Conditions of Approval
MIC	Moorebank Intermodal Company
Moorebank Precinct West (MPW) Concept Plan Approval  (Concept approval and Early Works)	MPW Concept Plan and Stage 1 Approval (SSD 5066) granted on 3 June 2016 for the development of the MPW Intermodal terminal facility at Moorebank and the undertaking of the Early Works. Granted under Part 4, Division 4.1 of the <i>Environmental Planning and Assessment Act 1979</i> . This reference also includes associated Conditions of Approval and Revised Environmental Management Measures, which form part of the documentation for the approval.  N.B. Previously the MIC Concept Plan Approval
Moorebank Precinct West (MPW) Concept Plan EIS	The Environmental Impact Statement prepared to support the application for approval of the MPW Concept Plan and Early Works (Stage 1) under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> and the <i>Environmental Planning and Assessment Act 1979</i> .  N.B. Previously the MIC Concept Plan EIS
MPW Final EIS	EIS prepared by Parsons Brinckerhoff (December 2015) for the purposes of the Commonwealth EPBC Referral (2011/6086).
Moorebank Precinct West (MPW) Intermodal Terminal Facility/IMT facility	The Intermodal terminal facility on the MPW site, including truck processing, holding and loading areas, rail loading and container storage areas, nine rail sidings, loco shifter and an administration facility and workshop.
Moorebank Precinct West (MPW) Project	The MPW Intermodal Terminal Facility as approved under the MPW Concept Plan Approval and the anticipated MPW EPBC Proposal.
MPW RtS	MIC Response to Submissions Report (PB, May 2015)
Moorebank Precinct West (MPW) site	The site which is the subject of the MPW Concept Plan Approval, MPW EPBC Proposal and MPW Planning Proposal (comprising Lot 1 DP1197707 and Lots 100, 101 DP1049508 and Lot 2 DP 1197707). The MPW site does not include the rail link as referenced in the MPW Concept Plan Approval or MPE Concept Plan Approval.
MPW SRtS	MIC Supplementary Response to Submissions Report (PB, August 2015)

Term	Definition
Modification Proposal	The application to undertake additional site preparatory works, including the import, placement and stockpiling of clean fill, as a modification to the approved Early Works on the MPW site.
Moorebank conservation area/conservation area	Vegetation exists along the western edge of the MPW site, with a riparian vegetation corridor (generally 25 metres wide) along the banks of the Georges River. This area has been defined as a conservation area as part of the MPW Concept Plan Approval (Moorebank Conservation Area).
MUR	Moorebank Relocation Unit
NGLG	Noise Guide for Local Government
NML	Noise monitoring locations
NOHC	Navin Officer Heritage Consultants
NVIA	Noise and Vibration Impact Assessment
NPW	<i>National Parks and Wildlife Act</i>
NW	<i>Noxious Weeds Act</i>
OEH	Office of Environment and Heritage
OOH	Out of Hours
operational area	Extent of operational activities for the operation of the MPW Stage 2 Proposal (the Proposal).
PAC	Planning Assessment Commission
PAD	Potential Archaeological Deposit
PASS	potential acid sulphate soils
PB	Parsons Brinckerhoff
PCB	Polychlorinated bi-phenols
PCT	Plant community Types
PFAS	Per- and poly-fluorinated alkyl substances
PM	Particulate Matter
PM <sub>10</sub>	Particulate matter with a mean aerodynamic diameter of 10µm
PM <sub>2.5</sub>	Fine particles with a diameter of 2.5µm or less
POEO	<i>Protection of Environmental Operations Act</i>
primary earthworks area	The primary earthworks area is located entirely within the area of impact for the Modification Proposal. Bulk earthworks for the placement and stockpiling of clean fill material would occur within this area. The primary earthworks area covers an area of approximately 35.9 ha.
RAAF	Royal Australian Air Force
RAE	Royal Australian Engineers
RAP	Registered Aboriginal Party
RBL	Rating Background Noise Levels
Revised Environmental Management Measures (REMMs)	The environmental management measures for the MPW Concept Plan Approval as presented within the Supplementary Response to Submissions (SRtS) (PB, 2015) and approved under the MPW Concept Plan Approval.

Term	Definition
RNP	Road noise policy
ROL	Road Occupancy Licence
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
Moorebank Precinct East (MPE) Project	The Intermodal terminal facility on the MPE site as approved by the MPE Concept Plan Approval (MP 10_0913) and including the MPE Stage 1 Proposal (14-6766). N.B. Previously the SIMTA Concept Plan Approval
Moorebank Precinct East (MPE) site	The site which is the subject of the MPE Concept Plan Approval, and includes the site which is the subject of the MPE Stage 1 Approval. N.B. Previously the SIMTA site
Moorebank Precinct East (MPE) Stage 1 Proposal	MPE Stage 1 Proposal (14-6766) for the development of the Intermodal terminal facility at Moorebank. This reference also includes associated conditions of approval and environmental management measures which form part of the documentation for the approval. N.B. Previously the SIMTA Stage 1 Proposal
SSD	State Significant Development
SSFL	Southern Sydney Freight Line
STRARCH	Stressed Arch
SWL	Sound Power Level
SWMP	Soil and Water Management Plan
TEC	Threatened ecological community
TEU	Twenty-foot Equivalent Unit or standard shipping container
TSC	<i>Threatened Species Conservation Act</i>
TSP	Total Suspended Particles
VENM	Virgin Excavated National Material
WARR	Waste Avoidance and Resource Recovery
WHS Regulation	Worker Health and Safety regulation
WSUD	Water Sensitive Urban Design
WWII	World War Two



## EXECUTIVE SUMMARY

### Background

The Moorebank Precinct West (MPW) Project (MPW Project) includes the development of intermodal freight terminal facilities (IMT), linked to Port Botany, the interstate and intrastate freight rail network. The MPW Project includes associated warehouse and logistics facilities, a rail link connecting the MPW site to the Southern Sydney Freight Line (SSFL), and a road entry and exit point from Moorebank Avenue.

The application for the MPW Project (SSD\_5066) (MPW Concept Plan Approval) includes Early Works comprising site preparatory works, such as the demolition of buildings, including services termination and diversion; rehabilitation of the excavation/ earthmoving training area; remediation of contaminated land and removal of underground storage tanks; heritage impact remediation works; and the establishment of construction facilities and access, including site security. Approval for the MPW Project, under Part 4, Division 4.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), was granted on 3 June 2016.

### The Modification Proposal

This modification application has been prepared on behalf of the Sydney Intermodal Terminal Alliance (SIMTA) and seeks approval to modify the MPW Concept Plan Approval under s96(2) of the EP&A Act. Recent civil and earthworks design development has re-evaluated the cut and fill volumes on the MPW site and as a result identified a deficit of available fill on the site. It is therefore proposed to undertake additional site preparatory works, including the import, placement and stockpiling of clean fill, as a modification to the approved Early Works (referred to as the Modification Proposal).

The Modification Proposal would result in development that is substantially the same as the project described within the MPW Concept Plan Approval and the changes would not alter the final development of the MPW Project. The works, for which a modification is sought includes the following:

- Minor vegetation removal (not Endangered Ecological Communities) slightly above that provided within Early Works
- Import, by truck, of approximately 1,600,000m<sup>3</sup> of fill (from offsite locations)
- Cut and fill (within the primary earthworks areas) and stockpiling of excess fill within the primary earthworks areas
- Crushing and screening of oversized materials and demolition materials stockpiled during Early Works, for direct placement on site
- Temporary sediment and erosion control works, including onsite detention basins (greater than those envisaged within the Early Works)
- Establishment of temporary internal haulage routes, construction compounds (including, but not limited to, a materials crusher and other plant and equipment) (additional to those included within Early Works).

It is proposed that the works would be undertaken during extended works hours to those identified in the MPW Concept Plan documentation (for selected activities only). The extended hours would include a morning period from 6am – 7am on weekdays, from 7am to 8am on weekends, the evening period between 6pm-10pm on weekdays and Saturday afternoons between 1pm and 6pm.

## The purpose of this report

This application identifies the MPW Concept Plan Approval, describes the Modification Proposal and provides a planning and impact assessment of the relevant matters for consideration contained in section 96(2) and 79C(1) of the EP&A Act, and in accordance with the Secretary's Environmental Assessment Requirements (SEARs, SSD 5066).

## Modification need and justification

The MPW Concept Plan EIS and supporting documentation identified the need for bulk earthworks at the MPW site as part of the MPW Project. At the time of preparation, the environmental assessments anticipated that all of the fill material required for the MPW Project could be sourced from spoil within the MPW site with the exception of fill material to be imported to the MPW site for the purposes of remediation of onsite contamination. However more detailed investigations have recently established a substantial deficit of fill material, requiring fill material to be imported to the MPW site from offsite sources.

A modification to the MPW Concept Plan Approval is therefore sought to permit the import, placement and stockpiling of 1,600,000 m<sup>3</sup> of clean fill material for the MPW Project as part of the Early Works. This modification would be required to support future stages of development for the MPW Project.

## Planning approval pathway

A modification to the MPW Concept Plan Approval is required to permit the import, placement and stockpiling of clean fill on the MPW site as the earthworks proposed have not previously been included within the Early Works.

Section 96(2) of the EP&A Act allows a consent authority to modify a development consent, provided that *'it is satisfied that the development to which the consent as modified relates is substantially the same development as the development for which consent was originally granted and before that consent as originally granted was modified (if at all).'*

Overall, the proposed modification will maintain the MPW Concept Plan as approved under SSD 5066 and will not alter the approved land use as an IMT and warehousing facility. The works required as part of Early Works for the MPW Project have been further refined and it has been identified that works to raise the MPW site are required to achieve the desired stormwater outcomes, meet geotechnical requirements, and minimise offsite disposal of contaminated waste materials. The additional works would result in a temporary intensification of construction works approved under Early Works of SSD\_5066. The assessments included in this report have concluded that, with the implementation of appropriate mitigation measures, environmental impacts associated with the proposed modification would be minor and of a short duration.

The proposed modification does not result in any change of use or intensified use of the MPW site and preserves the approved land use of the site, hence approval for the modification is sought under s96(2) of the EP&A Act.

## Potential environmental issues

Detailed environmental assessments have been undertaken for the Modification Proposal, in consideration of the following potential key issues:

- Traffic and Transport
- Soils and contamination

- Hydrology and flooding
- Noise and vibration
- Air quality
- Biodiversity
- Aboriginal heritage
- Non-Aboriginal heritage
- Waste and resource management.

Technical specialist assessments of the above key environmental issues and other environmental issues have been undertaken in consideration of the issues relevant to the Modification Proposal and those raised within the SEARs for the MPW Project.

Overall, it has been determined that the Modification Proposal would result in a minor intensification of activity associated with the Early Works, however, this would be of a short duration and would be managed with minimal environmental impact through the implementation of the mitigation measures identified within the MCoAs, REMMs and the additional mitigation measures identified in this report. As a result approval of the Modification Proposal is recommended.

## 1 INTRODUCTION

This modification application has been prepared on behalf of the Sydney Intermodal Terminal Alliance (SIMTA) and seeks approval to modify the Moorebank Intermodal Company (MIC) Concept Project and Early Works (Stage 1) (SSD\_5066) (MPW Concept Plan Approval), which relates to the development of an intermodal terminal (IMT) facility and warehousing at Moorebank on the western side of Moorebank Avenue, NSW (MPW Project). This application has been prepared pursuant to Section (s) 96(2) of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Recent civil design development relating to earthworks has re-evaluated the cut volumes, and therefore available fill volumes, on the MPW site. As a result, the fill now required to be imported to the MPW site is estimated at 1,600,000 cubic metres (m<sup>3</sup>). This departs from that identified within the MPW Concept Plan documentation which stated that, although fill was required, it was to be derived from on-site excavations (i.e. balanced cut to fill).

It is proposed to undertake additional site preparatory works, including the import, placement and stockpiling of clean fill, as a modification to the approved Early Works (referred to as the Modification Proposal). The proposed modification would result in a minor intensification of activity associated with the Early Works; however, this would be of a short duration and can be managed with minimal environmental impact through the implementation of the mitigation measures identified within the MPW Project Environmental Impact Statement (EIS) (Parsons Brinckerhoff (PB), 2014), Response to Submissions (RtS) (PB May 2015) and Supplementary Response to Submissions (SRtS) (PB, August 2015) and additional mitigation measures identified in this report (Modification Report).

Fundamentally, the proposed modification would result in development that is substantially the same as the project described within the MPW Concept Plan Approval and the changes would not alter the development of the IMT facility and warehousing. This application identifies the MPW Concept Plan Approval, describes the proposed modifications and provides a planning and impact assessment of the relevant matters for consideration contained in section 96(2) and 79C(1) of the EP&A Act, and in accordance with the Secretary's Environmental Assessment Requirements (SEARs, 5066).

### 1.1 Background

The MPW Project involves the development of intermodal freight terminal facilities (IMT), linked to Port Botany, the interstate and intrastate freight rail network. The MPW Project includes associated commercial infrastructure (i.e. warehousing), a rail link connecting the MPW site to the Southern Sydney Freight Line (SSFL), and a road entry and exit point from Moorebank Avenue. The application for the MPW Project also included site preparatory works, such as demolition and site remediation, as part of the first stage of works, referred to as Early Works. Approval for the MPW Project was granted on 3 June 2016 and includes approval of the MPW Concept Plan and Early Works.

Several environmental assessment documents, which include supporting technical studies, have been developed during the State and Commonwealth approval process for the MPW Project. These include:

- State Significant Development (SSD), Part 4, Division 4.1 of the EP&A Act
  - MIC Concept Plan EIS (October 2014) (MPW Concept Plan EIS)
  - MIC Concept Plan RtS (May 2015) (MPW RtS)
  - MIC Concept Plan SRtS, (August 2015) (MPW SRtS)

- Commonwealth, *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act)
  - MIC Final Environmental Impact Statement (MPW Final EIS) (December 2015).

### 1.1.1 Applicant and Capital Investment Value

On 4 June 2015, MIC, with the approval of the Commonwealth Government, entered an agreement with SIMTA under which SIMTA will obtain approvals, build and operate all stages of the MPW Project at Moorebank. SIMTA, a consortium comprising Qube Holdings and Aurizon, is seeking approval to modify the MPW Concept Plan Approval under s96 of the EP&A Act to allow the import, placement and stockpiling of clean fill material at the MPW site as part of the Early Works.

The Capital Investment Value for the Modification Proposal, consistent with the definition provided in the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation), is approximately \$6,900,000 AUD (excluding GST) (refer to the Quantity Surveyors Report prepared by Rider Levett Bucknall NSW at Appendix A).

## 1.2 Existing and pending approvals

Concept Plan Approval was provided, under Part 4, Division 4.1 of the EP&A Act to develop the MPW Project on the western side of Moorebank Avenue, Moorebank, in south-western Sydney (the MPW site). The Ministers Conditions of Approval (MCoA) provides the following description of the development for which the MPW Concept Plan Approval was granted:

- **Concept Proposal:** *the Concept involves the use of the site as an intermodal facility, including a rail link to the Southern Sydney Freight Line, warehouse and distribution facilities, and associated works.*
- **Early Works (Stage 1):** *involves the demolition of buildings, including services termination and diversion; rehabilitation of the excavation/ earthmoving training area; remediation of contaminated land; removal of underground storage tanks; heritage impact remediation works; and the establishment of construction facilities and access, including site security.*

The MPW Project includes a number of stages of development namely, Early Works (part of the works to be approved in the MPW Project) and Phases A-C (various stages of the intermodal terminal (IMT) facility and warehousing development, subject to future approvals). The following sections provide further detail on the project and works approved under the MPW Concept Plan Approval.

### 1.2.1 Concept Plan and Early Works Approval

The MPW Concept Plan Approval for the MPW Project was received on 3 June 2016. The following sections describe the MPW Concept Plan and Early Works, as approved under SSD\_5066.

#### Concept Approval

A summary of the MPW Project (at full build), as approved under the MPW Concept Plan Approval, is as follows:

- IMEX freight terminal - maximum capacity of 1.05 million twenty-foot equivalent units (TEU) throughput per annum, servicing international IMEX freight movement between Port Botany and the MPW site

- Interstate freight terminal - maximum capacity of 500,000 TEU throughput per annum, servicing trains travelling to, from and between Sydney, regional and interstate destinations
- Warehousing facilities - maximum of 300,000 m<sup>2</sup> gross floor area (GFA) to service the IMEX and interstate terminals
- Rail link connection - between the MPW site and the SSFL
- Conservation area - to maintain and enhance riparian vegetation on the western boundary of the site, along the Georges River
- Moorebank Avenue upgrade - widening of the road to four lanes between Anzac Road and the M5 Motorway.

Figure 1 shows the layout of the MPW site as approved within the MPW Concept Plan Approval.

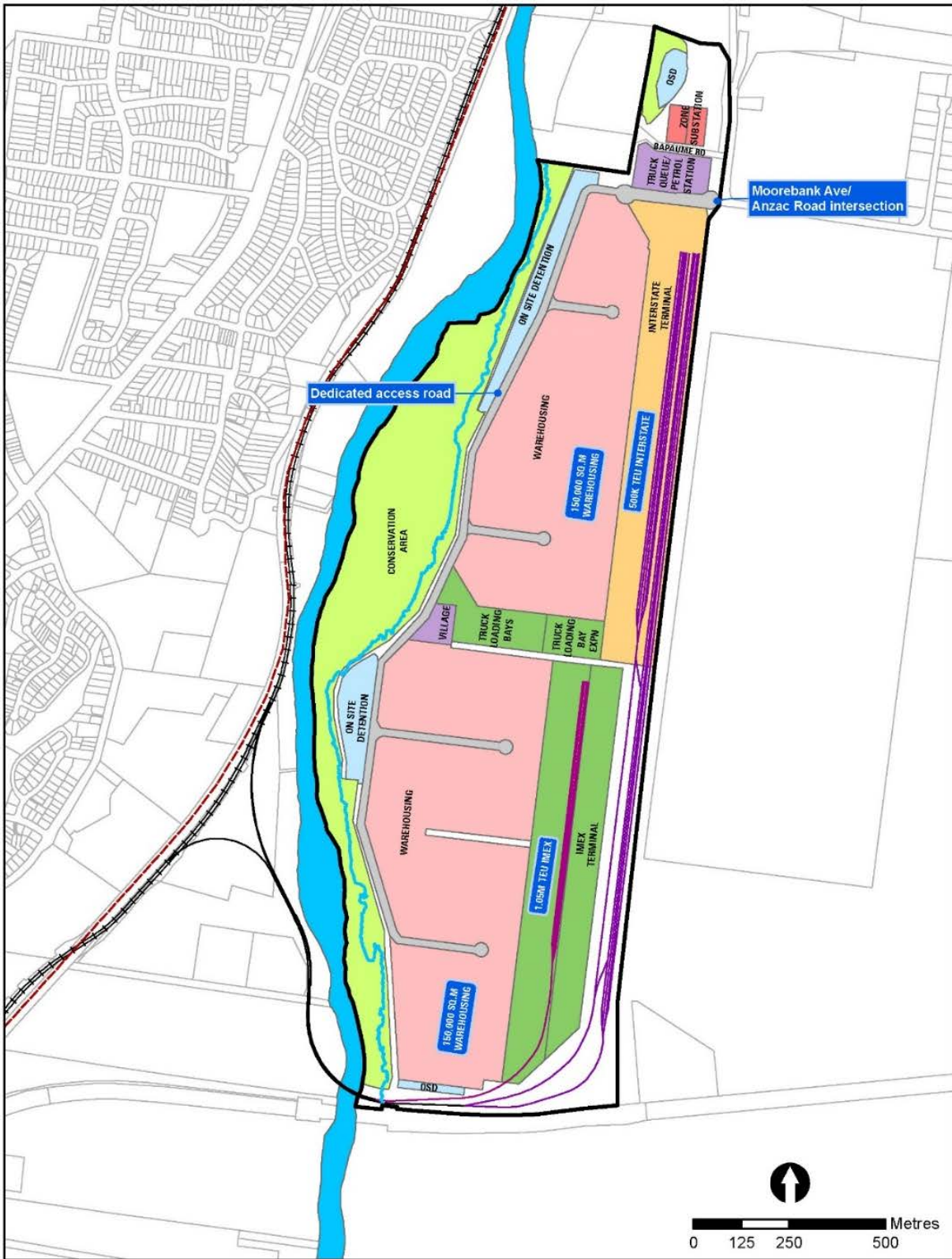
Terms of the MPW Concept Plan Approval relevant to the Modification Proposal are:

#### **Schedule 2 – Terms of Approval**

- **Development Description (1):** *Except as amended by the conditions of this consent, development consent is granted only to the Concept Proposal and Early Works as described in Schedule 1 and the Environmental Impact Statement dated October 2014, as amended by the Response to Submissions, dated May 2015 (as further amended by the Supplementary Response to Submissions dated August 2015), and the conditions contained in this development consent.*
- **Development in Accordance with Plans and Documents (4):** *The applicant shall carry out the development generally in accordance with the:*
  - a) Environmental Impact Statement titled Moorebank Intermodal Terminal Project Environmental Impact Statement, prepared by Parsons Brinckerhoff Australia Pty Limited, dated October 2014;*
  - b) Response to Submissions report titled, Moorebank Intermodal Terminal Response to Submissions Report, prepared by Parsons Brinckerhoff Australia Pty Limited, dated May 2015;*
  - c) Supplementary Submissions report titled, Moorebank Intermodal Terminal Supplementary Response to Submissions Report, prepared by Parsons Brinckerhoff Australia Pty Limited, dated August 2015; and*
  - d) the conditions of this consent.*

**(5):** *In the event of an inconsistency between: (a) the conditions of this approval and any document listed from condition 4(a) to 4(c) inclusive, the conditions of this approval shall prevail to the extent of the inconsistency; and (b) any document listed from condition 4(a) to 4(c) inclusive, and any other document listed from condition 4(a) to 4(c) inclusive, the most recent document shall prevail to the extent of the inconsistency.*

No change to the operational development of the MPW Project is proposed as part of this modification. Further details of the requested modification is provided in Section 3.1 below.



- |  |   |                       |
|--|---|-----------------------|
| 1% AEP flood level                     | IMEX Terminal                             | Dedicated Access Road |
| Existing south rail line               | Interstate Terminal                       | Georges River         |
| Proposed IMEX Rail line                | Warehousing                               | On Site Detention     |
| Proposed interstate terminal rail line | Services Freight Village / Petrol station | Conservation Area     |
| Southern rail connection               | Zone Substation                           |                       |
| Southern Sydney Freight Line           |   |                       |

**Revised IMT layout at Full Build (2030)**

Figure 1 MPW Concept Plan Approval (SSD 5066) layout

## Early Works

Approval for the Early Works phase was granted as Stage 1 of the MPW Project (MPW Stage 1 Approval) within the MPW Concept Plan Approval, and works for this phase are anticipated to commence in late 2016.

The works approved as Early Works are shown in Figure 2 and include the following:

- The demolition of existing buildings and structures
- Service utility terminations and diversion/relocation
- Removal of existing hardstand/roads/pavements and infrastructure associated with existing buildings
- Rehabilitation of the excavation/earthmoving training area (i.e. 'dust bowl')
- Remediation of contaminated land and hotspots, including areas known to contain asbestos, and the removal of:
  - Underground storage tanks (USTs)
  - Unexploded ordnance (UXO) and explosive ordnance waste (EOW) if found
  - Asbestos contaminated buildings
- Archaeological salvage of Aboriginal and European sites, including the CUST Hut and STRARCH Hanger<sup>1</sup>
- Establishment of a conservation area along the Georges River, including seed banking and planting
- Establishment of construction facilities (which may include a construction laydown area, site offices, hygiene units, kitchen facilities, wheel wash and staff parking) and access, including site security
- Vegetation removal, including the relocation of hollow-bearing trees, however:
  - No vegetation clearing would occur within the vegetation exclusion area shown on Figure 2.
  - No Endangered Ecological Communities (EECs) or Threatened Ecological Communities (TECs) would be removed.

The term of the MPW Concept Plan Approval relevant to the Early Works and the subject of this modification application is:

### **Schedule 3 – Conditions to be met for Early Works (Stage 1)**

- **Construction hours (D5):** *Early works shall be undertaken during the following standard construction hours: (a) 7:00am to 6:00pm Mondays to Fridays, inclusive; and (b) 8:00am to 1:00pm Saturdays; (c) at no time on Sundays or public holidays.*

A modification to the works proposed under the Early Works is proposed to permit the import and placement of material on the MPW site as part of this stage of works. Further detail on the proposed modification is provided in Section 3.1.2, below.

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<sup>1</sup> It is anticipated that the tender process for the adaptive reuse of the CUST Hut and STRARCH Hanger will be undertaken in accordance with the recommendations of the *STRARCH Hanger and CUST Hut Condition Inspection Report* (PB, October 2014), therefore Early Works is considered to include either the removal of these items for adaptive reuse or their demolition.

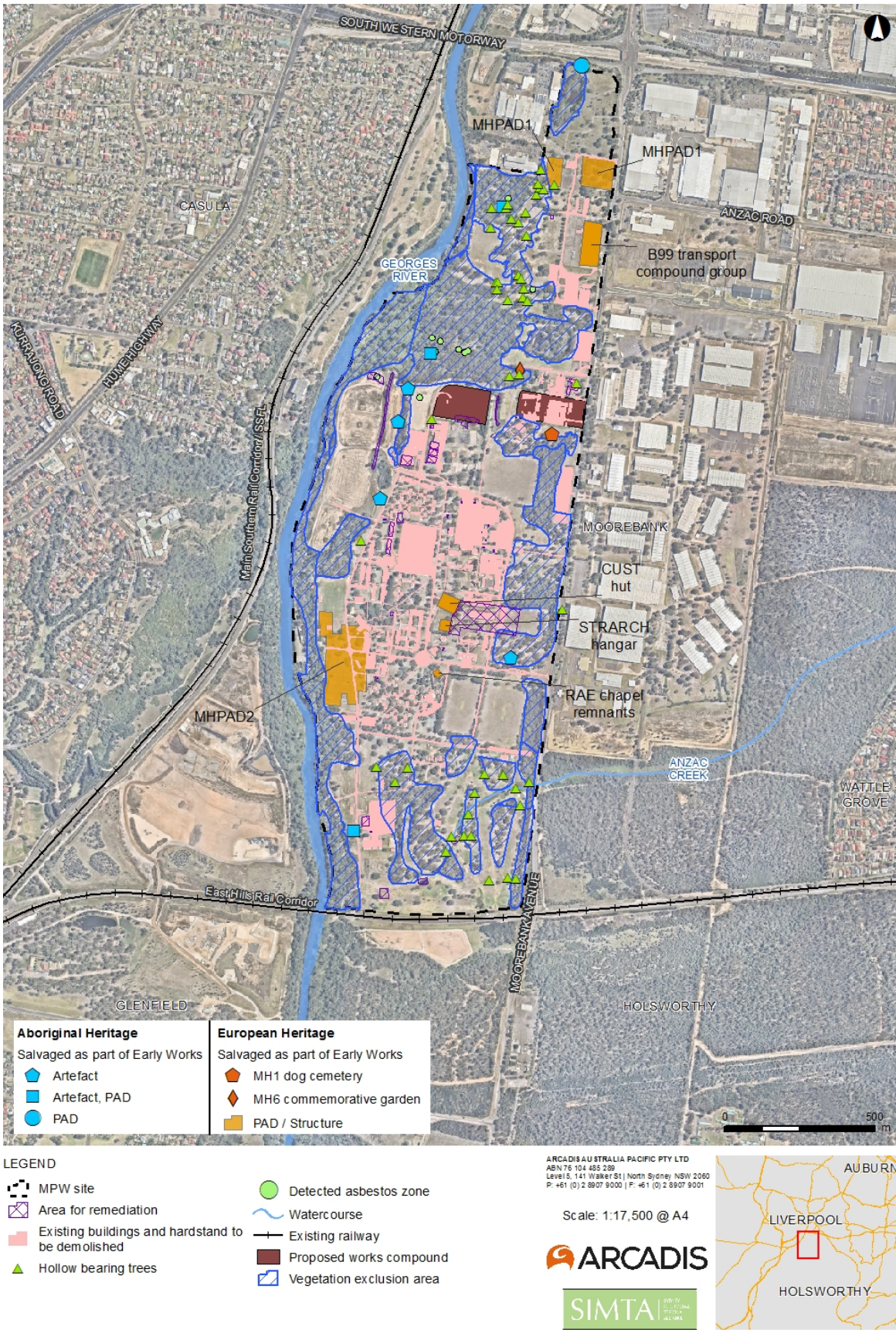


Figure 2: Approximate footprint of approved MPW Stage 1 (Early Works)

## 1.2.2 EPBC Proposal

Approval has been sought for the MPW Project as a 'controlled action' under the EPBC Act in parallel with the MPW Concept Plan Approval under the EP&A Act. Approval for construction and operation of the MPW Project as a controlled action has been sought under EPBC 2011/6086, and is anticipated during 2016.

A portion of the Early Works was determined under the EPBC Act as 'not a controlled action' under Referral Decision EPBC 2014/7152. The works assessed as part of the referral included:

- Decontamination and demolition of buildings identified with asbestos containing material (ACM)
- Remediation of contamination hotspots including underground storage tanks (USTs)
- Site stabilisation and establishment of the proposed conservation area on the site of the plant and equipment operator training area on the western side of the site
- Construction of secure perimeter fencing
- Ancillary operations including establishment of construction facilities and amenities on existing areas of hardstand.

On approval of EPBC 2011/6086 the full scope of the Early Works, including the works that are the subject of this modification, will be approved under the EPBC Act.

## 1.3 Consultation

Discussions relating to the Modification Proposal, at various stages of development, have been undertaken with DPE periodically. The key discussions commenced in February 2016 and have included meetings, emails and the provision of documentation identifying the proposed approach to the modification, the suitability of the proposal to be assessed under s96(2) of the EP&A Act and the potential environmental issues and mitigation measures to reduce this impact.

Registered Aboriginal Parties have not been consulted for the purposes of the Aboriginal Heritage Memorandum (Appendix H), as the Modification Proposal is consistent with the approach identified in the MPW Concept Plan Approval and therefore does not result in any further impacts on Aboriginal heritage significance. The REMMs and MCoAs would ensure that Aboriginal heritage is managed for the other works which have previously been included (not part of this modification) in the MPW Project.

Consultation for the MPW Project has been undertaken periodically, via a number of mediums, prior to and throughout the assessment of the MPW Concept Plan Approval. Consultation with the community, for this Modification Proposal, is to be undertaken as part of the exhibition/public notification period as required under s96(2) of the EP&A Act.

## 1.4 Structure of this report

The structure of this modification application report is as follows:

- **Section 1** – Introduction: provides an overview of the MPW Concept Plan Approval and MPW Project and an introduction to the Modification Proposal.
- **Section 2** – Site description: provides a summary of the MPW site and its context and the area of impact for the Modification Proposal.

- **Section 3** – Proposed modification: provides a detailed description of the Modification Proposal and the proposed modification to the MPW Concept Plan Approval.
- **Section 4** – Statutory planning assessment: provides an assessment of the Modification Proposal against the relevant statutory planning documents and considers whether the Modification Proposal is ‘substantially the same development’ as the MPW Project and Early Works.
- **Section 5** – Environmental assessment: provides an environmental assessment of the Modification Proposal.
- **Section 6** – Conclusion: provides a summary and conclusion to this modification application report.

The following appendices are included in this modification application report:

- Appendix A – Quantity Surveyors Certification
- Appendix B – Construction Traffic Impact Assessment
- Appendix C - Geotechnical and Contamination Memorandum
- Appendix D - Stormwater Assessment
  - Bulk Earthworks Plans
- Appendix E - Noise and Vibration Impact Assessment
- Appendix F – Assessment of Air Quality Impacts
- Appendix G – Biodiversity Impact Assessment
- Appendix H - Aboriginal Heritage Memorandum
- Appendix I - Non-Aboriginal Heritage Memorandum

## 2 SITE DESCRIPTION

Section 2 provides a summary of the area that would be impacted by the Modification Proposal, including a description of its regional setting and local context within the surrounding area.

### 2.1 Site context

The area of works for the Modification Proposal ('area of impact') is wholly within the MPW site, for which Concept Plan Approval was granted, as shown in Figure 2.

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

#### 2.1.1 Surrounding residential areas

A number of residential suburbs are located in proximity to the area of impact of the Modification Proposal, including:

- Wattle Grove, located approximately 670 metres from the area of impact
- Moorebank, located approximately 650 metres from the area of impact
- Casula, located approximately 300 metres from the area of impact
- Glenfield, located over 900 metres from the area of impact.

### 2.2 Site description

#### 2.2.1 Moorebank Precinct West (MPW) site

The MPW site is generally bounded by the Georges River to the west, Moorebank Avenue to the east, the East Hills Railway Line to the south and the M5 Motorway to the north. The MPW site is located on Moorebank Avenue, Moorebank and forms Lot 1 in Deposited Plan (DP) 1197707 and Lot 100 DP 1049508, which is wholly owned by the MIC, and leased by SIMTA. Other parcels of land that will be impacted by the MPW Project during road upgrades for the project include:

- Moorebank Avenue, owned by the Commonwealth Government, south of Anzac Road Lot 2, DP 1197707
- Moorebank Avenue, owned by Roads and Maritime Services, north of Anzac Road
- A portion of Bapaume Road, a public road that is the responsibility of Liverpool City Council, to the north
- A portion of Anzac Road, a public road that is the responsibility of Liverpool City Council, to the east of Moorebank Avenue.

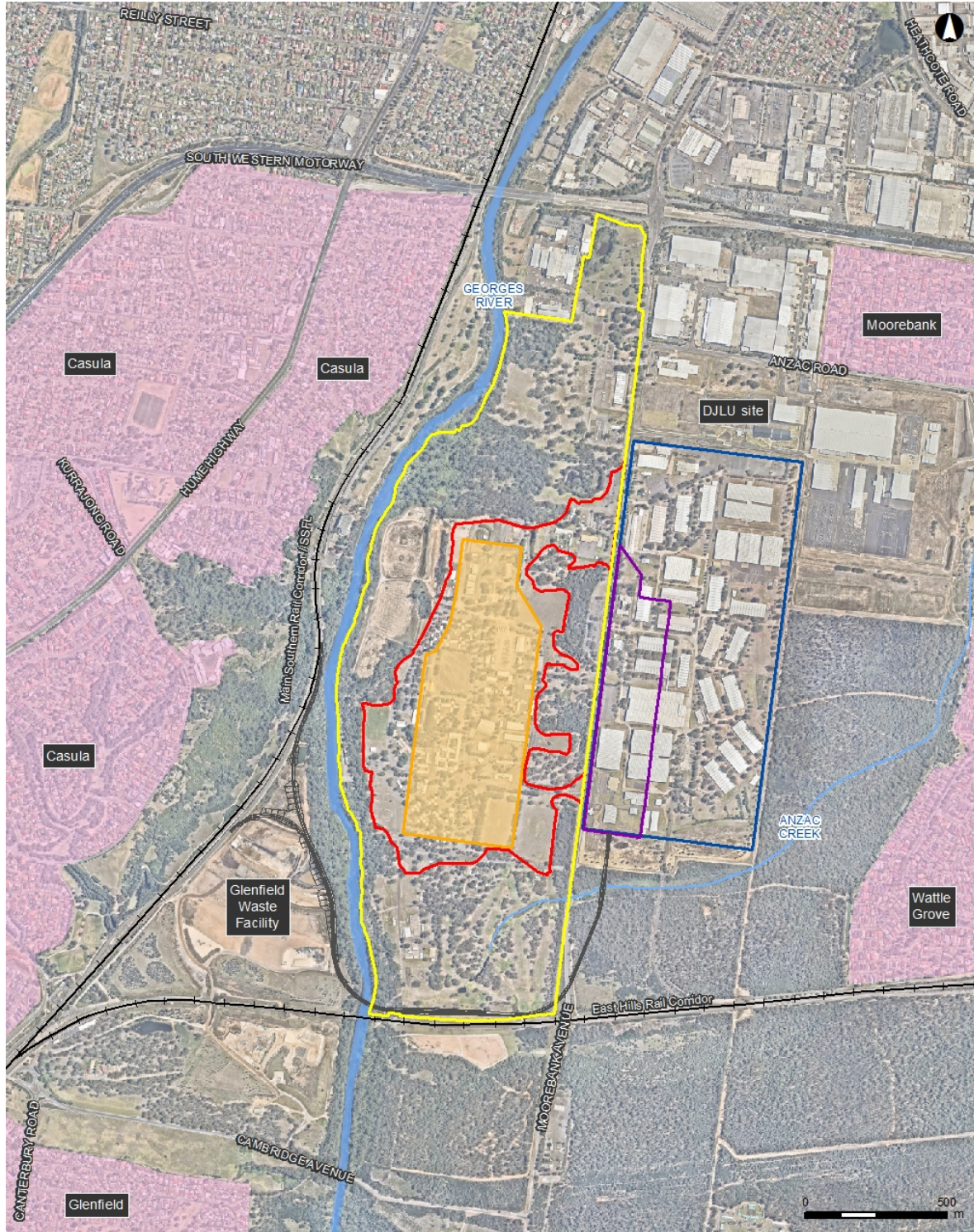
The key existing features of the MPW site are:

- Relatively flat topography, with the western edge flowing down towards the Georges River, which forms the western boundary to the MPW site
- Direct frontage to Moorebank Avenue, which is a publicly used private road, south of Anzac Road and a publicly owned and used road north of Anzac Road
- The site has been developed and comprises low-rise buildings, including warehouses, administrative offices, residential buildings, access roads, open areas, landscaped fields and the Royal Australian Engineers (RAE) Golf Course and Club. All buildings on the MPW site are currently unoccupied and are approved for removal during the Early Works

- Vegetation exists along the western edge of the MPW site, with riparian vegetation along the banks of the Georges River. The riparian vegetation corridor (generally 25 metres wide) provides a wildlife corridor and a buffer for the protection of soil stability, water quality and aquatic habitats. This area has been defined as a conservation area as part of the MPW Concept Plan Approval
- Native vegetation is scattered across the MPW site, with some areas of native vegetation to be removed as part of Early Works
- Much of the MPW site has been developed for Defence purposes, however heritage and biodiversity values still remain on the site
- A strip of land (up to approximately 250 metres wide) along the western edge of the MPW site lies below the 1% annual exceedance probability (AEP) flood level. This area generally corresponds to the proposed conservation area (refer to Figure 2). The area to be retained for conservations is outside of the area of impact.

### **2.2.2 Siting of Modification Proposal**

The area identified for the Modification Proposal works was selected to align with the footprint of Early Works and existing cleared areas within the MPW site. Two areas have been identified for the Modification Proposal and are described below and shown in Figure 4.

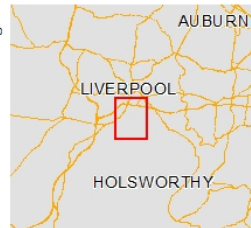


LEGEND

- MPW site
- Area of impact (modification subject)
- Primary earthworks area (modification subject)
- MPE site
- MPE Stage 1 Operational area
- Rail link
- Residential area
- Watercourse
- Existing railway

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Figure 3: Locality Overview

## Area of impact

The area of impact for the Modification Proposal works is located centrally to the MPW site. The area of impact was selected to meet the following requirements:

- Avoid clearing of EECs and threatened species and maintain the 'vegetation exclusion area' identified within the MPW Concept Plan EIS for Early Works
- Provide sufficient area for the placement and stockpiling of 1,600,000 m<sup>3</sup> of clean fill material
- Provide sufficient area for soil and water management structures during the Modification Proposal works.

All works associated with the Modification Proposal, including the establishment of haul roads, erosion and sediment controls and establishment of site compound(s) and ancillary facilities, would occur within the area of impact. The area of impact covers an area of approximately 66.3 ha.

## Primary earthworks area

The primary earthworks area is located entirely within the area of impact for the Modification Proposal. Bulk earthworks for the placement and stockpiling of clean fill material would occur within this area. The primary earthworks area covers an area of approximately 35.9 ha.

## 2.2.3 Moorebank Precinct East (MPE) site

The MPE site is located to the immediate west of the MPW site, across Moorebank Avenue and is the subject of the following approvals:

- EPBC Approval (No. 2011/6229) granted in March 2014 for the impact of the MPE Project on listed threatened species and communities (sections 18 and 18A of the EPBC Act) and Commonwealth land (sections 26 and 27A of the EPBC Act)
- Concept Plan Approval (No. 10\_0193) granted by the PAC on the 29 September 2014 for the 'Concept Plan Approval' of the MPE Project (IMT, Rail link and warehousing) under Part 3A (Transitional) of the EP&A Act

In addition to this the MPE site is the subject of the Stage 1 Proposal (14-6766) for the construction and operation of an IMT and associated Rail link under Part 4, Division 4.1 of the EP&A Act. This Proposal is currently under assessment by the Planning Assessment Commission (PAC).

### 3 PROPOSED MODIFICATION

The MPW Concept Plan EIS and supporting documentation identified the need for bulk earthworks at the MPW site as part of the MPW Project. At the time of preparation, the environmental assessments anticipated that all of the fill material required for the MPW Project could be derived from spoil within the MPW site with the exception of fill material to be imported to the MPW site for the purposes of remediation of onsite contamination. Recently, more detailed investigations have established a substantial deficit of fill material that will be available from the MPW site. To address this deficit, fill material will need to be imported to the MPW site from offsite sources.

The works, for which a modification is sought (the Modification Proposal), include the following:

- Minor vegetation removal (not Endangered Ecological Communities) slightly above that provided within Early Works, as shown in Figure 2
- Import, by truck, of approximately 1,600,000m<sup>3</sup> of fill (from offsite locations)
- Cut and fill (within the primary earthworks areas) and stockpiling of excess fill within the primary earthworks areas
- Crushing and screening of oversized materials and demolition materials stockpiled during Early Works, for direct placement on site
- Temporary sediment and erosion control works, including onsite detention basins (greater than those envisaged within the Early Works as shown in Figure 2)
- Establishment of temporary internal haulage routes, construction compounds (including, but not limited to, a materials crusher and other plant and equipment) (additional to those included within Early Works, as shown in Figure 2).

It is anticipated that the works would be undertaken during the hours identified in Table 3-1. These hours extend those identified in the MPW Concept Plan documentation to include the evening period between 6pm-10pm on weekdays and Saturday afternoons between 1pm and 6pm.

Table 3-1: Proposed working hours

Day	Proposed Hours	Activities
Weekdays	6:00am – 7:00am	<ul style="list-style-type: none"> <li>• Material Delivery.</li> </ul>
	7:00am – 6:00pm	<ul style="list-style-type: none"> <li>• Material Delivery</li> <li>• Direct Placement; and</li> <li>• Stockpiling; and</li> <li>• Crushing.</li> </ul>
	6:00pm – 10:00pm	<ul style="list-style-type: none"> <li>• Material Delivery; and</li> <li>• Direct Placement; or</li> <li>• Stockpiling.</li> </ul>
Saturdays	7:00am – 8:00am	<ul style="list-style-type: none"> <li>• Material Delivery; and</li> <li>• Direct Placement; or</li> <li>• Stockpiling.</li> </ul>
	8:00am – 1:00pm	<ul style="list-style-type: none"> <li>• Material Delivery</li> </ul>

Day	Proposed Hours	Activities
		<ul style="list-style-type: none"> <li>• Direct Placement; and</li> <li>• Stockpiling; and</li> <li>• Crushing.</li> </ul>
	1:00PM – 6:00PM	<ul style="list-style-type: none"> <li>• Material Delivery; and</li> <li>• Direct Placement; or</li> <li>• Stockpiling.</li> </ul>

Further details of the proposed works are included in Section 3.2, below.

### 3.1 Planning approval modification

A modification to the MPW Concept Plan Approval is required to permit the import, placement and stockpiling of clean fill on the MPW site as the earthworks proposed have not been identified within the Early Works. The following sections discuss the key discrepancies between the MPW Concept Plan environmental assessment documentation and the works proposed within the modification.

#### 3.1.1 Concept Plan

The MPW Project includes a number of stages of development namely, Early Works (part of the works approved in the MPW Concept Plan Approval) and Phases A-C (various stages of the IMT facility and warehousing development, subject to future approvals).

The MPW RtS (PB, May 2015) provides the most recent information relating to the proposed approach to earthworks under the MPW Concept Proposal. Table 3-2, below, provides a reproduction of Table 7.5 from Section 7 of the MPW RtS. Of particular note in this table is that the estimate of the total amount of fill required for the MPW site, and rail link is approximately 914,927m<sup>3</sup> across three phases (Phases A-C) of development. Notwithstanding this, the MPW Proposal identified that as a result of the excavations (cut) proposed for the development, there would be spoil (approximately 61,894m<sup>3</sup>) generated from the site at the completion of construction of the MPW Proposal.

Table 3-2: Revised bulk earthworks estimate (MPW RtS, PB, May 2015)

Item (at 30% bulking and settlement)	Revised layout cumulative		
	Phase A	Phase B	Phase C
Total excavated cut (m <sup>3</sup> )	559,827	598,191	431,490
Acceptable reuse (m <sup>3</sup> )	335,896	358,915	258,894
Total export (m <sup>3</sup> )	427,129	468,499	320,914
Total pavement volume (m <sup>3</sup> )	327,467	322,073	261,707
Total fill required (m <sup>3</sup> ) = (fill + soft spot container + rail earthworks)	312,468	405,456	197,000
Total cut reuse and spoil from previous stage	335,896	382,343	258,894
Import required (m <sup>3</sup> ) = (fill required – acceptable)	-23,429	23,113	-61,894
Spoil	23,429	0	61,894
	Total Import m <sup>3</sup>		23,113
	Total Spoil Remaining m <sup>3</sup>		61,894

The MPW RtS also identifies the number of vehicle movements associated with each phase of construction, which includes the earthworks volumes identified above, as shown in Table 3-3, below, (Table 7.9 of the MPW RtS). Table 3-3 identifies that the most significant volume of vehicle movements for the Proposal is as part of Scenario 1<sup>2</sup>, at 1,390 heavy vehicle movements per day.

Table 3-3: Indicative construction traffic volumes for the MPW Proposal<sup>3</sup> (MPW RtS, PB May 2015)

Stage	Daily vehicle movements		Peak hourly vehicle movements	
	Cars	HV	Cars	HV
Early Works (2015)	810	64	54	10
Scenario 1 (2016)	2295	1390	153	152
Scenario 2a (2019)	1485	260	99	28
Scenario 2b (2023)	2080	360	139	40

### 3.1.2 Early Works

The Early Works included some earthworks, including the importation of fill for the purposes of remediation of on-site contamination. Section 7.8.5 of the MPW RtS provides a summary of the estimated quantity of fill to be brought to the MPW site during Early Works, (Table 3-4 (Table 7.12 of the MPW RtS)). The truck deliveries, shown in Table 3-4 were subsequently restricted within the MPW RtS to a maximum of 40 heavy vehicle (truck) movements per day, for the duration of the Early Works period.

<sup>2</sup> Scenario 1 includes the majority of construction activities proposed within Phase A, i.e. IMT facility with a 250,000 TEU capacity per annum and 100,000m<sup>2</sup> of warehousing, but excludes the Rail link and some supporting utilities infrastructure.

<sup>3</sup> The scenarios include construction works which generally align with each phase of development.

Table 3-4: Estimated quantities of clean fill to be imported during Early Works (as identified in the MPW Concept Plan EIS, PB, 2014)

Element of proposed action	Estimated quantity of fill required (m <sup>3</sup> )	Approximate number of truck deliveries to the site <sup>1</sup>
Backfill of UST voids	1414	57
Import of suitable planting fill for driver training arena	44720	1789

Notes: <sup>1</sup> based on 30 tonne truck and dog carrying 20-25m<sup>3</sup> of soil and sand and 40m<sup>3</sup> mulch (lighter fill)  
[http://www.amazonsoils.com.au/company/amazon\\_booklet.pdf](http://www.amazonsoils.com.au/company/amazon_booklet.pdf)

In summary, the MPW Concept Plan Approval documentation identifies the following fill to be placed on site:

- Early Works – 46,134m<sup>3</sup> for the purposes of remediation works
- Phases A-C - 914,927m<sup>3</sup>, for filling of the MPW site to facilitate various stages of development. Notwithstanding this, it is indicated that there is a suitable cut fill balance provided on-site and as such importation of fill was not required.

More recently civil design development relating to earthworks, undertaken by Arcadis, has re-evaluated the cut volumes, and therefore available fill volumes, on the MPW site. As a result, the fill now required to be imported to the MPW site is approximately 1,600,000m<sup>3</sup>. This departs from that identified within the MPW Concept Plan Approval documentation which stated that, although fill was required, it was to be derived from on-site excavations (i.e. balanced cut to fill).

## 3.2 Modification Proposal

The purpose of the Modification Proposal is to permit the import, placement and stockpiling of clean fill on the MPW site during Early Works activities. The area of impact would be made ready for receipt of materials through stripping of topsoil, levelling of the site and removal of contaminated materials. Haul roads, construction compounds and ancillary facilities to support the Modification Proposal works would be established. Material brought to site would be placed and compacted within the primary earthworks area, to achieve final site levels within this area. Short-term and long-term stockpiling of clean fill material would also occur in this area. Further detail of the proposed methods for import, placement and stockpiling of fill are provided below.

### 3.2.1 Construction methodology overview

The earthworks included within the Modification Proposal would occur over a period of approximately six to nine months. The footprint for the Modification Proposal is shown in Figure 4. The modification would affect all areas identified within the 'area of impact'; however, earthworks placement is proposed to be confined to the 'primary earthworks areas'.

The works for which a modification is sought, include the following:

- Minor vegetation removal (not Endangered Ecological Communities (EEC); slightly above that provided within Early Works)
- Demolition of buildings or structures during Early Works (those not currently included within Early Works)
- Import, by truck, of approximately 1,600,000 m<sup>3</sup> of fill (from offsite locations)
- Stripping and stockpiling of topsoil within the area of impact, cut and fill within the primary earthworks areas and stockpiling of clean fill within the primary earthworks areas (Figure 4)

- Temporary sediment and erosion control works, including onsite detention basins (greater than those envisaged within the Early Works) (Figure 4)
- Establishment of temporary internal haulage routes, construction compounds (including, but not limited to, a materials crusher and other plant and equipment) (additional to those included within Early Works).

Further detail regarding the construction methodology is provided in the following sections.



LEGEND

- Area of impact (modification subject)
- Temporary construction sediment basins
- Primary earthworks areas (modification subject)
- ▲ Northern access
- ▲ Southern access
- ~ Watercourse
- +— Existing railway
- Primary haul road

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Figure 4: Proposed earthworks (MPW Concept Plan Modification)

### 3.2.2 Construction program and activities

The proposed works are planned to commence in the last quarter of 2016 for an approximate construction period of six to nine months. The construction program for the Modification Proposal would cease on commencement of construction activities associated with the next stage of the MPW Project. This will minimise the opportunity for overlapping of works programs and therefore streamline the works packages to be undertaken under the MPW Concept Plan Approval.

The Modification Proposal includes only activities that are above those identified within the Early Works of the MPW Concept Plan Approval. This avoids overlapping of works programs and provides clarity to works to be undertaken under the MPW Concept Plan Approval, as part of Early Works. The general activities for the Modification Proposal include:

- Vegetation clearance (excluding removal of EEC)
- Removal of existing buildings and road pavements, as required
- Establishment of two access points at Chatham Road (southern access point) and at the signalised intersection approximately 900 m to the south of the intersection with Moorebank Avenue and the M5 Motorway (northern access point)
- Establishment of temporary erosion and sediment controls, including two sediment basins
- Minor clearing and grubbing of the area of impact
- Stripping and stockpiling of topsoil within the area of impact
- Establishment of stockpiling pads and associated temporary access roads
- Installation of temporary construction compounds, including amenities and office
- Construction of hardstands for staff parking and laydown areas
- Establishment of construction compound fencing and hoardings
- Establishment of associated plant and equipment (including, but not limited to, materials screening, crushing and washing facilities)
- Construction of access roads and internal haulage routes
- Crushing and screening of oversized materials and demolition materials stockpiled during Early Works for direct placement on site
- Import, placement and stockpiling of approximately 1,600,000 m<sup>3</sup> of clean fill, equating to a peak import of 22,000 tonnes per day.

### 3.2.3 Construction methods

The primary earthworks areas have been located to minimise impacts on the broader MPW site and generally include areas where Early Works are approved to be undertaken under the MPW Concept Plan Approval. The proposed methods for management of the import, placement and stockpiling of fill material within the primary earthworks areas are detailed in the following sections.

#### Site preparation and compound establishment

Prior to commencement of the import and placement of clean fill, vegetation and buildings remaining within the area of impact, that were not approved for removal under the Early Works, would be removed. Clean topsoil within the area of impact would be stripped and stockpiled. Locations for stockpiling of topsoil would be within the area of impact and outside of the primary earthworks areas with the exact location of the stockpiles determined by the construction contractor. Clean topsoil stripped from the area of impact would be progressively used during other stages of the MPW Project. Potentially contaminated material would be removed from the primary

earthworks area and disposed of at a suitably licensed landfill, such as the Glenfield Waste Facility.

A level area would be established for the Earthworks Compound, located at the southern part of the area of impact (Figure 4). The compound would generally include, but not be limited to, offices, car parking, equipment storage and laydown areas and materials screening, crushing and washing facilities.

The main entrance to the area of impact would be from Chatham Avenue (southern access point) and would provide access to the compound, with a truck marshalling area located adjacent to the compound and site entrance. The main exit from the area of impact would be via the northern access point, located approximately 1 km to the south of the intersection of Moorebank Avenue and the M5 Motorway (refer to Section 5.1 for further information on traffic and access).

Two temporary sediment basins would be established to manage potential water quality impacts resulting from the works (refer to below for further information). The approximate location of these basins are shown in Figure 4. Water captured within the sediment basins would be re-used on site for dust suppression.

Internal haulage roads would be established within the area of impact prior to the commencement of fill importation. The approximate location of these internal roads is shown on Figure 4. Works for the establishment of these haulage roads would include grading and surfacing (potentially gravel) and associated drainage.

### Material delivery

Imported fill material would be delivered by trucks (truck and dog or semi-trailer), from multiple sources within the Greater Sydney Metropolitan Area. Trucks would generally enter the MPW site via the southern access point. Once on-site trucks importing fill would be directed to one of the following locations:

- Truck holding/marshalling area, adjacent to the southern access point
- The primary earthworks areas for direct placement of imported fill
- The primary earthworks areas for stockpiling of imported fill.

Materials received at the site outside of the hours approved for direct placement (i.e. 6am to 7am) would be tipped into temporary stockpiles. The arriving trucks would unload onto a pre-prepared unloading area, comprising a firm, stable and level pad that would accommodate the temporary stockpile until the approved hours for direct placement or stockpiling activities occur. Works during this time would not involve the use of heavy earth moving machinery, and a grader would be used to trim the stockpiles during this time.

Further information on the types of activities that would be undertaken for both the direct placement and long-term stockpiling of imported fill is provided below. Trucks would generally leave the site via the northern access point, through a wheel wash facility (or alternative facility), with all trucks visually inspected prior to leaving the site.

### Direct placement of imported fill

The area identified as the primary earthworks area would be progressively filled to the final site level required for subsequent stages of the MPW Project. Fill brought to the MPW site would be either placed directly at its final location and compacted, or temporarily stockpiled and then placed and compacted. The construction contractor would determine the locations for unloading and placement or stockpiling of fill material (unloading point) as the construction programme is progressively developed. The method for placement of fill material is described below.

Trucks would be directed from the southern access point, via a haul road, to the unloading point for unloading. The trucks would unload onto a pre-prepared unloading area, comprising a firm, stable and level pad suitable to accommodate the material and unloading process. Once unloaded the truck would exit the unloading point and the MPW site via the northern access point.

On exit of the truck, the imported fill would be spread out using a bulldozer, or similar equipment and compacted to achieve the required geotechnical compaction. The unloading point would be moisture conditioned using a water cart spraying, as and when required, to minimise dust generation and achieve the requisite compaction. This delivery, compaction and conditioning process would continue until the final surface level is reached for each individual area. On completion of each area, a soil technician would test for compliance with the geotechnical requirements for the final site use (refer to Appendix C).

At the end of each shift, or if rain is expected, the surface of the direct placement area would be sealed using a smooth drum roller and the surface trimmed using a grader to ensure rain would run off to the temporary sediment control basins.

### Stockpiling of Imported Fill

Imported fill would be placed in stockpiles within the primary earthworks area for future use. Stockpiling of material would occur within the primary earthworks area in two instances:

1. Short term stockpiling of material imported to the site outside of approved hours for direct placement of fill (refer to Section 3.2.6 for proposed construction hours); and
2. Long term stockpiling of material brought to site for future stages of development of the MPW Project.

Short term stockpiling activities would occur as part of materials delivery, as described above. During long term stockpiling activities, trucks would be directed from the southern access point, via a haul road to a stockpile area. The trucks would unload onto a pre-prepared unloading area, comprising a firm, stable and level pad suitable to accommodate the intended size of the stockpile. Stockpile areas would be located within the primary earthworks area, the precise location of which would be determined by the construction contractor. Stockpiles would not exceed ten metres in height from the final site levels, with battered walls at gradients of 1:3.

Once unloaded the truck would exit the stockpile area and a bulldozer, or similar, would move the materials over the leading edge of the stockpile. The surface of the stockpiles would be sealed using a smooth drum roller and graded to minimise the impact of rain events potentially saturating the materials.

When areas become available for the placement and compaction of fill to final site levels, the material would be recovered from the short-term stockpiles and placed as engineered fill in the manner described above. Material placed in long-term stockpiles would remain within the stabilised stockpiles until required for further construction on the MPW site, which would be the subject of separate, future approvals.

### Crushing and Screening of Materials

There is the potential for some oversized boulders to be contained within the imported fill that would require segregation and crushing to make the materials suitable as an engineered fill. These oversized materials would either be identified on entry to the MPW site or at the unloading point. Once identified the oversized materials would be directed to the materials crushing area within the Earthworks Compound (Figure 4). The following process would be followed for screening and crushing of materials as part of the Modification Proposal:

1. Trucks carrying loads with oversized materials would unload onto the primary screen, which would separate larger materials from the smaller materials
2. Earth moving equipment would then be used to manoeuvre the screened material into the crushing system
3. The primary crusher would crush the raw material to a manageable size, which would then be transferred by a conveyor to the secondary crusher
4. The secondary crusher would crush the material into smaller pieces which would then be put back through the primary screening facility to separate the material into required product sizes and separate stockpiles
5. Material which is not crushed to product size would be transported back to the crusher for another round of processing
6. The product from the crushing and screening operation would be loaded into trucks using a front-end loader, and either directly placed to form the final site levels or placed into a stockpile within the primary earthworks area.

Demolition of buildings during the Early Works will generate waste material such as concrete, brick and tile, which could be crushed for re-use on the MPW site. The MPW Concept Plan Approval for the Early Works allows for stockpiling of this material on site; however, as the Modification Proposal includes the establishment of a crushing plant to handle oversized material it is proposed to crush this material as part of the Modification Proposal for reuse on the MPW site. Material that is deemed appropriate for the crushing facility and reuse for the MPW Project would be transported to the materials crushing area by trucks. Once material has been received into the materials crushing area it would be stockpiled until it is ready to be processed through the crushing system. These stockpiles would be located at one end of the crushing area and would be arranged by material type to a maximum height of 10 m above the final site levels.

The stockpiles of final product would be located at the opposite end of the crushing area to the originating raw material. Controls would be implemented to ensure erosion and dust generation are minimised on the stockpiles and maximum stockpile heights are not exceeded.

### **3.2.4 Earthworks**

As discussed above, it is proposed that the primary earthworks area would be raised and levelled in preparation for future stages of approval of the MPW Project. Clean fill material, required for future stages of the MPW Project would be stockpiled within the primary earthworks area to a maximum height of 10 m above the final site levels.

Where considered suitable, material excavated from the MPW site would be reused on-site for foundation preparation, levelling works or maintenance of access roads. Excavated material considered unsuitable for re-use on site would be temporarily stockpiled and then transferred off site. All material removed from site would be tested in accordance with the NSW EPA Waste Classification Guidelines Part 1 Classifying Waste and would be transported to a suitably licensed waste disposal facility.

At peak, approximately 22,000 tonnes of fill would be imported per day for a duration of approximately six months, with a ramp up and ramp down period either side of the peak.

A summary of the preliminary earthworks volumes for the Modification Proposal is provided in Table 3-5.

Table 3-5: Preliminary earthwork volumes

Type	Preliminary volume (m <sup>3</sup> )
Cut to fill material	68,600
Imported fill - direct placement and compaction.	375,100
Stockpiled imported fill	1,224,900

### 3.2.5 Erosion and sediment control

Soil and water management works to be undertaken for the Modification Proposal would involve the establishment of water management swales and sediment basins. Swales would direct stormwater flows from disturbed areas to two sediment ponds that would be located along the western boundary of the area of impact. The sediment basins would capture and store all surface water run-off from the disturbed area of impact, prior to being discharged into the Georges River. Sediment fences (or equivalent) would be placed around the perimeter of the primary earthworks area to guide run-off and limit sediment transport off-site. Clean water would be directed around the site using stormwater swales or other stormwater infrastructure.

Water stored in the sediment basins would also be reused for dust suppression on site to manage potential air quality impacts.

### 3.2.6 Construction workforce and hours

Approximately 105 construction personnel would be required during the peak construction works period.

It is anticipated that the works would be undertaken during the hours identified in Table 3-6. These hours extend beyond those identified in the MPW approvals documentation, and include additional hours during the evening period between 6pm-10pm on weekdays and additional hours during Saturday afternoons between 1pm and 6pm.

Table 3-6: Proposed working hours

Day	Proposed Hours	Activities
Weekdays	6:00am – 7:00am	<ul style="list-style-type: none"> <li>Material Delivery.</li> </ul>
	7:00am – 6:00pm	<ul style="list-style-type: none"> <li>Material Delivery</li> <li>Direct Placement; and</li> <li>Stockpiling; and</li> <li>Crushing.</li> </ul>
	6:00pm – 10:00pm	<ul style="list-style-type: none"> <li>Material Delivery; and</li> <li>Direct Placement; or</li> <li>Stockpiling.</li> </ul>
Saturdays	7:00am – 8:00am	<ul style="list-style-type: none"> <li>Material Delivery; and</li> <li>Direct Placement; or</li> <li>Stockpiling.</li> </ul>

Day	Proposed Hours	Activities
	8:00am – 1:00pm	<ul style="list-style-type: none"> <li>• Material Delivery</li> <li>• Direct Placement; and</li> <li>• Stockpiling; and</li> <li>• Crushing.</li> </ul>
	1:00PM – 6:00PM	<ul style="list-style-type: none"> <li>• Material Delivery; and</li> <li>• Direct Placement; or</li> <li>• Stockpiling.</li> </ul>

Any other construction works associated with the Modification Proposal and undertaken outside of these hours would be undertaken in consultation with relevant authorities, in accordance with the MCoA for the MPW Concept Plan Approval. As such, works outside these hours that may be permitted would include:

- Any works which do not cause noise emissions to be audible at any nearby sensitive receptors or comply with the ‘Outside Standard Construction Hours’
- The delivery of materials which is required outside of these hours as requested by Police or other authorities for safety reasons
- Emergency work to avoid the loss of lives, property and/or to prevent environmental harm
- Any other works as approved through the Construction Noise and Vibration Management Plan.

### 3.2.7 Plant and equipment

A range of plant and equipment would be required for the works associated with the Modification Proposal. A summary of the indicative plant and equipment likely to be utilised includes:

- Truck and dog
- Road sweeper
- Loaders
- Static and vibratory rollers, and high energy impact compaction
- Mobile cranes
- Excavators
- Backhoes
- Crushing plant
- Concrete agitators (or similar)
- Dozers
- 20-40 tonne articulated tipper trucks
- Scrapers
- Graders
- Water trucks
- Small earthmoving equipment
- Wheel wash
- Generators
- Weighbridge

- Compactor
- Mobile lighting towers
- Telehandlers.

### 3.2.8 Construction traffic movements

The majority of vehicles would travel to and from the site via the M5 Motorway. A small number of trucks would head south from the MPW site to the Glenfield Waste Facility to dispose of unsuitable materials; however, no trucks bringing clean fill material to the MPW site would be permitted to access the site via this route. Some light vehicles would travel to the site via Cambridge Avenue with other employees and light vehicles accessing the site via the M5 Motorway, Anzac Road and Moorebank Avenue. Access to and from the site would be via Moorebank Avenue. The majority of vehicles would enter the site at the southern access point at Chatham Avenue and would then be directed to the appropriate location within the site. Heavy vehicles would generally exit from the northern access point (Figure 4).

Vehicles would travel within the site via a number of internal haul roads. A primary haul road has been identified in Figure 4. Other haul roads would be established within the site to provide access to direct placement and stockpiling areas within the primary earthworks area.

The approximate number of construction vehicles and movements during the peak construction period are detailed in Table 3-7.

Table 3-7: Construction traffic movements

Vehicle type	Number of vehicles per day	Vehicle trips per day
Heavy vehicles	745	1,490
Light vehicles	95	190

### 3.2.9 Construction ancillary facilities

A temporary construction compound and communal parking area would be required to support the works associated with the Modification Proposal. It is likely that the construction compound would be located to the west of Moorebank Avenue, near the site access off Chatham Avenue, as shown in Figure 4 and identified as the 'Earthworks Compound'. The Earthworks Compound would also be used for the materials crushing area, as described above. The location of this compound is indicative and subject to confirmation by the construction contractor.

The compound would have an area of approximately 65,650 m<sup>2</sup> and would provide the following facilities:

- Offices
- Staff amenities
- Parking area
- Materials handling, crushing and storage area
- Truck marshalling area.

### Other compound locations

In the event that other compounds are required, they would be located taking into consideration the following criteria for site selection:

- Within the area of impact
- Relatively level land
- Greater than 40 m from a watercourse
- Greater than 20 m from threatened species and endangered ecological communities
- No requirement to remove any native vegetation beyond that otherwise being undertaken for the Modification Proposal.
- No requirement to undertake any significant ground disturbing works beyond that otherwise being undertaken for the Modification Proposal.
- No impact on any heritage items (Indigenous or non-Indigenous) beyond that otherwise being undertaken for the Modification Proposal or the approved Early Works.
- Not unreasonably affect the land use of adjacent properties.

Consideration of all of the above factors would be undertaken prior to the establishment of any additional compounds, for the purpose of the Modification Proposal.

### 3.3 Proposed modification to consent

In summary, a modification to the MPW Concept Plan Approval is sought to permit the import, placement and stockpiling of 1,600,000 m<sup>3</sup> of clean fill material for the MPW Project as part of the Early Works. The proposed modifications described above necessitate amendments to the MPW Concept Plan Approval conditions, which are identified below. Words proposed to be deleted are shown in ~~**bold italic strike through**~~ and words to be inserted are shown in **underlined bold italics**.

#### Schedule 2 – Terms of Approval

##### Development Description

- **(1)**: Except as amended by the conditions of this consent, development consent is granted only to the Concept Proposal and Early Works as described in Schedule 1 and the Environmental Impact Statement dated October 2014, as amended by the Response to Submissions, dated May 2015 (as further amended by the Supplementary Response to Submissions dated August 2015), **the Section 96(2) Modification Report, dated May 2016**, and the conditions contained in this development consent.

...

##### Development in Accordance with Plans and Documents

- **(4)**: The applicant shall carry out the development generally in accordance with the:
  - a) Environmental Impact Statement titled Moorebank Intermodal Terminal Project Environmental Impact Statement, prepared by Parsons Brinckerhoff Australia Pty Limited, dated October 2014;
  - b) Response to Submissions report titled, Moorebank Intermodal Terminal Response to Submissions Report, prepared by Parsons Brinckerhoff Australia Pty Limited, dated May 2015;

c) Supplementary Submissions report titled, Moorebank Intermodal Terminal Supplementary Response to Submissions Report, prepared by Parsons Brinckerhoff Australia Pty Limited, dated August 2015; **and**

**d) The Section 96(2) Modification Report prepared by Arcadis Australia Pacific Pty Ltd, dated May 2016; and**

~~d) e)~~ the conditions of this consent.

(5): In the event of an inconsistency between: (a) the conditions of this approval and any document listed from condition 4(a) to ~~4(e) 4(d)~~ inclusive, the conditions of this approval shall prevail to the extent of the inconsistency; and (b) any document listed from condition 4(a) to ~~4(e) 4(d)~~ inclusive, and any other document listed from condition 4(a) to ~~4(e) 4(d)~~ inclusive, the most recent document shall prevail to the extent of the inconsistency.

...

### Schedule 3 – Conditions to be met for Early Works (Stage 1)

#### Construction hours

- **D5:** Early works, **excluding works for the import, placement and stockpiling of fill as described in the Section 96(2) Modification Report (dated May 2016),** shall be undertaken during the following standard construction hours: (a) 7:00am to 6:00pm Mondays to Fridays, inclusive; and (b) 8:00am to 1:00pm Saturdays; (c) at no time on Sundays or public holidays.

**Works for the import, placement and stockpiling of fill shall be undertaken during the hours identified in Table 1.**

**Table 1 Proposed working hours**

Day	Proposed Hours	Activities
Weekdays	6:00am – 7:00am	<ul style="list-style-type: none"> <li>• Material Delivery.</li> </ul>
	7:00am – 6:00pm	<ul style="list-style-type: none"> <li>• Material Delivery</li> <li>• Direct Placement; and</li> <li>• Stockpiling; and</li> <li>• Crushing.</li> </ul>
	6:00pm – 10:00pm	<ul style="list-style-type: none"> <li>• Material Delivery; and</li> <li>• Direct Placement; or</li> <li>• Stockpiling.</li> </ul>
Saturdays	7:00am – 8:00am	<ul style="list-style-type: none"> <li>• Material Delivery; and</li> <li>• Direct Placement; or</li> <li>• Stockpiling.</li> </ul>
	8:00am – 1:00pm	<ul style="list-style-type: none"> <li>• Material Delivery</li> <li>• Direct Placement; and</li> <li>• Stockpiling; and</li> <li>• Crushing.</li> </ul>
	1:00pm – 6:00pm	<ul style="list-style-type: none"> <li>• Material Delivery; and</li> <li>• Direct Placement; or</li> <li>• Stockpiling.</li> </ul>



## 4 PLANNING ASSESSMENT

Section 96(3) of the EP&A Act requires a consent authority to take into consideration such of the matters referred to in s 79C(1), as they are of relevance to the development the subject of the application. This includes consideration of any environmental planning instruments and legislation applicable to the land that is the subject of the proposed modification. The following sections consider the legislation and plans relevant to the Modification Proposal.

### 4.1 Statutory planning assessment

A summary of the Commonwealth, State and Local Government legislation which are relevant to the MPW Concept Plan Approval and Modification Proposal are summarised in Table 4-1.

Table 4-1: Legislation applicable to the MPW Project and Modification Proposal

Legislation	Associated environmental concerns	Approval or assessment requirement
<b>Commonwealth</b>		
<i>Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)</i>	Impacts to Matters of National Environmental Significance (MNES), particularly disturbance to listed threatened species, ecological communities and/or migratory species, and impact(s) on Commonwealth land.	The MPW Project was declared a controlled action by the Commonwealth Minister of the Environment as it will be undertaken by, or on behalf of the Commonwealth and will result in impacts to listed threatened species.  Approval for the MPW Project by the Commonwealth Minister for the Environment is anticipated to be granted in 2016 (No. 2011/6086). Subject to the implementation of the conditions of approval for this EPBC Approval, no additional assessment or approval is required under the EPBC Act for the Modification Proposal.
<b>State</b>		
<i>EP&amp;A Act</i> <i>EP&amp;A Regulation</i> <i>State Environmental Planning Policy (Infrastructure) 2007</i> <i>State and Regional Development SEPP</i>	Planning approval pathway determination and any potential impacts on the environment.	The MPW Concept Plan Approval (SSD_5066) for the MPW Project was granted on 3 June 2016 by the Department of DPE.  Modification to the MPW Concept Plan Approval is sought under s 96(2) of the EP&A Act. Refer to further discussion in Section 4.2 which includes an assessment of whether the modified project can be considered 'substantially the same development' under s96(2) of the EP&A Act.

Legislation	Associated environmental concerns	Approval or assessment requirement
<p><i>Protection of the Environment Operations Act 1997 (POEO Act)</i></p>	<p>Impacts of the operation of the Proposal relating to air quality, noise emissions and discharge of polluted water.</p>	<p>The Modification Proposal would require crushing, grinding or separating of materials, which is an activity listed under Schedule 1 of the POEO Act. Therefore an Environmental Protection Licence (EPL) would be required for the Modification Proposal.</p> <p>The potential need for an EPL for the MPW Project was identified within the MPW Concept Plan EIS.</p>
<p><i>Contaminated Land Management Act 1997 (CLM Act)</i></p> <p><i>State Environmental Planning Policy No. 55- Remediation of Land (SEPP 55)</i></p>	<p>Disturbance of contaminated land and potential for further soil contamination</p>	<p>The MPW Concept Plan Approval included Phase 1 and Phase 2 Environmental Site Assessments (ESAs) for the IMT facility site and a Phase 1 ESA for the Rail link connection. The Early Works will remediate a considerable amount of the existing on-site contamination.</p> <p>Assessment of the contamination potential within the area of impact is included in Section 5.2 and Appendix C of this Modification Report. Impacts would be the same as those identified within the Concept Plan EIS and SRtS documentation and contamination would be managed in accordance with the REMMs and MCoAs during the Modification Proposal works.</p>
<p><i>National Parks and Wildlife Act 1974 (NPW Act)</i></p>	<p>Disturbance of any objects or places of Aboriginal heritage significance</p>	<p>Under Section 89J of the EP&amp;A Act development applications assessed as SSD do not require an Aboriginal heritage impact permit (AHIP) (under section 90 of the NPW Act).</p> <p>The MPW Concept Plan EIS included an Aboriginal Heritage Impact Assessment for the MPW site. The Early Works includes Aboriginal Heritage investigation and salvage that would remove known items of Aboriginal heritage from within the area of impact. A review of potential impacts on Aboriginal heritage as a result of the Modification Proposal is included in Section 5.7 and Appendix H of this Modification Report. The assessment concluded that works would not impact on items of Aboriginal heritage in addition to those identified within the Early Works.</p>

Legislation	Associated environmental concerns	Approval or assessment requirement
<i>Threatened Species Conservation Act 1995</i> (TSC Act)	Disturbance to listed threatened species and ecological communities	The MPW Concept Plan Approval included an Ecological Impact Assessment for the MPW site and surrounds. The Early Works would remove vegetation within the Early Works footprint (shown in Figure 2). The Modification Proposal would result in some clearing of some native vegetation in addition to that identified for the Early Works; however no clearing of EECs or threatened species would occur.
<i>Noxious Weeds Act 1993</i> (NW Act)	Spread and impact of weeds	Spread and impact of noxious weeds within the MPW site associated with the Modification Proposal would be managed in accordance with the REMMs and MCoAs for the MPW Concept Plan and Early Works. Impacts above those assessed for the Early Works are not predicted.
<i>Fisheries Management Act 1994</i> (FM Act)	Disturbance to aquatic flora and fauna	The Modification Proposal would not result in any disturbance to aquatic flora and fauna.
<i>Water Act 1912</i> (Water Act) <i>Water Management Act 2000</i> (WM Act)	Disturbance of groundwater aquifers, impacts to flooding behaviour and/or water quality of surrounding water bodies	Under Section 89J of the EP&A Act, development applications assessed as SSD do not require a permit under section 89, 90 or 91 of the WM Act.  The Modification Proposal would not result in any disturbance to groundwater or require works on waterfront land and no change to the assessments presented within the MPW Concept Plan EIS, RtS and SRtS for Early Works are predicted.
<i>Roads Act 1993</i> (Roads Act)	Impacts of the construction and/or operation of the Proposal on traffic flows and works to public and private roads.	Under Section 89K of the EP&A Act consent under Section 138 of the <i>Roads Act</i> cannot be refused if it is necessary for the carrying out of a SSD authorised by a development consent.  The Modification Proposal would require minor works on Moorebank Avenue to facilitate site access. Any Road occupancy licences needed would be acquired as per REMM 4M (refer Section 5.1.3).

Legislation	Associated environmental concerns	Approval or assessment requirement
<i>Heritage Act 1977</i> (Heritage Act)	Disturbance to any object that is of state or local heritage significance	<p>Under Section 89J of the EP&amp;A Act, development applications assessed as SSD do not require a permit under section 139 of the Heritage Act. The MPW Concept Plan EIS included a European Heritage Impact Assessment for the impacts of the MPW Project. The approved Early Works includes a considerable amount of non-indigenous heritage management and salvage.</p> <p>The Modification Proposal would not include any additional impacts to items of Non-Aboriginal heritage, beyond those approved for Early Works. Non-Aboriginal heritage impacts are discussed in Section 5.8, below and included in Appendix H.</p>
<i>Waste Avoidance and Resource Recovery Act 2001</i> (WARR Act)	Waste management and potential opportunities for diversion of waste from landfill	<p>A Waste and Resource management assessment was undertaken for the MPW Project as part of the Concept Plan Approval. The Early Works includes the demolition of a number of building and selected vegetation clearance.</p> <p>A waste impact assessment for the Modification Proposal is included in Section 5.9 of this report. Actions to mitigate waste impacts associated with the Modification Proposal works would be consistent with those included in the REMMs and MCoAs for the Early Works.</p>
<i>Rural Fires Act 1997</i> (Rural Fires Act)	Bushfire management/prevention and ensuring the site is suitably protected from the threat of bushfires	<p>Under Section 89J of the EP&amp;A Act development applications assessed as SSD do not require a bush fire safety authority (under section 100B of the Rural Fires Act). An assessment of the MPW Project against the relevant factors for bushfire risk was undertaken within the Hazards and Risks Assessment prepared as part of the application for Concept Plan Approval.</p> <p>Bushfire risk associated with the Modification Proposal would be managed in accordance with the REMMs and the MCoAs for the Early Works.</p>
<i>State Environmental Planning Policy No. 33- Hazardous and Offensive Development</i> (SEPP 33)	Management of hazardous and dangerous goods	<p>A Hazard and Risks Assessment was prepared for the MPW Project as part of the application for MPW Concept Plan.</p> <p>The Modification Proposal would not result in a change to the approved land use for the MPW site and is consistent with the hazards and risks considered for the Early Works.</p>

Legislation	Associated environmental concerns	Approval or assessment requirement
<p><i>State Environmental Planning Policy No. 64- Advertising and Signage (SEPP 64)</i></p>	<p>Location and design of signage and impact on the surrounding visual environment</p>	<p>A Visual Impact Assessment was undertaken as part of the assessment for Concept Plan Approval. The Early Works includes the demolition of a number of building and selected vegetation clearance which would alter the visual environment of the MPW site.</p> <p>The Modification Proposal would result in the clearing of some additional vegetation within the MPW site; however, the screening vegetation along Moorebank Avenue and the Georges River would be maintained. The Modification Proposal would not result in any further signage above that identified within the Concept Plan Approval. Visual impacts in addition to those predicted for the Early Works are not therefore expected during the Modification Proposal works.</p>
<p><i>Greater Metropolitan Regional Environmental Plan No 2 – Georges River Catchment</i></p>	<p>Drainage and site runoff including potential impacts on water quality and flooding of the Georges River Catchment</p>	<p>The Concept Plan Approval included a Surface Water Assessment for the MPW Project and impacts on surrounding water bodies. The Early Works includes the demolition of a number of building and selected vegetation clearance which may change the existing drainage patterns on the MPW site.</p> <p>An assessment of water quality impacts has been undertaken for the Modification Proposal, and is included in Section 5.3 and Appendix D of this report. With the implementation of the mitigation measures identified, impacts above those predicted for the approved Early Works are not expected.</p>
<p><b>Local</b></p>		
<p><i>Liverpool Local Environment Plan 2008</i> (Liverpool LEP)</p>	<p>Impact on the environment and the built form of the Liverpool Local Government Area</p>	<p>The MPW Concept Plan EIS included consideration of the Liverpool LEP. A Planning Proposal for rezoning of the MPW site to amend the LEP has yet to be gazetted.</p> <p>The Modification Proposal would not alter the ultimate land use approved under SSD_5066 or alter the compliance of the MPW Project with the planning controls under the LEP.</p>
<p><i>Liverpool Development Control Plan 2008</i> (Liverpool DCP)</p>	<p>Impact on the environment and the built form of the Liverpool Local Government Area</p>	<p>The MPW Concept Plan EIS included consideration of the Liverpool DCP. As the project is SSD under Part 4, Division 4.1 of the EP&amp;A Act, consideration of the Liverpool DCP is not required.</p> <p>Works for the Modification Proposal would be undertaken in accordance with the REMMs and the MCoAs for the MPW Project, which are largely consistent with the requirements under the DCP for construction activities,</p>

Legislation	Associated environmental concerns	Approval or assessment requirement
		including the preparation of a Soil and Water Management Plan (SWMP), Construction Traffic Management Plan and the protection of trees identified for retention.

## 4.2 Substantially the same development

Section 96(2) of the EP&A Act allows a consent authority to modify a development consent, provided that *‘it is satisfied that the development to which the consent as modified relates is substantially the same development as the development for which consent was originally granted and before that consent as originally granted was modified (if at all).’*<sup>1</sup>

Overall, the proposed modification will maintain the MPW Concept Plan as approved under SSD\_5066 and will not alter the approved land use as an IMT and warehousing facility. The works required as part of Early Works for the MPW Project have been further refined and it has been identified that works to raise the MPW site are required to achieve the desired stormwater outcomes, meet geotechnical requirements, and minimise offsite disposal of contaminated waste materials. The additional works would result in a temporary intensification of construction works approved under Early Works of SSD\_5066. An assessment of environmental impacts associated with this intensification is provided below (Section 5). The assessments have concluded that, with the implementation of appropriate mitigation measures, environmental impacts associated with the proposed modification would be minor and of a short duration.

The proposed modification does not result in any change of use or intensified use of the MPW site and preserves the approved land use of the site, hence approval for the modification is sought under s96(2) of the EP&A Act.



## 5 ENVIRONMENTAL ASSESSEMENT

### 5.1 Traffic and transport

A Construction Traffic Impact Assessment has been prepared by Arcadis (2016), included at Appendix B, to consider additional traffic impacts associated with the Modification Proposal.

#### 5.1.1 MPW Concept Plan Approval

A Transport and Accessibility Impact Assessment report was prepared by Parsons Brinkerhoff (2014) as part of the MPW Concept Plan EIS to assess the potential impacts to traffic from the MPW Project, including those associated with Early Works. The main objective of the assessment was to ensure that the traffic conditions resulting from the MPW Project would not be “significantly worse” than traffic conditions without the MPW Project.

The assessment methodology considered the surrounding road and rail network, in addition to other public and active transportation infrastructure and the effect of construction activities at various stages of the Project culminating to the “full build” scenario in 2030. The assessment comprised of a strategic transport model to provide traffic forecasts, and intersection performance modelling (SIDRA) to forecast the operation of the network for the various design stages. Early works activities, which included construction impacts generated from remedial earthworks and building demolition (not bulk earthworks), was assessed as Scenario 1 (2015) to occur prior to the Moorebank Avenue upgrade. Bulk earthworks activities were assessed under Phase A, assuming Moorebank Avenue is under construction.

Daily traffic movements (cars and heavy vehicles) generated as a result of Early Works activities were considered to be minor for both morning and evening periods assessed when compared to the expected traffic conditions without the MPW Project.

A comparison of level of service (LOS) values for main intersections with and without Early Works show that increased traffic volumes along Moorebank Avenue during Early Works construction would slightly reduce the performance of the Moorebank Avenue/Anzac Road and Moorebank Avenue/DNSDC Access intersections during the evening peak periods. This impact however is anticipated to be relieved following the proposed upgrade to Moorebank Avenue.

The MPW RtS and MPW SRtS documentation included additional investigations relating changes to the Project, yet did not include any additional investigations that resulted in adjustments to traffic impacts imposed by Early Works as presented in the initial EIS (PB, 2014).

## 5.1.2 Impact assessment

### Traffic generation

A *Construction Traffic Impact Assessment* was prepared by Arcadis (2016) to consider additional traffic impacts associated with the Modification Proposal (refer to Appendix B). Key additional activities impacting traffic conditions during Early Works that were not assessed in the MPW Concept Plan Assessment include the import, placement and stockpiling of approximately 1,600,000 m<sup>3</sup> of clean fill.

Existing 2015 traffic volumes<sup>4</sup> were multiplied with a 1.8% per annum (compound) growth rate to estimate the worst-case 2017 background traffic volumes for the surrounding road network for the peak one hour morning (8-9AM) and evening (5-6PM) periods.

A worst case scenario of truck and light vehicles entering the MPW site (to and from Moorebank Avenue) as a result of the Modification Proposal was generated. It was estimated that over the six to nine months of the Modification Proposal, approximately 190 light vehicle trips per day (two-way) and 1,490 heavy vehicle trips per day (two-way) would occur. These trips were primarily to facilitate the movement of clean fill to the MPW site for bulk earthworks and for the movement of construction workers and delivery vehicles.

All trucks are expected to travel from the north via the Moorebank Avenue/M5 Motorway with the exception of 16 daily trips (two way) to and from the Glenfield Waste Facility for disposal of contaminated material. No construction trucks are expected to travel via Anzac Road.

Traffic impacts incurred by the Modification Proposal on the surrounding road network were assessed in consideration of traffic generated from the Modification Proposal.

The impact assessment was conducted for the following key intersections:

1. M5 Interchange/Moorebank Avenue (signalised intersection)
2. Bapaume Road/Moorebank Avenue (priority intersection)
3. Anzac Road/Moorebank Avenue (signalised intersection)
4. Northern access: MPW Access Road/Moorebank Avenue (approximately 118 m south of the DNSDC signalised intersection) (signalised intersection).
5. Southern access: Chatham Avenue/Moorebank Avenue intersection (signalised intersection)

The assessment proposes the majority of construction traffic would enter the MPW site via the Chatham Avenue/Moorebank Avenue intersection (southern access) and exit via the northern access. However, the proposed layout provides flexibility for all movements (exit and entry) at both the northern and southern access points. Three scenarios have been assessed, providing multiple access combinations, as detailed in Table 5-1.

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<sup>4</sup> Existing traffic volumes were based on surveys undertaken for SIMTA, MIC and Roads and Maritime's wider Liverpool Moorebank Arterial Road Investigations (LMARI) traffic model

Table 5-1 Traffic scenarios

Scenario	Modification Proposal Traffic	Northern access	Southern access
1	Construction Activities	Exit (100% of traffic)	Entry (100% of traffic)
	ACM Removal	Nominal traffic volumes	Entry/Exit (100% of traffic)
2	Construction Activities	Nominal traffic volumes	Entry/Exit (100% of traffic)
	ACM Removal	Nominal traffic volumes	Entry/Exit (100% of traffic)
3	Construction Activities	Entry/Exit (100% of traffic)	Nominal traffic volumes
	ACM Removal	Nominal traffic volumes	Entry/Exit (100% of traffic)

Note: Nominal traffic volumes has been assumed for the intersection analysis for a conservative assessment.

Traffic forecasts generated for the Modification Proposal in isolation were calculated. It was concluded that the traffic impacts created by the Modification Proposal in peak periods are relatively minor compared to existing traffic volumes on Moorebank Avenue.

Traffic impacts generated by the Modification Proposal in isolation for key access roads and intersections were analysed using the SIDRA traffic analysis software (version 7). The following conclusions were reported:

- The existing intersections 1, 2 and 3 would operate satisfactorily at level of service C or better in both AM and PM peak hour period during the construction period.
- The intersections 4 and 5 would operate at level of service B in both AM and PM peak periods. The SIDRA analysis indicated that construction traffic from the proposed access points would not adversely impact through traffic on Moorebank Avenue.

The analysis determined that no upgrades are required at intersections 1, 2 and 3 due to the addition of the Modification Proposal construction traffic. The impact of the construction traffic is anticipated to be minor at intersections 4 and 5.

### Cumulative impacts

A cumulative construction traffic impact assessment was also undertaken to identify predicted traffic generation impacts from the concurrent construction of:

- Early Works
- MPE Stage 1
- MPW Modification Proposal.

Traffic impacts for cumulative impacts at key access roads and intersections were analysed using the SIDRA traffic analysis software (version 7). The following conclusions were reported:

- The existing intersections 1, 2 and 3 would operate satisfactorily at level of service C or better in both AM and PM peak hour period during the construction period.
- The intersections 4 and 5 would operate at level of service C in both AM and PM peak periods. The SIDRA analysis indicated that construction traffic from the

proposed access points would not adversely impact existing through traffic on Moorebank Avenue.

Overall, the SIDRA analysis indicates that construction traffic from the proposed access points, in consideration of surrounding cumulative construction works would not adversely impact through traffic on Moorebank Avenue.

### Other potential traffic impacts

In addition to traffic generation, additional assessment has been undertaken for access to the site and surrounding roads, road safety, car parking and public and active transport. Results of this assessment are summarised in Table 5-2.

Table 5-2: Other traffic considerations assessment

Transport type	Impact assessment
<b>Access/Egress</b>	Existing signalised intersections will provide access to the MPW site to accommodate cumulative construction traffic as a result of the Modification Proposal, MPW Early Works and SIMTA Stage 1 (assumed to occur in 2017). Analysis shows cumulative traffic volumes do not significantly impact the performance of proposed intersection layouts.
<b>Road safety</b>	Increased traffic may exacerbate existing road safety issues at Cambridge Avenue, namely poor forward sight distance, inadequate road shoulders and inadequate width of the causeway. A Road Safety Audit on Cambridge Avenue is recommended to mitigate impacts associated with the Modification Proposal.
<b>Parking</b>	The number of parking bays proposed to be provided would accommodate the peak number of workers. No impacts are anticipated.
<b>Public Transport</b>	There is one southbound bus service in each peak hour that runs past the MPW site and one northbound bus that runs along Moorebank Avenue.  No impacts are anticipated, provided works impacting the carriageway on Moorebank Avenue are undertaken outside of peak hour periods.
<b>Pedestrians and cyclists</b>	Potential impacts include cyclists coming in contact with trucks, and maintaining safety within the interface between the desired walking lines from the main car park to the construction site across the truck egress.
<b>General road access</b>	<p><b>Road access restrictions</b></p> <ul style="list-style-type: none"> <li>• Signposting to be developed to prevent movement of construction vehicles through residential noise receivers.</li> </ul> <p><b>Local property access</b></p> <ul style="list-style-type: none"> <li>• Existing local access to be maintained during construction. MPW site access would be controlled primarily by signals, or via traffic controller (for larger vehicle access). Signage would be installed to prevent unauthorised access.</li> </ul> <p><b>Emergency vehicle access</b></p> <ul style="list-style-type: none"> <li>• It is proposed that all access points for the MPW site be made available for emergency vehicle access. This is unlikely to have an impact on the surrounding road network.</li> </ul>

In summary, it has been identified that:

- The Modification Proposal would not generate significant additional traffic volumes when compared to existing volumes along Moorebank Avenue during peak periods.
- No upgrades are anticipated to be required at the following intersections as a result of the Modification Proposal:
  - M5 Interchange/Moorebank Avenue (signalised intersection)
  - Bapaume Road/Moorebank Avenue (priority intersection)
  - Anzac Road/Moorebank Avenue (signalised intersection)
- The impacts to the following intersections are predicted to be minor:
  - Southern access: Chatham Avenue/Moorebank Avenue intersection (signalised intersection)
  - Northern access: MPW Access Road/Moorebank Avenue (approximately 118 m south of the DNSDC signalised intersection) (signalised intersection).
- The Modification Proposal would not adversely affect existing through traffic conditions when considered in conjunction with MPE Stage 1 and MPW Early Works.

### 5.1.3 Mitigation measures

As required under MCoA D20(a) a Construction Traffic and Access Management Plan (CTAMP) would be prepared, detailing management controls to be implemented to avoid or minimise impacts to traffic, pedestrian and cyclist access, and the amenity of the surrounding environment. The CTAMP would be approved by the DPE prior to commencement of construction and would be implemented during the Modification Proposal. Specific components, additional to those presented in the MCoA (refer Table 10), of this plan would include:

- Review of speed restrictions along Moorebank Avenue and additional signposting of speed limitations
- Installation of specific warning signs at entrances to the construction site to warn existing road users of entering and exiting construction traffic
- Establishing pedestrian walking routes and crossing points
- Distribution of day warning notices to advise local road users of scheduled construction activities
- Installation of appropriate traffic control and warning signs for areas identified where potential safety risk issues exist
- The promotion of car-pooling for construction staff and other shared transport initiatives during the pre-construction phase
- Management of the transportation of materials to maximise vehicle loads and therefore minimise vehicle movements.

Mitigation measures identified within the MPW SRtS and the MCoA for the MPW Concept Plan Approval are applicable to the management of traffic impacts and would be implemented during the Modification Proposal are listed in Table 5-3.

Table 5-3: Mitigation measures within the REMMs applicable to traffic management for the Proposal

REMM	Mitigation measure
The following mitigation measures would be implemented as part of the traffic management plans to be prepared for the Project:	
REMM 4I	Reducing the volumes of construction vehicles travelling during peak periods, especially if the increase in traffic generated by construction activities impedes on the operation of Moorebank Avenue.
REMM 4J	Maintain access to neighbouring properties. It is particularly important that the ABB site has access throughout the construction stages.
REMM 4K	In addition to the Community Engagement Plan (or equivalent) (Refer to 2A), a communication plan will be developed to provide information to the relevant authorities and bus operators in addition to the local community. The communication plan will need to incorporate a contact list with the chain of command.
REMM 4L	Implement relevant traffic control measures to inform drivers of the construction activities and locations of heavy vehicle access locations.
REMM 4M	Obtain Road Occupancy Licences (ROLs) as necessary.
REMM 4O	Traffic on Moorebank Avenue would be monitored during peak periods to ensure that queuing at intersections does not impact on other road users.

Additional mitigation measures are proposed below:

- Road Safety Audit on Cambridge Avenue to be undertaken prior to the commencement of the Modification Proposal works period to identify the traffic safety risks and determine appropriate mitigations which would need to be implemented (e.g. truck movements to occur outside peak hours, driver awareness and safety training, speed monitoring and reporting protocols, etc.).
- Proposed Chatham Avenue/Moorebank Avenue intersection. To accommodate construction traffic as a result of the Modification Proposal, this intersection is proposed to be a signalised 3-leg intersection. The lane configuration at this intersection is proposed to remain unchanged from the existing layout on Moorebank Avenue with the exception of an increase in the turn storage length for the north approach from 20 m to 200 m. It should be noted that the SIDRA analysis has indicated that 70 m would be adequate storage length for the right-turn movement on the north approach. However, a storage length of 200 m would be provided to enhance vehicular access to the site. On the south approach, the left-turn storage length is recommended to be increased from 15 m to 25 m. The proposed changes are able to be implemented within the current right-of-way of the road. The proposed changes are able to be implemented within the current right-of-way of the road.
- Proposed MPW Access Road/Moorebank Avenue intersection. As a result of the Modification Proposal, the intersection is proposed to be a 3-leg signalised seagull intersection with the western approach facilitating access for construction traffic generated by the Modification Proposal. With the signalised seagull intersection, southbound through movements are not impeded i.e. free-flowing to provide increased intersection throughput. On the north approach, a right turn storage

length of 85 m is recommended to facilitate heavy vehicle access to the MPW site. Two full approach lanes (one for left-turn movement and one lane for northbound through movement) on the south approach are recommended.

In summary, through the implementation of the mitigation measures approved for the MPW Concept Plan identified above along with the additional measures outlined, traffic impacts associated with the Modification Proposal are expected to be adequately managed in addition to those predicted within the MPW Concept Plan EIS.

## 5.2 Soils and contamination

A Geotechnical and Contamination Memorandum has been prepared by Golder Associates (2016), included at Appendix C, to consider additional impacts of the Modification Proposal on soils and contamination.

### 5.2.1 MPW Concept Plan Approval

A Phase Two Environmental Site Assessment (2014a) was prepared by Parsons Brinkerhoff (PB) for the MPW Concept Plan EIS, and included an assessment of contamination and soil related impacts as a result of the Early Works activities. The following key conclusions were made regarding the geology and soils of the MPW site for Early Works and surrounding areas:

- The site and surrounding area is underlain by tertiary fluvial deposits composed of clayey sand and clay to depths of 10 m in places. Significantly different performance can be expected between the granular (i.e. sand) and cohesive (i.e. clay) material as a subgrade/stockpile foundation
- The recent alluvial soils within or close to the Georges River are characterised by high acid sulphate soils risk potential
- Anthropogenic fill material is present around the MPW site as a result of prior development, and is not considered suitable as a foundation material given its current condition. It is varying in its depth (between 0.5 and 1 metres below ground level (BGL) in some locations, while over 3.2 metres BGL in others), and inclusions (may include timber, steel and concrete building debris and general rubbish)
- Asbestos cement fragments have been detected in surface soils on the Proposal site
- The underlying soils of the Modification area of impact are of the Berkshire Group, and have very high wind erosion potential if left uncovered. Across the Proposal site, there is a potential for erosion of soils exposed through vegetation clearing, material stockpiling, drainage lines and earthworks, and sedimentation into the surrounding Georges River and Anzac Creek.

By nature, Early Works activities include remediation of contaminated land, i.e. identified hotspots. The Early Works footprint is therefore bound by the extent of contamination hotspots and areas of concern identified within the investigations undertaken for the MPW Concept Plan Approval and post approval in the Remediation Action Plan (as required by MCoA B3 in the MPW Concept Plan Approval). Early desktop investigations identified a potential for subsurface contamination to have occurred as a result of prior land uses (military training, demolition and reconstruction of buildings, use and storage of potentially harmful chemicals) across the whole MPW site, including land to be used for Early Works. Subsequent intrusive soil sampling, presented in the Phase Two Environmental Site Assessment (PB, 2014a) identified the following findings:

- Several localised areas of soil contamination with concentrations of hydrocarbons, dissolved metals and heavy metals detected above the adopted (commercial/industrial) screening criteria
- Soils with acid generating potential (potential acid sulphate soils (PASS)) located within the Georges River riparian corridor
- Several anthropogenic fill material locations, containing building rubble, plastics, bricks, concrete and asbestos containing materials (ACMs) (fragments, sheeting, pipes/conduit)
- Areas with potentially contaminating infrastructure (underground fuel storage systems, waste oil tanks and water separators).

A Post-Phase Two Environmental Site Assessment (2015) was undertaken by Golders Associates as part of the MPW SRtS document to supplement the findings made in previous investigations, and to inform a site Validation Plan and Remediation Specification in guiding specific actions required to validate the MPW site for future use (commercial/industrial purposes). It was concluded that overall, the majority of the MPW site contains a low risk of contamination, or had contaminant concentrations below the adopted (commercial/industrial) screening criteria. As part of Early Works, specific remediation activities would include:

- The demolition, excavation and remediation of known underground storage infrastructure and associated contaminated soils impacted with petroleum hydrocarbons
- The excavation and remediation of known stockpiles of building demolition waste and/or asbestos contaminated soils
- The excavation and remediation of known areas of soil contamination ('hotspots') including soils impacted with lead, and petroleum hydrocarbons at concentrations which present an unacceptable risk to the future use of the site
- The assessment and if required remediation of materials suspected of being contaminated with polychlorinated bi-phenols (PCBs), organochlorine pesticides (OCP) and per- and poly-fluorinated alkyl substances (PFAS)
- The assessment and if required remediation of underground utilities suspected as either being made of or suspected of containing hazardous or contaminated materials.

In general, remaining isolated areas of land contamination on the MPW site, not remediated by Early Works, includes areas occurring within EEC areas, in addition to management of broadscale ongoing contamination risks.

## 5.2.2 Impact assessment

The area of impact for the Modification Proposal, which includes the primary earthworks area, predominately overlaps the indicative footprint for Early Works and existing cleared areas within the MPW site.

The Concept Plan Approval for Early Works assumed that fill material required would be relatively minor as it would be largely sourced from on-site excavations (i.e. cut to fill). Subsequent investigations have identified that approximately 1,600,000 m<sup>3</sup> of clean fill would require importation to the MPW site to satisfy finished surface levels, in addition to other site preparatory works, including the import, placement and stockpiling of clean fill for future stages of development. These additional importation of fill and earthworks activities are the subject of the Modification Proposal. Golder Associates (2016) have prepared a *Geotechnical and Contamination Memorandum* (Refer Appendix C) in order to assess the impact of Modification activities on soils and

contamination aspects associated with the MPW site, which have been summarised below.

For further detail regarding the impacts of the Modification Proposal associated with drainage, stormwater quality and flooding, please refer to Section 5.3.

## Soils

Impacts to soils created by the Modification Proposal would be centred on the importation, placement and stockpiling of clean, sandstone fill to the primary earthworks area. These activities have the potential to create the following impacts across the MPW site and surrounding areas:

- Erosion of the levelled site
- Generation of sediment laden runoff and potential impacts on Anzac Creek and Georges River
- Fouling of stockpiled material through the unwanted growth of vegetation
- Dust generation during periods of rain and/or high winds, thereby degrading the quality of surrounding environments.

The primary earthworks area to be raised would be made ready through clearing (where not undertaken as part of the Early Works) and grubbing, grading, levelling, moisture conditioning and compaction of the upper layer of placed fill within the primary earthworks area. The large volume of soil entering the MPW site for Modification works, despite the flat topography, means the primary earthworks area may become susceptible to a high erosion risk if not properly managed. Stockpiles located in the primary earthworks area would be placed, prepared and compacted in accordance with the *Earthworks Specification*<sup>5</sup> to minimise erosion impacts created from loose materials, steep slopes and drainage conditions.

The large surface area and length of time upon which stockpiled materials will be placed onsite may lead to the unwanted spread and growth of vegetation degrading the quality of the stockpiled material (fouling), which will be addressed through the *Earthworks Specification*.

Construction works undertaken as part of the Modification Proposal are unlikely to expose acid sulfate soils or potential acid sulfate soils, as the area of impact for Modification works lies outside of the Georges River riparian corridor.

## Contamination

The Early Works includes the remediation of known contaminated land and hotspots, including areas known to contain asbestos, and the removal of:

- Underground storage tanks (USTs)
- Unexploded ordnance (UXO) and explosive ordnance waste (EOW) if found
- Asbestos contaminated buildings.

It is therefore expected that contamination remediation works, if any, required as part of the Modification would be minor in nature. In particular, there is the potential that that anthropogenic fill containing asbestos could be uncovered during Modification works. Exposure and disposal of contaminated soil, if not managed appropriately could result in further spread of contaminants into the surrounding environment, including groundwater, or potentially impact the health and wellbeing of construction workers.

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<sup>5</sup> This specification is to be prepared as a mitigation measures, refer to Section 5.2.3.

Further, works included in the Modification Proposal will include the stripping of topsoil and surficial soils within the primary earthworks area as part of site preparation activities. This material may contain UXO/ EOW waste and/or ACM material not identified during previous investigations, which may create impacts to human health through direct exposure or to the wider environment through interface with surrounding soils or groundwater.

Management of potential human-health and environmental impacts arising from topsoil and surficial soil stripping will be managed through the implementation of the REMMs identified for the Concept Plan Approval.

It is not anticipated that Modification works including additional site preparatory works will pose any added contamination threat that has not previously been identified under the Concept Plan Approval. Conversely, it is considered that the activities seeking approval under the Modification would benefit the Proposal in a number of ways, including:

- Provision of a more consistent, less moisture sensitive working platform
- Provision of a more consistent cross-sectional layer for which pavement design can be developed, which may translate to economic savings in pavement design.

Fundamentally, the proposed modification would result in development that is substantially the same as that described within the MPW Concept Plan Approval and the changes would not alter the development of the IMT facility and warehousing.

### 5.2.3 Mitigation measures

As required under MCoA D20(e) a Soil and Water Management Plan (SWMP) would be prepared, providing management measures to be carried out in relation to managing the movement and storage of fill imported to the MPW site. The SWMP would be approved by the DPE prior to commencement of construction and would be implemented during the Modification Proposal.

A summary of mitigation measures from the REMMs, previously included within the MPW Concept Plan Approval that would be implemented during the Modification Proposal works to mitigate potential impacts on soil and contamination are shown in Table 5-4.

*Table 5-4: Mitigation measures within the REMMs and MCoAs applicable to soils and land contamination for the Modification Proposal*

REMM / MCoA No.	Mitigation measure
REMM 8B	Before construction, a remediation program would be implemented in accordance with the Moorebank Intermodal Terminal Preliminary Remediation Action Plan (RAP) (or equivalent). The program will have been formally reviewed and approved by the Site Auditor under Part 4 of the NSW <i>Contaminated Land Management Act 1997</i> (CLM Act).
REMM 8C	A CEMP would be prepared by the contractor for all excavation and remediation works and would include requirements for decontamination facilities at the Project site.
REMM 8K	Stockpiled soils would be stored on a sealed surface and the stockpiled areas would be securely bunded using silt fencing to prevent silt laden surface water from entering or leaving the stockpiles or the Project site.
REMM 8M	All asbestos removal, transport and disposal would be performed in accordance with the <i>Work Health and Safety Regulation 2011</i> (WHS Regulation).
REMM 8N	The removal works would be conducted in accordance with the National Occupational Health and Safety Commission Code of Practice for the

REMM / MCoA No.	Mitigation measure
	Safe Removal of Asbestos, 2nd Edition [NOHSC 2002 (2005)] (NOHSC 2005a).
REMM 8O	An appropriate asbestos removal licence issued by WorkCover NSW would be required for the removal of asbestos contaminated soil.
REMM 8P	Environmental management and WHS procedures would be put in place for the asbestos removal during excavation to protect workers, surrounding residents and the environment.
REMM 8R	An asbestos removal clearance certification would be prepared by an occupational hygienist at the completion of the removal work. This would follow the systematic removal of asbestos containing materials and any affected soils from the Project site, and validation of these areas (through visual inspection and laboratory analysis of selected soil samples).
REMM 8U	Stockpiles would be placed at approved locations and would be strategically located to mitigate environmental impacts while facilitating material handling requirements. Contaminated or potentially contaminated materials would only be stockpiled in unremediated areas of the Project site or at locations that did not pose any risk of environmental impairment of the stockpile area or surrounding areas (e.g. hardstand areas).
REMM 8V	Stockpiles would only be constructed in areas of the Project site that had been prepared in accordance with the requirements of the Project Preliminary RAP in Appendix F of Technical Paper 5 – Environmental Site Assessment (Phase 2), Volume 5A and 5B. All such preparatory works would be undertaken before material is placed in the stockpile. Stockpiles must be located on sealed surfaces such as sealed concrete, asphalt, high density polyethylene or a mixture of these, to appropriately mitigate potential cross contamination of underlying soil.
REMM 8Y	Where required, contaminated materials and wastes generated from the Project remediation and construction works would be taken to suitable licensed offsite disposal facilities.

Additional mitigation measures proposed for the Modification Proposal include:

- Quality control aspects relating to permanent fill and risks associated with temporary stockpiling would be addressed and managed by a site specific earthworks specification (also known as the *Earthworks Specification*). This document is to be developed in consideration of the final design layout adopted, and operational requirements relating to the stockpiling during the construction stage.

Through the implementation of the mitigation measures approved for the MPW Concept Plan and the MCoA identified above, soil and contamination impacts associated with the Modification Proposal are expected to be consistent with the impacts predicted within the MPW Concept Plan EIS.

## 5.3 Hydrology and flooding

A Stormwater and Flooding Impact Assessment has been prepared by Arcadis (2016), included at Appendix D, to consider additional impacts of the Modification Proposal on stormwater (quality and quantity) and flooding.

### 5.3.1 MPW Concept Plan Approval

A Surface Water Assessment was prepared by Parsons Brinkerhoff (2014) for the MPW Concept Plan EIS to assess potential stormwater and flooding impacts, including those associated with Early Works. The assessment methodology involved desktop assessments supplemented by site walkovers, and considered a construction scenario based on assumed worst case disturbance of local water catchments.

The MPW site is located within the Georges River catchment, with the majority of the area draining into the Georges River. The existing drainage system, being retained for the Early Works activities, has stormwater generally conveyed via pits, pipes and open channels in a north-westerly direction across the MPW site and discharged into the Georges River. Only one of the existing stormwater pipe networks discharges elsewhere (into Anzac Creek). Based on the local topography, a number of land areas surrounding the MPW site partially drain into the site through open channels, box culverts, natural drainage lines and overland flows during differing rainfall events. These land areas include:

- MPE site, east of the MPW site
- M5 Motorway, north of the MPW site
- Moorebank Business Park, north-east of the MPW site
- ABB site, north of the MPW site.

The proposed drainage strategy for Early Works includes the provision of temporary sedimentation basins to contain dirty water onsite, which would discharge via outlets draining into the Georges River. In the presence of a comprehensive soil and water management plan and erosion and sediment control plans for the site (developed in accordance with '*Managing Urban Stormwater: Soils and Construction*', 4th edition (Landcom, 2004), Early Works would be expected to have a minor impact on surface water quality in the local stormwater catchments.

The establishment of a dedicated conservation area between the Georges River and the 1% AEP flood level would minimise the potential flood risk associated with the MPW site. Early Works activities would be located outside flood affected areas and would not be susceptible to regional flooding risk.

No further investigations were conducted as part of the MPW RtS or MPW SrtS documentation associated with Early Works activities.

### 5.3.2 Impact assessment

A Stormwater Assessment (Arcadis, 2016), at Appendix D, has been prepared to consider additional impacts of works included within the Modification Proposal with respect to hydrology and flooding.

The area of impact for the Modification Proposal is greater than the approximate footprint for Early Works, however land use activities including site preparation (clearing, topsoil stripping and stockpiling) are similar in nature to that approved for Early Works. The proposed Modification would result in an intensification of activities associated with Early Works, which would result in an intensification of erosion and sedimentation impacts previously identified for Early Works, including:

- Increased turbidity of waterways and drainage lines
- Increased nutrient loads to receiving waterways
- Changes to groundwater levels and systems
- Changed concentration of stormwater pollutants
- Changes to volume and velocities of surface water drainage
- Sedimentation of creeks and drainage lines.

Preliminary erosion and sedimentation plans (building upon those developed for Early Works) propose swales/earth banks to collect runoff from the top stockpile area, before transporting flows down the proposed batters via chutes into one of four sedimentation basins located adjacent to the Georges River riparian corridor on the western side of the MPW site. Settled clean water would then be discharged into the Georges River via existing stormwater systems.

Activities to be undertaken as part of the Modification Proposal would not expand the construction footprint any closer to the Georges River compared with that already assessed for the Concept Plan Approval, and therefore would not pose any additional flood risk to that already assessed.

### 5.3.3 Mitigation measures

Mitigation measures previously identified within the MPW SRtS and the MCoA for the MPW Concept Plan Approval that are applicable to the management of stormwater impacts the Modification Proposal are listed in Table 5-5.

Table 5-5: Mitigation measures within the REMMs and MCoAs applicable to stormwater management for the Proposal

REMM / MCoA No.	Mitigation measure
REMM 9A	A soil and water management plan (or equivalent) would be developed before work begins in the conservation area. This plan would include erosion and sediment control plans (ESCPs) and procedures to manage and minimise potential environmental impacts associated with developing this area.
REMM 9B	Site compounds, stockpiling areas and storage areas for sensitive plant, equipment and hazardous materials would be located above an appropriate design flood level, which would be determined based on the duration of the construction works.
REMM 9K	<p>The following staging process would be considered to be implemented when constructing surface water drainage infrastructure:</p> <ul style="list-style-type: none"> <li>• Biofiltration and detention basins that form part of the proposed stormwater management strategy would be excavated at the first phase of development, with the intention that the excavated basins would be used as temporary construction phase sedimentation basins. Once these construction phase basins become operational, these temporary construction phase sedimentation basins could be developed into the permanent biofiltration and detention basins.</li> <li>• During the relevant phase of development, all major stormwater pipes and culverts (600 mm diameter and larger) and main channels and outlets would be installed. Minor drainage and upstream systems would then be progressively connected to the major drainage elements during each phase of construction as required.</li> </ul>

REMM / MCoA No.	Mitigation measure
REMM 9L	<p>A soil and water management plan (or equivalent) would be developed before land was disturbed that would include erosion and sediment control plans (ESCPs) and procedures to manage and minimise potential environmental impacts associated with construction of the Project.</p> <p>The ESCP(s) for the Project would be prepared in accordance with Volume 1 of Managing Urban Stormwater: Soils and Construction ('the Blue Book') (Landcom 2004), Managing Urban Stormwater: Soils and Construction – Installation of Services, Volume 2A (OEH 2008) and Managing Urban Stormwater: Soils and Construction – Main Road Construction, Volume 2D (OEH 2008). The ESCP(s) would be established before the start of each construction phase and would be updated as relevant to the changing construction activities.</p> <p>Strategies to be considered as part of the plan include:</p> <ul style="list-style-type: none"> <li>• clean runoff from upstream undisturbed areas would be diverted around the Project site to minimise overland flow through the disturbed areas;</li> <li>• stabilised surfaces would be reinstated as quickly as practicable after construction;</li> <li>• all stockpiled materials would be stored in bunded areas and away from waterways to avoid sediment-laden runoff entering the waterways;</li> <li>• sediment would be prevented from moving offsite and sediment-laden water prevented from entering any watercourse, drainage line or drainage inlet;</li> <li>• erosion and sediment control measures would be regularly inspected (particularly following rainfall events) to monitor their effectiveness and stability;</li> <li>• Erosion and sediment control measures would be left in place until the works are complete or areas are stabilised.</li> </ul>
REMM 9M	<p>Procedures to maintain acceptable water quality and to manage chemicals and hazardous materials (including spill management procedures, use of spill kits and procedures for refuelling and maintaining construction vehicles/equipment) would be implemented during construction.</p>
REMM 9N	<p>Vehicles and machinery would be properly maintained to minimise the risk of fuel/oil leaks.</p>
REMM 9O	<p>Routine inspections of all construction vehicles and equipment would be undertaken for evidence of fuel/oil leaks.</p>
REMM 9P	<p>All fuels, chemicals and hazardous liquids would be stored within an impervious bunded area in accordance with Australian Standards and NSW Environment Protection Authority guidelines.</p>
REMM 9Q	<p>Emergency spill kits would be kept onsite at all times. All staff would be made aware of the location of the spill kits and trained in their use.</p>
REMM 9S	<p>Construction plant, vehicles and equipment would be refuelled offsite, or in designated re-fuelling areas located at least 50 metres from drainage lines or waterways.</p>

In summary, potential impacts on stormwater associated with the Modification Proposal represent a minor increase from those assessed for the Early Works under

the MPW Concept Plan EIS, RtS and SRtS. Through the implementation of the mitigation measures approved for the MPW Concept Plan identified above, stormwater impacts associated with the Modification Proposal are expected to be generally consistent with the impacts predicted within the MPW Concept Plan EIS.

## 5.4 Noise and vibration

A Noise and Vibration Impact Assessment has been prepared by Wilkinson Murray (2016), included at Appendix E, to consider additional potential noise and vibration emissions and associated impacts of the Modification Proposal.

### 5.4.1 MPW Concept Plan Approval

The MPW Concept Plan Approval included a Noise and Vibration Impact Assessment (NVIA) (SLR Consulting, 2014) which assessed the noise and vibration impacts associated with construction and operation of the MPW Project and the Early Works. No further assessment of the noise and vibration impacts associated with the Early Works was included within the MPW RtS or MPW SRtS as the activities identified as occurring during Early Works within the MPW RtS and MPW SRtS were consistent with the activities assessed for Early Works within the MPW Concept Plan EIS.

The existing background noise levels at sensitive residential receiver locations surrounding the MPW site were established in the NVIA. Background noise monitoring was undertaken to establish the Rating Background Noise Levels (RBL) for each residential receiver catchment (refer to Figure 5). These are presented in Table 13.

Table 5-6: Rating Background Noise Levels

Receiver Catchment	RBL (dBA)		
	Day <sup>1</sup>	Evening <sup>1, 2</sup>	Night <sup>1</sup>
Casula	39	39	33
Glenfield	35	37	33
Wattle Grove	35	36	32

1. Day = 7:00am – 6:00pm, Evening = 6:00pm – 10:00pm, Night = 10:00pm – 6:00am
2. If the evening RBL is calculated to be greater than the daytime RBL, it is set equal to the daytime RBL.

The RBLs were used to establish Noise Management Levels, in accordance with the Interim Construction Noise Guideline (DECC, 2009) (ICNG), which were the adopted noise criteria for the Early Works assessment. The NVIA identified and assessed the following equipment as those with the greatest potential to generate noise and ground vibration impacts during the Early Works:

- Construction trucks
- Front end loader
- 30 t excavator
- Franna crane.

The predicted noise levels associated with each noise generating activity to be undertaken during Early Works is presented in Table 14.

Table 5-7: Predicted noise levels – Early Works

Early Works Activity	Maximum predicted noise levels, dB(A) LAeq		
	Casula NML = 49 dB(A)	Wattle Grove NML = 45 dB(A)	Glenfield NML = 45 dB(A)
Heavy vehicles within the MPW site	42	36	38
Service utility terminations and diversions	41	35	37
Lifting	36	30	31
Landscaping	44	38	40

The assessment concluded that, as the predicted levels comply with the NMLs for the MPW Project, the Early Works would not require the implementation of specific mitigation measures to reduce potential noise levels from daytime works.

An assessment of vibration impacts was also undertaken for the Early Works which concluded that, as all construction equipment would be operated at least 450 m from the nearest sensitive receivers, vibration impacts, both for cosmetic damage to buildings and disturbance or annoyance to humans are unlikely.

In summary, the NVIA concluded that if the recommended construction noise and vibration management and mitigation measures are implemented, it is considered likely that the potential noise levels at the assessed receivers in Wattle Grove, Casula and North Glenfield would be sufficiently controlled to achieve the adopted criteria.

## 5.4.2 Impact assessment

### Construction noise

Construction noise associated with the Modification Proposal was assessed in accordance with the ICNG within the Noise and Vibration Impact Assessment prepared by Wilkinson Murray at Appendix E. As discussed in sections 3.2 and 3.3, above, an extension to the approved construction hours is sought for the Modification Proposal. Along with the predicted noise impacts within standard construction hours, four 'out of hours' work periods have been identified and assessed, being:

- OOH Period 1: 6:00am – 7:00am weekdays
- OOH Period 2: 6:00pm – 10:00pm weekdays
- OOH Period 3: 7:00am – 8:00am Saturday
- OOH Period 4 1:00pm – 6:00pm Saturday.

Based on the RBL presented in Table 13, the NML for residential receivers are presented in Table 15. Figure 5 shows the location of the residential areas and sensitive receivers within the vicinity of the MPW site.

Table 5-8: Noise Management Levels for sensitive receivers

Receiver	Noise Management Levels				
	Standard Hours	OOH Period 1	OOH Period 2	OOH Period 3	OOH Period 4
Casula	49	44	44	44	44
Glenfield	45	40	40	40	40
Wattle Grove	45	40	40	40	40
All Saints Catholic College (S1) (when in use)	55 (when in use)				
Casula Powerhouse (S2)	55 (when in use)				

Modelling was undertaken using the CadnaA environmental noise modelling software and CONCAWE algorithms to predict noise impacts on the nearest sensitive receivers. The modelling considers the following factors:

- Equipment noise emissions and locations
- Shielding from structures
- Noise attenuation due to geometric spreading
- Ground absorption
- Atmospheric absorption.

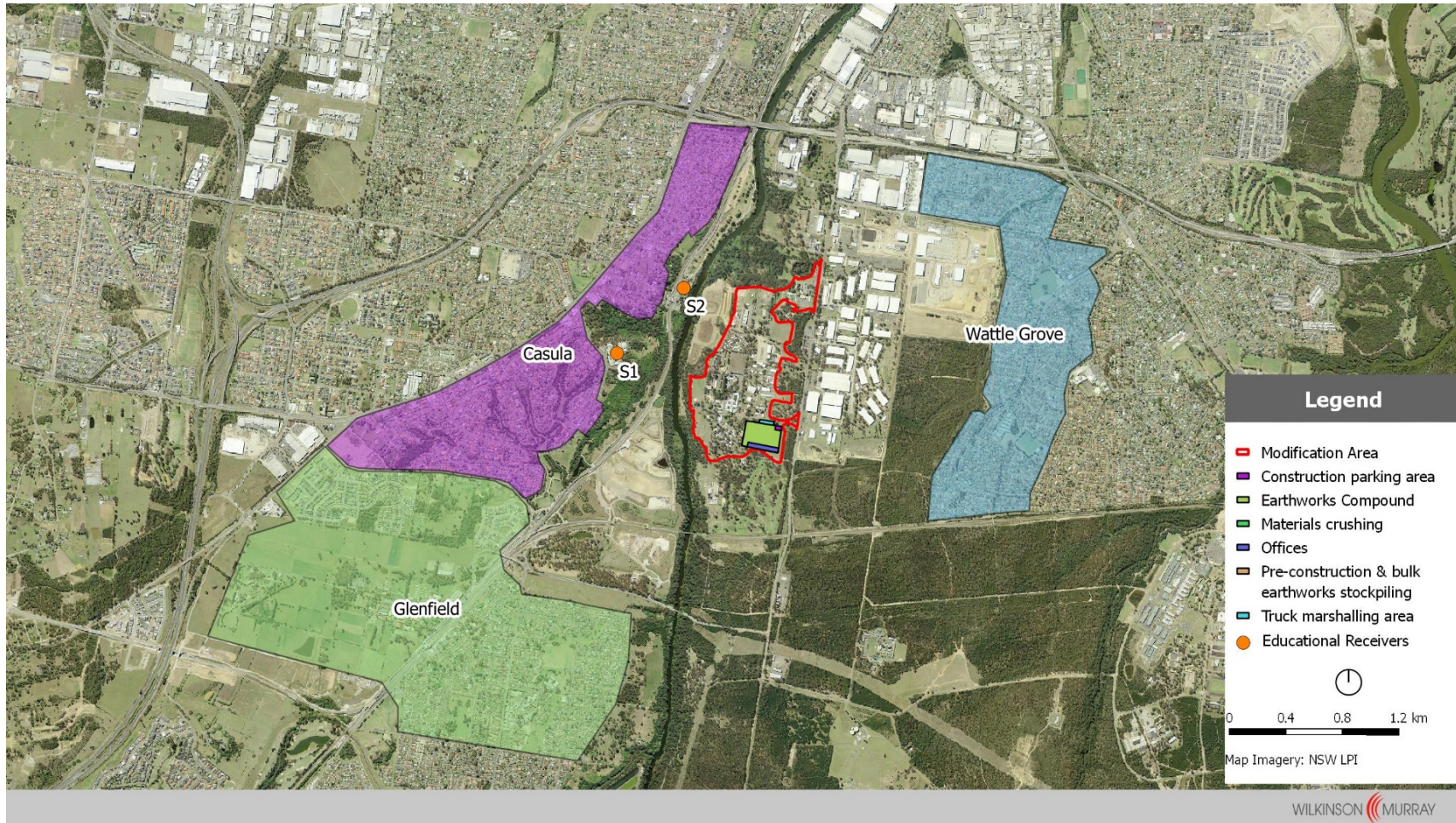


Figure 5: Sensitive Receivers

The equipment shown in Table 16 was identified as having the greatest potential to generate noise and vibration impacts and included within the model. Table 16 shows the equipment and the proposed periods of operation that were modelled.

Table 5-9: Noise generating equipment and proposed hours of operation

Equipment	Hours of operation
Bulldozer	Standard hours and OOH Periods 2-4
Excavator	Standard hours and OOH Periods 2-4
Front End Loader	Standard hours and OOH Periods 2-4
Grader	Standard hours and all OOH Periods
Water Cart	Standard hours and all OOH Periods
Compactor	Standard hours and OOH Periods 2-4
Truck & Dog	Standard hours and all OOH Periods
Lighting Tower	All OOH Periods
Mobile Crusher	Standard hours only

As discussed in Section 3.2, during standard construction hours, 7:00am – 6:00pm weekdays and 8:00am – 1:00pm Saturdays, the following activities are proposed:

- Material delivery;
- Direct placement;
- Stockpiling; and,
- Crushing.

Noise levels at sensitive receivers were predicted, assuming that all plant is operating simultaneously, with a modelled sound power level (SWL) of 128 dBA over the area of impact. The predicted noise levels are presented in Table 17 for standard hours. No exceedance of the NMLs for the MPW Project are predicted as a result of the Modification Proposal works during standard construction hours, with the exception of a 1 dB(A) exceedance at Casula, which is not perceptible to the average human ear.

Table 5-10: Predicted Construction Noise Levels during Standard Hours

Receiver	Predicted $L_{Aeq, 15min}$ Noise Level	NML	Exceedance
Casula	50	49	1 dB
Glenfield	36	45	-
Wattle Grove	37	45	-
S1	49	55	-
S2	48	55	-

During OOH Period 1, 6:00am – 7:00am weekdays, Material Delivery is the only proposed activity. Noise levels at sensitive receivers have been predicted where all plant is operating simultaneously, with a modelled SWL of 117 dBA over the area of

impact. The predicted noise levels are presented in Table 18. No exceedance of the NMLs for the MPW Project are predicted as a result of the Modification Proposal works during OOH Period 1.

Table 5-11: Predicted Construction Noise Levels during OOH Period 1

Receiver	Predicted $L_{Aeq, 15min}$ Noise Level	NML	Exceedance
Casula	39	44	-
Glenfield	26	40	-
Wattle Grove	26	40	-
S1	38	55	-
S2	47	55	-

An assessment of potential sleep disturbance impacts was also undertaken for OOH Period 1 as this period falls within the ‘night time’ definition under the majority of NSW Government noise guidelines. The most significant short duration, high intensity noise events, which have the potential to cause sleep disturbance, associated with the proposed works are truck tailgates slamming during unloading. Based on previous measurements conducted by Wilkinson Murray, the  $L_{Amax}$  sound power level of slamming tailgate is 118 dBA. Noise levels at sensitive residential receivers, associated with truck tailgates, and the sleep disturbance screening levels established in accordance with the EPA’s *Noise Guide for Local Government* (NGLG) are shown in Table 19. No exceedance of the screening levels for sleep disturbance are predicted due to the Modification Proposal.

Table 5-12: Predicted  $L_{Amax}$  Noise Levels at Sensitive Receivers during OOH Period 1

Receiver Catchment	Predicted $L_{Amax}$ Noise Level (dBA)	Screening Level	Complies?
Casula	50	54	Yes
Glenfield	40	50	Yes
Wattle Grove	42	50	Yes

During OOH Period 2 (6:00pm – 10:00pm weekdays), OOH Period 3 (7:00am – 8:00am Saturday) and OOH Period 4 (1:00pm – 6:00pm Saturday), the following activities are proposed:

- Material Delivery; and,
- Direct Placement, or Stockpiling.

Noise levels at sensitive receivers have been predicted where all plant is operating simultaneously, with a modelled SWL of 122 dBA over the area of impact. The predicted levels are presented in Table 20

Table 20. No exceedance of the NMLs for the MPW Project are predicted as a result of the Modification Proposal works during OOH periods 2-4.

Table 5-13: Predicted Construction Noise Levels during OOH Period 2, 3 and 4

Receiver	Predicted $L_{Aeq, 15min}$ Noise Level	NML	Exceedance
Casula	44	44	-
Glenfield	31	40	-
Wattle Grove	35	40	-
S1	44	55	-
S2	43	55	-

### Cumulative impacts

A cumulative construction noise impact assessment was undertaken to identify predicted noise levels from the concurrent construction of:

- Early Works
- MPE Stage 1
- MPW Modification Proposal.

The highest predicted  $L_{Aeq, 15min}$  construction noise levels at sensitive receivers, during relevant phases, for each project have been added to provide an indication of potential cumulative construction noise impacts. Predicted noise levels for the MPW Early Works were taken from *Moorebank Intermodal Terminal EIS – Noise and Vibration Impact Assessment*, prepared by SLR Consulting, dated October 2014. Predicted construction noise levels for the SIMTA Stage 1 project have been taken from *SIMTA Intermodal Terminal Facility – Stage 1 – Noise and Vibration Impact Assessment*, prepared by Wilkinson Murray, dated May 2015.

The worst-case cumulative construction noise levels at sensitive receivers, during standard construction hours, are presented in Table 21. No exceedance of the NMLs for the MPW Project are predicted during the cumulative construction noise scenario, with the exception of a 2 dB(A) exceedance at Casula, which is not perceptible to the average human ear.

Table 5-14: Worst-case cumulative construction noise levels

Receiver	Predicted $L_{Aeq, 15min}$ Noise Levels				NML	Exceedance
	Modification Proposal	MPW Early Works	SIMTA Stage 1	Cumulative		
Casula	50	44	40	51	49	2 dB
Glenfield	36	40	32	42	45	-
Wattle Grove	37	38	40	43	45	-
S1	49	49	39	52	55	-
S2	48	49	37	52	55	-

## Road noise

Road traffic noise resulting from increased traffic associated with the Modification Proposal was calculated using the *Calculation of Road Traffic Noise (CORTN)* algorithm, in accordance with the *Road Noise Policy (RNP)* (NSW EPA, 2011). The predicted increase in traffic noise levels are shown in Table 22.

Table 5-15: Predicted increases in Traffic Noise Levels

Location	Predicted Increase (dBA)	
	Day*	Night*
M5 Motorway – East of Moorebank Avenue	0.2	0.2
M5 Motorway – West of Moorebank Avenue	0.2	0.3
Moorebank Avenue – North of M5 Motorway	0.0	0.1

\* Day = 7.00am – 10.00pm, Night = 10.00pm – 7.00am

Table 5-15 shows that increases in road traffic noise levels along the M5 Motorway and along Moorebank Avenue north of the M5 interchange are considerably less than 2 dBA, which represents a minor impact that is considered barely perceptible to the average person. In accordance with the RNP, no mitigation of traffic noise levels is warranted.

### 5.4.3 Mitigation measures

As discussed above, noise modelling has identified the potential for construction noise levels to exceed the established NMLs at Casula by 1-2 dB(A). During the approved Early Works and the Modification Proposal, best practice mitigation and management measures would be used to minimise construction noise and vibration at noise sensitive receivers. The measures would be described in the Construction Noise and Vibration Management Plan (CNVMP), as required under MCoA D20(b) (SSD\_5066) and REMMs 5A and 5B. No additional REMMs or MCoAs are considered necessary.

As specified in the MCoAs, the CNVMP would be developed in accordance with the ICNG, and would give consideration to the relevant REMMs, as outlined in Table 5-16.

Table 5-16: Mitigation measures within the REMMs applicable to noise management for the Modification Proposal

REMMs	Mitigation Measure
REMM 5A	A construction noise and vibration management plan (CNVMP) (or equivalent) would be developed for construction activities.
REMM 5D	<p>Construction works outside of the standard construction hours identified in condition 5C may be undertaken in the following circumstances:</p> <ul style="list-style-type: none"> <li>construction works that generate noise that is: <ul style="list-style-type: none"> <li>no more than 5 dB(A) above rating background level at any residence in accordance with the Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009); and</li> <li>no more than the noise management levels specified in Table 3 of the Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009) at other sensitive receivers; or</li> </ul> </li> <li>for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or</li> </ul>

REMMs	Mitigation Measure
	<ul style="list-style-type: none"> <li>• where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm;</li> <li>• works approved through an EPL, or</li> <li>• works as approved through the out-of-hours work protocol outlined in the CEMP.</li> </ul>
REMM 5E	During site inductions and toolbox talks, all site workers (including subcontractors and temporary workforce) are to be made aware of the hours of construction and how to apply practical, feasible and reasonable measures to minimise noise and vibration when undertaking construction activities.
REMM 5F	Quieter and less vibration-emitting construction methods would be applied where feasible and reasonable. For example, when piling is required, bored piles rather than impact-driven piles would minimise noise and vibration impacts.
REMM 5G	The construction site would be arranged to minimise noise impacts by locating potentially noisy activities away from the nearest receivers wherever possible.
REMM 5H	Where possible, equipment that emit directional noise would be oriented away from sensitive receptors.
REMM 5I	Reversing of vehicles and mobile equipment would be minimised so as to prevent nuisance caused by reversing alarms. This could be achieved through one-way traffic systems and the use of traffic lights which could also limit the use of vehicle horns.
REMM 5J	Where work is proposed in the vicinity of residences, potentially affected residents would be advised, at least two weeks prior to the commencement of works, of the potential noise and vibration levels and the proposed management measures to control environmental impacts.
REMM 5K	Whenever possible, loading and unloading areas would be located away from the nearest residences.
REMM 5L	Broadband reversing alarms would be considered instead of tonal reversing alarms, in particular outside standard working hours (such as during night-time rail possession works).
REMM 5M	Equipment that is used intermittently would be shut down when not in use for extended periods of time.
REMM 5N	Where possible, all engine covers would be kept closed while equipment is operating.
REMM 5O	Where possible, trucks associated with the work would not be left standing with their engines operating in streets adjacent to or within residential areas.
REMM 5P	Traffic speeds would be signposted. All drivers would be expected to comply with speed limits and to implement responsible driving practices to minimise noise associated with unnecessary acceleration and braking. Traffic movements should be scheduled to minimise continuous traffic flows (convoys).
REMM 5Q	The site manager (as appropriate) should provide a community liaison phone number and permanent site contact so that any noise and/or vibration related complaints can be received and addressed in a timely manner. Consultation and cooperation between the site and its neighbours would assist in limiting uncertainty, misconceptions and adverse reactions to noise and vibration.
REMM 5R	Attended noise and ground vibration measurements would be undertaken at monthly intervals, In areas within close proximity to sensitive receivers and upon receipt of adverse comment/complaints during the construction

REMMs	Mitigation Measure
	program, to confirm that noise and vibration levels at adjacent communities and receptors are consistent with the predictions in this assessment and any approval and/or licence conditions.
REMM 5S	<p>If noise generating construction works are undertaken outside the standard daytime construction hours and/or measured construction noise levels at nearest residences are greater than 75 dB(A) LAeq, the following additional noise mitigation measures would be considered:</p> <ul style="list-style-type: none"> <li>• Localised acoustic screens, comprising a solid structure such as plywood fencing to surround noise generating construction plant or work locations. To be effective for ground level noise, the screens would be lined with acoustic absorptive material, at least 2 m in height and installed within 5 m of the noise source.</li> <li>• Dominant noise-generating mechanical plant would be fitted with feasible noise mitigation controls such as exhaust mufflers and engine shrouds.</li> <li>• Respite periods of one hour are recommended for every continuous three-hour period of work; alternatively, daytime works would be scheduled between 9.00 am and 12.00 pm, and between 2.00 pm and 5.00 pm</li> <li>• Where practical, and when night works are being undertaken, noisy construction work would be undertaken during the less sensitive 6.00 pm to 10.00 pm evening period</li> </ul>

Construction noise impacts associated with the Modification Proposal would result in a 4 dB increase  $L_{Aeq, 15min}$  noise levels during standard working hours, compared with the Early Works under the MPW Concept Plan EIS and MPW SRtS. The 4 dB increase results in the predicted noise levels exceeding the NML by 1dB, which is considered a negligible exceedance. Construction noise levels during all identified out of hours works periods are predicted to comply with the established NML at all receivers

Through the implementation of the mitigation measures approved for the MPW Concept Plan, identified above, noise impacts associated with the Modification Proposal are expected to be consistent with the impacts predicted within the MPW Concept Plan EIS.

## 5.5 Air quality

An Assessment of Air Quality Impacts has been prepared by Ramboll Environ (2016), included at Appendix F, to consider additional potential air emissions and associated air quality impacts of the Modification Proposal.

### 5.5.1 MPW Concept Plan Approval

A *Regional Air Quality Impact Assessment* (Environ, 2014a) and a *Local Air Quality Impact Assessment* (Environ, 2014b) was undertaken by Environ Australia Pty Ltd (Environ) to assess the impacts to local and regional air quality as a result of the MPW Project. Further assessment of local air quality impacts was undertaken as part of the MPW RtS within the *Local Air Quality Impact Assessment* (Environ, 2015).

Onsite air quality monitoring was carried out for a range of pollutants and compared with ambient air quality data at Liverpool and Chullora to quantify baseline air quality. Average baseline concentrations of air pollutants including PM<sub>10</sub>, PM<sub>2.5</sub> and NO<sub>2</sub> at air monitoring stations located around the MPW site were all below NSW EPA criteria and National Environment Protection (Ambient Air Quality) Measure 1998 (AAQ

NEPM) advisory goals, despite observed exceedances of the 24-hour average reporting standards for both PM<sub>10</sub>, PM<sub>2.5</sub><sup>6</sup>.

Quantitative modelling was not undertaken for the Early Works phase of the MPW Project as it was determined that, given the small quantum of earthworks predicted to be required (estimated at approximately 30,000 m<sup>3</sup>) the potential air emissions and related impacts from this phase of the Project would be negligible. Further modelling was undertaken of the MPW Project as revised within the MPW SRtS; however, modelling of Early Works was not undertaken as part of the MPW RtS or MPW SRtS.

## 5.5.2 Impact assessment

The *Assessment of Air Quality Impacts* (Ramboll Environ, 2016) assesses impacts associated with the Modification Proposal, both incrementally and cumulatively with existing air quality, Early Works and works associated with the MPE Stage 1 Proposal. The assessment builds on the previous air quality impact assessment (AQIA) prepared for the MPW Concept Plan Approval and the MPE Stage 1 Proposal (Environ, 2014; Environ, 2015). The Modification assessment follows guidelines recommended in the NSW Environment Protection Authority (EPA) *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (Approved Methods) (NSW EPA, 2005a). The assessment focused on PM<sub>10</sub>, PM<sub>2.5</sub> and TSP, generated from materials handling, as key pollutants for activities associated with the Modification Proposal. Other combustion emissions were not quantitatively assessed as they would not result in significant off-site concentrations and compromise ambient air quality goals.

Consistent with the MPW Concept Plan EIS, baseline ambient air quality values used in the Modification Proposal AQIA were based on monitoring data obtained from the Office of Environment and Heritage (OEH) Liverpool site, located 2.5 km from the Modification site, to confirm the existing air quality environment<sup>7</sup>. To assess the cumulative impacts for criteria pollutants, annual average background PM concentrations were taken as a 5-year average, to account for any inter-annual variation in background due to different climate conditions.

Air quality criteria for the impact assessment were adopted from those set out by NSW EPA for TSP and PM<sub>10</sub>, while the AAQ NEPM standards were used for PM<sub>2.5</sub> emissions. For quantification of the various air pollutants associated with the works under the Modification Proposal, the following steps were followed:

- An emission inventory was developed, based on the activities described in Section 3.2 of this report and the US EPA AP- 42 *Compilation of Air Pollutant Emission Factors*<sup>8</sup> was used to estimate the amount of dust produced by each activity
- A worst case emissions scenario was developed, based on the daily maximum imported fill of 22,000 tonnes per day for the assessment of 24-hour average PM<sub>10</sub> and PM<sub>2.5</sub>

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<sup>6</sup> During 2013, there were two recorded days showing exceedances of PM<sub>2.5</sub> over the NEPM advisory reporting goal of 25 µg/m<sup>3</sup>, corresponding to reduction burns and bushfire events (one such exceedance measured 73.8 µg/m<sup>3</sup>). Removal of these two outliers from the data reduces the annual average PM<sub>2.5</sub> concentration to 7.2 µg/m<sup>3</sup>, highlighting the influence of these events on ambient PM<sub>2.5</sub> concentrations.

<sup>7</sup> It was found that Existing concentrations of PM<sub>10</sub> and PM<sub>2.5</sub> for the Liverpool area are strongly influenced by vehicle emissions and wood heaters respectively. Although PM<sub>2.5</sub> concentrations for the Liverpool area are currently non-compliant with the NEPM AAQ standards, regulatory initiatives such as wood heater compliance programs and improvements in vehicle emission standards are expected to play a role in driving down ambient concentrations in the medium term.

<sup>8</sup> United States Environmental Protection Agency (US EPA) AP-42 *Compilation of Air Pollutant Emission Factors* (US EPA, 1998b, US EPA, 2004, US EPA, 2006)

- Emissions associated with onsite diesel consumption were calculated based on a combined daily diesel consumption, assuming that all equipment on site would operate for 16 hours per day at 70% utilisation
- US EPA Tier 1 emission factors (kg/kL) for non-road equipment were used to estimate emissions diesel emissions for construction machinery
- Diesel exhaust emissions associated with on-road trucks were estimated using aggregated emission factors developed by the NSW EPA for the 2008 Greater Metropolitan Region (GMR) emissions inventory (NSW EPA, 2012b)
- Annual average emissions were estimated based on the total earthworks volumes.

The steps above were also used to calculate the emissions associated with the Early Works approved for the MPW Project. A summary of the estimated emissions for the duration of the Modification Proposal and Early Works is presented in Table 24.

It is likely that the Modification Proposal would coincide with the Engineering Fill phase of the MPE Stage 1 Proposal. Therefore, emissions from this phase were also included in the cumulative assessment, based on the information presented in Environ (2015) and shown in Table 5-17.

Table 5-17: Emissions estimates for Modification Proposal (kg)

Source / Activity	TSP	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Modification Proposal</b>			
Hauling on unsealed roads - fill	71,955	18,489	1,849
Trucks unloading fill	1,009	477	72
Material handling (re-handle with excavators, FEL, stockpile loading)	1,009	1,909	72
Dozers - on fill	7,950	1,676	835
Crushing	526	237	43.8
Screening	964	324	21.9
Grader	7,527	2,630	233.3
Diesel exhaust (onsite equipment)	6,408	6,408	6,052
On-road trucks diesel exhaust	278	278	220
Wind erosion (area of fill)	15,254	7,627	1,144
<b>Total</b>	<b>112,881</b>	<b>40,056</b>	<b>10,543</b>
<b>Early Works</b>			
Material handling (excavators on EW)	58	55	4
Dozers - on EW	29,761	6,276	3,125
Wind erosion (additional area for Early Works)	18,199	9,099	1,365
<b>Total</b>	<b>48,081</b>	<b>15,430</b>	<b>4,494</b>
<b>SIMTA Stage 1 Engineering Fill Phase</b>	<b>20,828</b>	<b>7,524</b>	<b>4,159</b>

The modelling results for the Modification Proposal, combined with the Early Works and MPE Stage 1 Proposal – Engineering Fill phase found the following:

- The predicted increase in annual average PM<sub>10</sub> is generally less than 1 µg/m<sup>3</sup> at all receptors and when combined with background, there are no cumulative exceedances of the impact assessment criteria for annual PM<sub>10</sub>
- Background concentrations of PM<sub>2.5</sub> already exceed the NEPM AAQ reporting standard, therefore cumulative predictions are also above the standard at all receptors, however, the modelling shows a relatively minor increase in annual average PM<sub>2.5</sub> (less than 0.6 µg/m<sup>3</sup>) at all receptors
- Statistical analysis shows that additional exceedances of the 24-hour PM<sub>10</sub> impact assessment criteria, beyond what is caused by the existing background air quality, is limited to one sensitive receptor and the risk would be 1 additional exceedance day per year
- Additional exceedances of the 24-hour PM<sub>2.5</sub> NEPM AAQ reporting standard, beyond what is caused by background, would be limited to 1-2 additional days per year
- There are no predicted exceedances of the annual average TSP or dust deposition impact assessment criteria.

Consistent with previous air quality assessments undertaken for the MPW Concept Plan, the potential air quality impacts are expected to be low risk and short-term in nature, given the implementation of the mitigation measures outlined within the following section.

### 5.5.3 Mitigation measures

Mitigation measures identified within the MPW SRtS for the MPW Concept Plan Approval that are applicable to the management of air quality impacts and would be implemented during the Modification Proposal are listed in Table 5-18.

Table 5-18: Mitigation measures within the REMMs and MCoAs applicable to air quality management for the Modification Proposal

REMM / MCoA No.	Mitigation Measure
REMM 10A & MCoA (D20[e])	A Dust Management Plan (DMP) (or equivalent) would be prepared as part of the CEMP.
REMM 10C & MCoA (D20[e])	Methods for management of emissions would be incorporated into Project inductions, training and pre-start talks.
REMM 10D	Activities with the potential to cause significant emissions, such as material delivery and load out and bulk earthworks, would be identified in the CEMP. Work practices that minimise emissions during these activities would be investigated and applied where reasonable and feasible.
REMM 10E	A mechanism for raising and responding to complaints would be put in place for the duration of the construction phase.
REMM 10F	Vehicle movements would be limited to designated entries and exits, haulage routes and parking areas. Project site exits would be fitted with hardstand material, rumble grids or other appropriate measures to limit the amount of material transported offsite (where required).
REMM 10H & MCoA (B12[b])	Dust would be visually monitored during construction and the following measures would be implemented where necessary: <ul style="list-style-type: none"> <li>• Apply water (or alternative measures) to exposed surfaces that are causing dust generation. Surfaces may include any stockpiles,</li> </ul>

REMM / MCoA No.	Mitigation Measure
	<p>hardstand areas and other exposed surfaces (for example recently graded areas). Regular watering would ensure that the soil is moist to achieve 50% control of dust emissions from scrapers, graders and dozers.</p> <ul style="list-style-type: none"> <li>• Appropriately cover loads on trucks transporting material to and from the construction site. Securely fix tailgates of road transport trucks before loading and immediately after unloading.</li> <li>• Prevent, where possible, or remove, mud and dirt being tracked onto sealed road.</li> </ul> <p>Apply water at a rate of &gt;2 litres (L) per square metre per hour (L/m<sup>2</sup>/hr) to internal unsealed access roadways and work areas. Application rates would be related to atmospheric conditions (e.g. prolonged dry periods) and the intensity of construction operations. Paved roads should be regularly swept and watered when necessary.</p>
<b>REMM 10I</b>	Where reasonable and feasible, dust generating activities (particularly clearing and excavating) would be avoided or minimised during dry and windy conditions.
<b>REMM 10J &amp; CoA (B12[a])</b>	Project site speed limits of 20 km/h would be imposed on all construction vehicles travelling within the Project site.
<b>REMM 10K</b>	Graders would be limited to a speed of 8 km/h to reduce potential dust emissions.
<b>REMM 10M</b>	Exposed areas and stockpiles would be limited in area and duration. For example, vegetation stripping or grading would be staged where possible, unconsolidated stockpiles would be covered, or hydro mulch or other revegetation applicant applied to stockpiles or surfaces left standing for extended periods.
<b>REMM 10O</b>	Construction plant and equipment would be well maintained and regularly serviced so that vehicular emissions remain within relevant air quality guidelines and standards.
<b>REMM 10R</b>	All construction vehicles would be tuned to avoid releasing excessive smoke from the exhaust and would be compliant with OEH Smokey Vehicles Program under the NSW Protection of the Environment and Operations Act 1997 (POEO Act) and POEO Regulations (NSW) (2010).

In summary, impacts on air quality associated with the Modification Proposal would result in a small and temporary increase in PM<sub>10</sub> and PM<sub>2.5</sub> from those assessed for the Early Works under the MPW Concept Plan EIS, MPW RtS and MPW SRtS. Through the implementation of the mitigation measures approved for the MPW Concept Plan, identified above air quality impacts associated with the Modification Proposal are expected to be consistent with the impacts predicted within the MPW Concept Plan EIS for Early Works.

## 5.6 Biodiversity

A Biodiversity Impact Assessment has been prepared by Arcadis (2016), included at Appendix G, to consider additional impacts of the Modification Proposal on the biodiversity values of the MPW site.

### 5.6.1 MPW Concept Plan Approval

A detailed *Ecological Impact Assessment* (with an associated *Biodiversity Offsets Strategy*) was prepared by PB (2014) as part of the MPW Concept Plan EIS, and included an assessment of impacts to local flora and fauna values from Early Works. The assessment identified significant biodiversity values on the MPW site, including three threatened ecological communities, two threatened flora species and potential habitat for 25 threatened fauna species.

The assessment identified that Early Works for the MPW Project would involve vegetation clearance in selected areas to facilitate for remediation and building/infrastructure demolition works (refer Section 1.2), and are unlikely to result in the clearing of any native vegetation communities. The vegetation to be cleared for Early Works does not constitute any threatened ecological community or contain any recorded locations of threatened plants, and has relatively poor habitat values for threatened species. It was considered that the establishment of construction facilities and demolition or relocation of existing buildings and structures are also likely to result in increased dust and noise during construction. Given the relatively poor habitat values and highly disturbed nature of the Early Works footprint, PB (2014) concluded that these activities are unlikely to result in a significant adverse impact on biodiversity.

The RtS for the MPW Concept Plan EIS included assessment of the impacts of project amendments on biodiversity values. These were largely focused on changes to the rail alignment and biodiversity offset areas, and revised calculation of impacts and offsets for Riparian Forest. Since no native vegetation communities are impacted under Early Works, these areas were not considered in the revised assessment.

The MPW SRtS included a revised Biodiversity Offset Strategy to incorporate changes made in response to submissions received during the EIS exhibition phase, as well as the results of additional surveys conducted within the proposed offset lands. None of the amendments to biodiversity assessment in the MPW SRtS are applicable to the Early Works.

### 5.6.2 Impact assessment

The area of impact of the Modification Proposal is greater than the approximate footprint for Early Works, however the vegetation of the additional areas is similar to that which will be disturbed by Early Works, comprising scattered native and introduced trees and shrubs over mown grassland and developed areas. The area of impact lies within areas previously surveyed for the Concept Plan Approval. The following conclusions were reached following an assessment of direct impacts to flora and fauna values by Modification activities not previously considered under Early Works:

- No native Plant Community Types (PCTs) were mapped within the area of impact of the Modification Proposal
- Potential impacts of the Modification Proposal on threatened species, populations and communities would be largely limited to indirect impacts on adjoining areas
- The clearing of additional scattered native and introduced trees which would be required for the Modification Proposal could result in a slightly increased risk of fauna injury or mortality to that approved as part of Early Works

- Following vegetation clearing, the increased number of truck movements and extended working hours required for the Modification Proposal could also potentially result in an increased risk of fauna injury or mortality. This would likely be minimal given that the works would take place across already cleared areas.

A number of indirect impacts on biodiversity values, particularly in adjoining areas of native vegetation, could potentially arise as a result of the Modification Proposal. Edge effects, weed invasion, sedimentation and erosion, noise (impacts on fauna), dust pollution and ecological light pollution were all considered with regard to the impact of Modification activities and surrounding works. It was concluded that with the implementation of appropriate management measures, any impacts to biodiversity from Modification activities relating to these aspects will be minor given the nature of the works in question and the context of the surrounding environment.

### 5.6.3 Mitigation measures

Mitigation measures identified within the MPW SRtS and the MCoA for the MPW Concept Plan Approval that are applicable to the management of biodiversity impacts and would be implemented during the Modification Proposal are listed in Table 5-19.

*Table 5-19: Mitigation measures within the REMMs and MCoAs applicable to biodiversity management for the Modification Proposal*

REMM / MCoA No.	Mitigation measure
REMM 6A	<p>Following detailed design and before construction, detailed flora and fauna mitigation measures would be developed and presented as part of the CEMP. These detailed measures would incorporate the measures listed in 6B to 6W [Where relevant].</p> <p>The CEMP would address:</p> <ul style="list-style-type: none"> <li>• general impact mitigation;</li> <li>• staff/contractor inductions;</li> <li>• vegetation clearing protocols;</li> <li>• pre-clearing surveys and fauna salvage/translocation;</li> <li>• rehabilitation and restitution of adjoining habitat;</li> <li>• weed control;</li> <li>• pest management; and</li> <li>• monitoring.</li> </ul> <p>The plans would include clear objectives and actions for the Project including how to:</p> <ul style="list-style-type: none"> <li>• minimise human interferences to flora and fauna;</li> <li>• minimise vegetation clearing/disturbance;</li> <li>• minimise impact to threatened species and communities;</li> <li>• minimise impacts to aquatic habitats and species; and</li> <li>• undertake flora and fauna monitoring at regular intervals.</li> </ul>
REMM 6B	Vegetation clearing would be restricted to the construction footprint and sensitive areas would be clearly identified as exclusion zones.
REMM 6C	The exclusion zones would be marked on maps, which would be provided to contractors, and would also be marked on the ground using high visibility fencing (such as barrier mesh).

REMM / MCoA No.	Mitigation measure
REMM 6D	A trained ecologist would accompany clearing crews to ensure disturbance is minimised and to assist in relocating any native fauna to adjacent habitat.
REMM 6E	<p>A staged habitat removal process would be developed and would include the identification and marking of all habitat trees in the area.</p> <p>Where reasonable and feasible, clearing of hollow-bearing trees would be undertaken in March and April when most microbats are likely to be active (not in torpor) but are unlikely to be breeding or caring for young, and when threatened hollow-dependent birds in the locality are also unlikely to be breeding.</p> <p>Pre-clearing surveys would be conducted 12 to 48 hours before vegetation clearing to search for native wildlife (e.g. reptiles, frogs, Cumberland Land Snail) that can be captured and relocated to the retained riparian vegetation of the Georges River corridor.</p> <p>Vegetation would be cleared from a 10 m radius around habitat trees to encourage animals roosting in hollows to leave the tree. A minimum 48 hour waiting period would allow animals to leave.</p> <p>After the waiting period, standing habitat trees would be shaken (where safe and practicable) under the supervision of an ecologist to encourage animals roosting in hollows to leave the trees, which may then be felled, commencing with the most distant trees from secure habitat.</p> <p>Felled habitat trees would either be immediately moved to the edge of retained vegetation, or left on the ground for a further 24 hours before being removed from the construction area, at the discretion of the supervising ecologist.</p> <p>All contractors would have the contact numbers of wildlife rescue groups and would be instructed to coordinate with these groups in relation to any animal injured or orphaned during clearing.</p> <p>Within areas of high quality intact native vegetation proposed to be removed:</p> <ul style="list-style-type: none"> <li>• topsoil (and seedbank) is to be collected from native vegetation that are to be permanently cleared and used in the revegetation of riparian areas; and</li> <li>• Native plants in areas that are to be permanently cleared are to be relocated and transplanted in riparian areas identified for rehabilitation</li> </ul>
REMM 6F	Relocation of fauna to adjacent retained habitat would be undertaken by an ecologist during the supervision of vegetation removal.
REMM 6O	Erosion and sediment control measures such as silt fencing and hay bales would be used to minimise sedimentation of streams and resultant impacts on aquatic habitats and water quality.
REMM 6R	The CEMP (or equivalent) would include detailed measures for minimising the risk of introducing weeds and pathogens.

Potential dust pollution impacts will be managed in accordance with the air quality REMMs 10A to 10U, as detailed in section 5.6.3 of this report.

An additional mitigation measure that will mitigate the impacts of the Modification Proposal on biodiversity include:

- Directional lighting will be used where lighting is required in the area of impact. Lights would be directed away from the riparian vegetation adjoining the Georges River as far as is practicable.

The Modification Proposal has been sited to avoid impacts on native vegetation, including threatened ecological communities (TECs) and threatened species habitat. Impacts on biodiversity associated with the Modification Proposal would result in a minor increase from those assessed for the Early Works under the MPW Concept Plan EIS, MPW RtS and MPW SRtS. Through the implementation of the mitigation measures approved for the MPW Concept Plan and the additional mitigation measure identified above, biodiversity impacts associated with the Modification Proposal are expected to be consistent with the impacts predicted within the MPW Concept Plan EIS.

## 5.7 Aboriginal heritage

An Aboriginal Heritage Memorandum has been prepared by Arcadis (2016), included at Appendix H, to consider additional impacts of the Modification Proposal on the potential Aboriginal heritage significance of the MPW site.

### 5.7.1 MPW Concept Plan Approval

An *Aboriginal Heritage Assessment* was prepared by Navin Officer Heritage Consultants (NOHC) (2014) for the MPW Concept Plan EIS to assess impacts to known Aboriginal heritage items, including those associated with Early Works. An Aboriginal archaeological sensitivity model and field surveys identified the following areas of Aboriginal heritage significance in the vicinity of the MPW Project:

- A total of 16 Aboriginal sites or PADs are located within or in close proximity to the MPW site. Of these sites:
  - Eight have been nominated for salvage as part of Early Works activities (MA1, MA2, MA3, MA4, MA5, MA9 (MAPAD1), MA10 (MRSA1) and MA14 (MRSA2)
  - Three items are to be considered during future development (MA6, MA7, PAD2)
  - Five items have been assessed as not directly impacted upon during the MPW Project (MA8, MA11, MA12, MA13 and MAPAD2).
- Areas of archaeological sensitivity were found in association with the Georges River and tertiary terraces adjacent to the river.

The MPW RtS included revised investigations of MRSA2, located in the north eastern portion of the site, which resulted in the item being reclassified as MA149. Further investigation was also undertaken to understand the condition of aboriginal scar trees within the MPW site (MA6 and MA7). No additional Aboriginal heritage investigations were undertaken as part of the MPW SRtS.

Overall, the construction footprint for Early Works is located in areas considered to be of low Aboriginal heritage significance, and the areas surrounding the site (along the banks of the Georges River) would be largely conserved. Management and mitigation measures proposed, including avoidance (within the conservation zone), salvage of significant items (heritage impact remediation works), and consultation with registered Aboriginal parties were identified to be undertaken as part of the approved Early Works.

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<sup>9</sup> This site is not to be confused with MA14 which was identified as part of the Moorebank Precinct East (MPE) Stage 1 Proposal investigations and is located in a separate area, to the south west of the MPW site within the Georges River riparian area.

## 5.7.2 Impact assessment

Artefact have prepared the Aboriginal Heritage Memorandum (2016) (Aboriginal Heritage Memo), included as Appendix H to this report. The Aboriginal Heritage Memo assesses the potential impacts on Aboriginal heritage as a result of the Modification Proposal. The Modification Proposal includes substantial surface impact within the area of impact. The majority of the works would take place within the Early Works footprint.

An extensive search of the Office of Environment and Heritage (OEH) Aboriginal Heritage Information Management System (AHIMS) was conducted on 4 May 2016, yielding 23 recorded Aboriginal sites and 1 Aboriginal place. Of these sites, only MA5 was found to be located partially within the Modification Proposal area of impact. This site contains three surface artefacts, with archaeological test excavation revealing a moderate density subsurface artefact scatter. This site has been assessed under the Concept Plan Approval and is to be salvaged as part of Early Works. All other sites are located outside the area of impact.

Sites located in immediate vicinity of the Modification Proposal and an assessment of impacts as a result of the Modification Proposal is shown in Table 5-20.

Table 5-20: Assessment of impacts on Aboriginal heritage items resulting from the Modification Proposal

Site ID (Name)	Type of harm (MPW Project)	Consequence of harm	Increase in impacts from Early Works?
45-5-4273 (MA2)	None	No loss of value (assessed against the Modification Proposal)	No
45-5-4274 (MA3)	None	No loss of value (assessed against the Modification Proposal)	No
45-5-4275 (MA4)	None	No loss of value (assessed against the Modification Proposal)	No
45-5-4276 (MA5)	Direct	Partial	No
45-5-4278 (MA8)	None	No loss of value (assessed against the Modification Proposal)	No

## 5.7.3 Mitigation measures

As required under MCoA D20(c), a Construction Heritage Management Plan (CHMP) would be prepared detailing the management measures to be carried out in relation to Aboriginal heritage, including a detailed methodology and strategies for protection, monitoring, and conservation of sites and items. The CHMP would be approved by the DPE prior to commencement of construction and would be implemented during the Modification Proposal.

A summary of mitigation measures from the REMMs that would be employed during the Modification Proposal works to mitigate potential impacts on Aboriginal heritage are shown in Table 5-21.

Table 5-21: Mitigation measures from REMMs applicable to Aboriginal heritage management for the Modification Proposal

REMM / MCoA No.	Mitigation measure
REMM 12F	The Unanticipated Discoveries Protocol described in Appendix 10 of Technical Paper 10 – Aboriginal Heritage Impact Assessment in Volume 7 of the EIS, would be followed in the event that historical items or relics or suspected burials are encountered during construction works.
REMM 12G	<p>Consultation would be ongoing with the registered Aboriginal parties during construction of the Project and would include:</p> <ul style="list-style-type: none"> <li>• consultation on the future care and management of recovered Aboriginal objects;</li> <li>• methodologies for any future investigations; and</li> <li>• finalisation of management and mitigation strategies subject to detailed design.</li> </ul>

No additional recommendations / mitigation measures are proposed for the Modification Proposal.

In summary, Aboriginal heritage impacts associated with the Modification Proposal would result in no increase in impacts from those assessed for the Early Works under the MPW Concept Plan EIS, RtS and RStS. Through the implementation of the mitigation measures approved for the MPW Concept Plan and the MCoA identified above, Aboriginal heritage impacts associated with the Modification Proposal are expected to be consistent with the impacts predicted within the MPW Concept Plan EIS.

## 5.8 Non-Aboriginal heritage

An Non-Aboriginal (Historic) Heritage Memorandum has been prepared by Arcadis (2016), included at Appendix I, to consider additional impacts of the Modification Proposal on the potential non-Aboriginal heritage significance of the MPW site.

### 5.8.1 MPW Concept Plan Approval

A Non-Indigenous Heritage Assessment was prepared by Navin Officer Heritage Consultants (NOHC) (2014) as part of the MPW Concept Plan EIS to assess impacts to Non-Aboriginal heritage values arising as a result of the MPW Project, including Early Works.

A number of archaeological features, potential archaeological deposits and items listed on local, state and national heritage registers were identified on and around the MPW site. The assessment specifically investigated the significance and potential impact to non-indigenous heritage values within the MPW site during Early Works.

The heritage and potential heritage items identified within the investigations are listed below:

#### Archaeological Features

- MH1 - Explosive Detection Dog (EDD) Cemetery and Memorial
- MH6 - Commemorative garden
- CUST Hut
- RAAF STRARCH Hangar

- Building 99 (B99)
- RAE Chapel elements remaining following the MUR Project<sup>10</sup>.

#### **Potential Archaeological Deposits**

- MHPAD 1: Site thought to be the location of WWI and WWII period quarters
- MHPAD 2: Site corresponds to the former location of a number of WWII period buildings.

Early Works activities would result in the removal, adaptive reuse and/or relocation of all items identified above during the heritage impact remediation works.

The MPW RtS documentation included archival recording of the following items:

- Grounds and Landscape
- RAAF STRARCH Hanger
- CUST Hut
- B99 Building
- MH6 Commemorative Garden
- EDD Cemetery and Memorial.

No additional non-indigenous heritage investigations were undertaken as part of the MPW SRtS.

## **5.8.2 Impact assessment**

Artefact have prepared the Non-Aboriginal (Historical) Heritage Memorandum (2016) (Non-Aboriginal Heritage Memo) included as Appendix I to this report. The Non-Aboriginal Heritage Memo assesses the potential impacts on historic heritage as a result of the Modification Proposal. Heritage elements remaining following the completion of Early Works, including the Moorebank Cultural landscape, were assessed for impacts driven discretely by activities seeking approval under the Modification Proposal (i.e. not previously assessed under the Concept Plan Approval).

Table 5-22 summarises the Non-Aboriginal heritage items within the vicinity of the Modification Proposal and determines the impact.

As shown in Table 5-22, the Non-Aboriginal Heritage Memo concludes that there would be no additional impacts to any known non-indigenous heritage items as a result of the Modification Proposal.

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<sup>10</sup> The Moorebank Unit Relocation (MUR) Project involves the proposed relocation of 18 heritage items from the MPW site to the Holsworthy Barracks, to be carried out prior to the commencement of Early Works. This is subject to a separate approval process and not included in the MPW Concept Plan Approval.

Table 5-22: Modification Proposal Non-Aboriginal heritage impact assessment

Item	Impacts (MPW Project)	Aspects of the Modification Proposal that respect or enhance the item's heritage significance	Impacts on items heritage significance	Increase in impacts from Early Works?
Moorebank Cultural Landscape	Building removal, vegetation removal, earthworks	Retention of elements of the landscape outside the Modification Proposal area	Disturbance of archaeological deposits, demolition of remaining landscape elements, loss of portions of the existing landscape setting	No
RAAF STRACH Hangar	Removal	Not applicable / none	The demolition would result in the loss of significance in terms of technical value	No
CUST Hut	Removal	Not applicable / none	The demolition would result in the loss of significance in terms of technical value and removal of archaeological potential associated with former earthen floor	No
RAE Chapel	Removal	Not applicable / none	Removal would result in the loss of significance in terms of technical value	No
MH1 Dog Cemetery	Removal	Not applicable / none	Removal would result in the loss of social significance	No
MHPAD2	Removal	Not applicable / none	Removal would result in the loss of significance in terms of research potential	No
Commemorative Garden	Partial removal	Not applicable / none	Removal of a portion of the Commemorative Garden would result in a loss of social significance	No

### 5.8.3 Mitigation measures

As required under MCoA D20(c) a Cultural Heritage Management Plan (CHMP) would be prepared, including details of management measures to be carried out in relation to Non-Aboriginal heritage, including a detailed methodology and strategies for protection, monitoring, and conservation of sites and items. The CHMP would be approved by the DPE prior to commencement of construction and would be implemented during the Modification Proposal.

Mitigation measures from the REMMs that would be employed during the Modification Proposal works to mitigate potential impacts on Non-Aboriginal heritage are shown in Table 5-23.

Table 5-23: Mitigation measures from REMMs applicable to Non-Aboriginal heritage management for the Modification Proposal

REMM / MCoA No.	Mitigation measure
REMM 13K	The Unanticipated Discoveries Protocol (detailed in Appendix 7 of Technical Paper 11 – European Heritage Impact Assessment in Volume 8) would be followed in the event that historical items or relics or suspected burials are encountered during excavation works.

In summary, Non-Aboriginal heritage impacts associated with the Modification Proposal would result in no increase in impacts from those assessed for the Early Works under the MPW Concept Plan EIS, MPW RtS and MPW RStS. Through the implementation of the mitigation measures approved for the MPW Concept Plan and the MCoA identified above, Non-Aboriginal heritage impacts associated with the Modification Proposal are expected to be consistent with the impacts predicted within the MPW Concept Plan EIS.

## 5.9 Waste and resource management

### 5.9.1 MPW Concept Plan Approval

The MPW Concept Plan EIS provided qualitative assessments of the waste (solid waste and waste water) likely to be generated during Early Works, and the likely use of any resources that could be in short supply (e.g. water, energy, fuels and construction materials) as a result of Early Works.

Early Works assessed under the MPW Concept Plan EIS included the following waste generating and resource utilising activities:

- Establishment of construction facilities
- Demolition of existing buildings, structures and contaminated buildings
- Contaminated land remediation including removal of unexploded ordnance and explosive ordnance waste (if found), removal of asbestos contaminated buildings and remediation of an area known to contain asbestos
- Relocation of trees
- Service utility terminations and diversions
- Establishment of a conservation area
- Heritage impact mitigation works.

Under the MPW RtS, the above activities were not modified and hence the EIS assessment remained relevant to these activities. However, the MPW RtS introduced rehabilitation works into the scope of Early Works, which include:

- Decontamination and demolition of buildings identified with asbestos containing material
- Remediation of contamination hotspots including underground storage tanks
- Site stabilisation and establishment of the proposed conservation area on the site of the plant and equipment operator training area
- Construction of secure perimeter fencing
- Ancillary operations including establishment of construction facilities and amenities on existing areas of hardstand.

### **5.9.2 Impact assessment**

Key waste streams which are likely to be generated by the Modification Proposal include:

- Contaminated soil, topsoil, Virgin Excavated Natural Material (VENM), Excavated Natural Material (ENM); some of which will be suitable for on-site reuse
- Vegetation
- Demolition waste from buildings – concrete, brick and tile, much of which will be crushed and reused on-site.
- Surplus building materials (from compound establishment)
- Concrete waste from in-situ concrete pours (from compound establishment).

Waste water streams likely to be generated by the Modification Proposal include:

- Sewage from worker amenities

Energy and fuels will be used through the following activities of the Modification Proposal:

- Office activities
- Electrical construction equipment
- Earthmoving plant and vehicles
- Compacting equipment and vehicles
- Water carts
- Crushing and screening plant and equipment
- Generators
- Mobile lighting towers
- Site vehicles.

Water will be used through the following activities of the Modification Proposal:

- Lunchrooms and amenities
- Dust suppression
- Bulk earthworks moisture content control and compaction
- Wheel wash facilities.

Water from the on-site sedimentation basins will be reused where possible.

The following key construction materials will be utilised under this Modification Proposal:

- Steel (associated with compound establishment)
- Timber (associated with compound establishment)
- Concrete (associated with compound establishment)
- Water (for moisture content control and compaction)
- Clean fill – the vast majority of which is being sourced from large construction activities in the Sydney Metropolitan Area.

Generation of waste and utilisation of resources is detailed for each construction phase in Table 5-24.

The key waste management activity which will differ from the MPW Concept Plan Approval is the crushing of building demolition waste, such as concrete, brick and tile. This activity will have the beneficial impact of replacing raw construction materials with reprocessed materials. Negative environmental impacts may include noise, vibration and dust (please refer to Sections 5.4 and 5.5 for the respective assessments).

Table 5-24: Waste generation and resource utilisation for each construction phase

Construction Phase	Activity	Waste Types Generated	Wastewater Generated	Water usage	Energy <sup>11</sup> and fuel usage	Construction Materials Used
Operational waste generated by construction contractors	Office	<ul style="list-style-type: none"> <li>Office Consumables</li> <li>Paper</li> <li>Cardboard</li> </ul>	NA	NA	<ul style="list-style-type: none"> <li>Electricity consumed by office operations</li> </ul>	NA
	Lunch rooms	<ul style="list-style-type: none"> <li>Residual waste</li> <li>Commingled recyclables</li> </ul>	NA	<ul style="list-style-type: none"> <li>Water consumed in kitchen</li> </ul>	<ul style="list-style-type: none"> <li>Electricity consumed for kitchen appliances</li> </ul>	NA
	Temporary Toilets	<ul style="list-style-type: none"> <li>Paper towels</li> <li>Sanitary bins</li> </ul>	<ul style="list-style-type: none"> <li>Wastewater generated from temporary toilets</li> </ul>	<ul style="list-style-type: none"> <li>Water consumed in temporary toilets</li> </ul>	<ul style="list-style-type: none"> <li>Electricity consumed for temporary toilets</li> </ul>	NA
Demolition	Demolition of existing buildings	<ul style="list-style-type: none"> <li>Concrete</li> <li>Brick</li> <li>Tile</li> <li>Steel</li> </ul>	NA	<ul style="list-style-type: none"> <li>Dust suppression and wash down of vehicles and equipment</li> </ul>	<ul style="list-style-type: none"> <li>Fuel and electricity consumed for demolition equipment</li> <li>Fuel for water cart spraying and equipment wash down</li> </ul>	NA
Site preparation and compound establishment	Removal of vegetation	<ul style="list-style-type: none"> <li>Vegetation</li> <li>Noxious weeds</li> </ul>	NA	NA	<ul style="list-style-type: none"> <li>Fuel and electricity consumed for removal of vegetation</li> </ul>	NA
	Removal and stockpile of top soil	<ul style="list-style-type: none"> <li>Contaminated topsoil – noxious weeds</li> <li>Topsoil suitable for onsite re-use</li> </ul>	NA	<ul style="list-style-type: none"> <li>Dust suppression and wash down of vehicles and equipment</li> </ul>	<ul style="list-style-type: none"> <li>Fuel consumed by earthworks equipment</li> <li>Fuel for water cart spraying and equipment wash down</li> </ul>	NA

<sup>11</sup> Refers to energy consumption onsite. Embodied energy of selected materials is beyond the scope of this assessment.

Construction Phase	Activity	Waste Types Generated	Wastewater Generated	Water usage	Energy <sup>11</sup> and fuel usage	Construction Materials Used
	Earthworks – establishment of compound	<ul style="list-style-type: none"> <li>• VENM/ENM</li> <li>• Contaminated soil</li> </ul>	NA	<ul style="list-style-type: none"> <li>• Dust suppression and wash down of vehicles and equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Fuel for water cart spraying and equipment wash down</li> </ul>	NA
	Compound construction - offices, car parking, equipment storage and laydown areas and materials screening, crushing and washing facilities	<ul style="list-style-type: none"> <li>• Construction material packaging waste</li> <li>• Surplus building materials</li> <li>• Concrete waste</li> </ul>	NA	<ul style="list-style-type: none"> <li>• Dust suppression and wash down of vehicles and equipment</li> <li>• Water used in concrete production</li> </ul>	<ul style="list-style-type: none"> <li>• Fuel and electricity consumed using building equipment and plant</li> <li>• Fuel consumed by washing, screening and crushing plant</li> <li>• Fuel consumed by material handling equipment</li> <li>• Fuel for water cart spraying and equipment wash down</li> </ul>	<ul style="list-style-type: none"> <li>• Demountable offices</li> <li>• Concrete</li> <li>• Brick</li> <li>• Steel</li> <li>• Timber</li> <li>• Asphalt</li> </ul>
	Earthworks associated with the installation of temporary basins and control measures	<ul style="list-style-type: none"> <li>• VENM/ENM (reused on-site wherever possible)</li> <li>• Contaminated soil</li> <li>• Excess and waste materials - sediment fences, hay bales, mesh and gravel inlet filters, construction exit/wash down, sand bags, geotextile inlet filters, pipes and site fences</li> </ul>	NA	<ul style="list-style-type: none"> <li>• Dust suppression and wash down of vehicles and equipment</li> <li>• Moisture content control in bulk earthworks.</li> </ul>	<ul style="list-style-type: none"> <li>• Fuel for water cart spraying and equipment wash down</li> <li>• Fuel and electricity consumed from earthworks and installation of temporary basins and control measures</li> </ul>	<ul style="list-style-type: none"> <li>• Sediment and erosion controls</li> <li>• Fill</li> </ul>
	Grading and surfacing of internal roads and associated drainage	<ul style="list-style-type: none"> <li>• VENM/ENM (reused on-site wherever possible)</li> </ul>	NA	<ul style="list-style-type: none"> <li>• Dust suppression and wash down of</li> </ul>	<ul style="list-style-type: none"> <li>• Fuel consumed from grading and surfacing equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Fill</li> <li>• Gravel</li> <li>• Concrete</li> </ul>

Construction Phase	Activity	Waste Types Generated	Wastewater Generated	Water usage	Energy <sup>11</sup> and fuel usage	Construction Materials Used
		<ul style="list-style-type: none"> <li>Contaminated soil</li> </ul>		vehicles and equipment	<ul style="list-style-type: none"> <li>Fuel for water cart spraying and equipment wash down</li> </ul>	<ul style="list-style-type: none"> <li>Asphalt</li> </ul>
	Haulage of materials on internal roads	NA	NA	<ul style="list-style-type: none"> <li>Dust suppression and wash down of vehicles</li> </ul>	<ul style="list-style-type: none"> <li>Fuel consumed by trucks</li> <li>Fuel for water cart spraying and equipment wash down</li> </ul>	NA
Acceptance of imported fill	Unloading fill	NA	NA	<ul style="list-style-type: none"> <li>Dust suppression and wash down of vehicles and equipment</li> </ul>	<ul style="list-style-type: none"> <li>Fuel consumed by trucks</li> <li>Fuel for water cart spraying and equipment wash down</li> </ul>	NA
	Stockpiling	NA	NA	<ul style="list-style-type: none"> <li>Dust suppression and wash down of vehicles and equipment</li> </ul>	<ul style="list-style-type: none"> <li>Fuel consumed by earthworks equipment</li> <li>Fuel for water cart spraying and equipment wash down</li> </ul>	NA
Direct placement of imported fill	Unloading fill	NA	NA	<ul style="list-style-type: none"> <li>Dust suppression and wash down of vehicles and equipment</li> </ul>	<ul style="list-style-type: none"> <li>Fuel consumed by trucks</li> <li>Fuel for water cart spraying and equipment wash down</li> </ul>	NA
	Earthworks- application and compacting of fill	NA	NA	<ul style="list-style-type: none"> <li>Dust suppression and wash down of vehicles and equipment</li> <li>Moisture content control in bulk earthworks.</li> </ul>	<ul style="list-style-type: none"> <li>Fuel consumed by trucks and compacting equipment</li> <li>Fuel for water cart spraying and equipment wash down</li> </ul>	<ul style="list-style-type: none"> <li>Fill</li> </ul>
Stockpiling of imported fill	Earthworks	NA	NA	<ul style="list-style-type: none"> <li>Dust suppression and wash down of vehicles and equipment</li> </ul>	<ul style="list-style-type: none"> <li>Fuel consumed by earthworks equipment</li> <li>Fuel for water cart spraying and equipment wash down</li> </ul>	<ul style="list-style-type: none"> <li>Fill</li> </ul>

Construction Phase	Activity	Waste Types Generated	Wastewater Generated	Water usage	Energy <sup>11</sup> and fuel usage	Construction Materials Used
Crushing and screening of materials	Unloading fill	NA	NA	<ul style="list-style-type: none"> <li>Dust suppression and wash down of vehicles and equipment</li> </ul>	<ul style="list-style-type: none"> <li>Fuel consumed by trucks</li> <li>Fuel for water cart spraying and equipment wash down</li> </ul>	<ul style="list-style-type: none"> <li>NA</li> </ul>
	Crushing and screening	NA	NA	<ul style="list-style-type: none"> <li>Dust suppression and wash down of plant</li> </ul>	<ul style="list-style-type: none"> <li>Fuel and electricity used for crushing and screening plant</li> <li>Fuel for water cart spraying and plant wash down</li> </ul>	<ul style="list-style-type: none"> <li>Fill with oversized boulders</li> </ul>

In summary, the review of the waste and resource management associated with the Modification Proposal has identified the following:

- Key waste streams to be generated under the Modification Proposal are similar to the key waste streams which will be produced under Early Works
- Key waste water types to be generated under the Modification Proposal are similar to the key waste water types to be produced under Early Works
- Key energy and fuel usage types under the Modification Proposal are similar to the key energy and fuel usage types under Early Works
- Key water usage types under the Modification Proposal are similar to the key water usage types under Early Works
- Key construction materials used under the Modification Proposal are similar to the key construction materials used under Early Works
- Material reused on-site will be managed in accordance with relevant legislation and to ensure maximisation of beneficial reuse. The requirements of the relevant Resource Recovery Exemption shall be met for relevant material imported to the site.

### 5.9.3 Mitigation measures

Mitigation measures identified within the MPW SRtS and the MCoA for the MPW Concept Plan Approval that are applicable to the management of waste and resource management impacts and would be implemented during the Modification Proposal are listed in Table 5-25.

*Table 5-25: Mitigation measures within the REMMs and MCoAs applicable to waste and resource management for the Modification Proposal*

REMM / MCoA No.	Mitigation measure
<b>MCoA B13</b>	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
<b>MCoA B14</b>	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).
<b>MCoA B15</b>	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.
<b>MCoA D19</b>	<p>Prior to the commencement of Early Works, or as otherwise agreed by the Secretary, the Applicant shall prepare and implement a Construction Environmental Management Plan (CEMP)...The CEMP shall include, but not necessarily be limited to:</p> <p>...</p> <p>e) details of how environmental performance would be managed and monitored to meet acceptable outcomes, including what actions will be taken to address identified potential adverse environmental impacts. In particular, the following environmental performance issues shall be addressed in the CEMP:</p> <p>...</p>

REMM / MCoA No.	Mitigation measure
	(iii) 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 or 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);
REMM 7I	No hazardous or regulated wastes would be disposed of onsite.
REMM 7J	All offsite disposals would be carried out by approved transport operators and to approved facilities.
REMM 7K	Other dangerous goods, including any waste materials present on the Project site, would be suitably contained, with secondary containment and runoff controls implemented where appropriate to prevent leaks or spills migrating to environmentally sensitive areas, in particular via stormwater systems that drain to the Georges River.
REMM 8J	Excavated soil would be temporarily stockpiled, sampled and analysed for waste classification processes. Subject to receipt of waste classification results, the material would be transported to a licensed offsite waste disposal facility as soon as practicable to minimise dust and odour issue through storage of materials on site.
REMM 8K	Stockpiled soils would be stored on a sealed surface and the stockpiled areas would be securely bunded using silt fencing to prevent silt laden surface water from entering or leaving the stockpiles or the Project site.
REMM 8M	All asbestos removal, transport and disposal would be performed in accordance with the Work Health and Safety Regulation 2011 (WHS Regulation).
REMM 8Q	Temporary stockpiles of asbestos containing material (ACM) soils would be covered to minimise dust and potential asbestos release.
REMM 8T	All stockpiles would be maintained in an orderly and safe condition. Batters would be formed with sloped angles that are appropriate to prevent collapse or sliding of the stockpiled materials.
REMM 8U	Stockpiles would be placed at approved locations and would be strategically located to mitigate environmental impacts while facilitating material handling requirements. Contaminated or potentially contaminated materials would only be stockpiled in unremediated areas of the Project site or at locations that did not pose any risk of environmental impairment of the stockpile area or surrounding areas (e.g. hardstand areas).
REMM 8V	Stockpiles would only be constructed in areas of the Project site that had been prepared in accordance with the requirements of the Project Preliminary RAP in Appendix F of Technical Paper 5 – Environmental Site Assessment (Phase 2), Volume 5A and 5B. All such preparatory works would be undertaken before material is placed in the stockpile. Stockpiles must be located on sealed surfaces such as sealed concrete, asphalt, high density polyethylene or a mixture of these, to appropriately mitigate potential cross contamination of underlying soil.

REMM / MCoA No.	Mitigation measure
REMM 8W	Any stockpiles of contaminated material would be covered with a waterproof membrane (such as polyethylene sheeting) to prevent increased moisture from rainwater infiltration and to reduce windblown dust or odour emission.
REMM 8X	Before the reuse of any material on site, it would be validated so that the lateral and vertical extent of the contamination is defined.
REMM 8Y	Where required, contaminated materials and wastes generated from the Project remediation and construction works would be taken to suitable licensed offsite disposal facilities.
REMM 11B	Where possible, implement the use of biofuels (e.g. biodiesel, ethanol, or blends such as E10 and B880) to reduce GHG emissions from plant and equipment.
REMM 11C	Consider the use of vehicles with minimum GHG emissions ratings of 7.5 for passenger vehicles and 6 for light commercial vehicles, as described in the Green Vehicle Guide ( <a href="http://www.greenvehicleguide.gov.au/GVGPUBLICUI/home.aspx">http://www.greenvehicleguide.gov.au/GVGPUBLICUI/home.aspx</a> )
REMM 11H	<p>Consider and implement, where possible, the mitigation options for further reducing energy and GHG emissions detailed in Table 9.4 in Chapter 9 – Project sustainability.</p> <p>Extract from Table 9.4:</p> <ul style="list-style-type: none"> <li>• <i>Minimise energy use</i> <ul style="list-style-type: none"> <li>• ...</li> <li>• <i>Procurement processes for building materials, plant and equipment for the Project would consider the lifecycle energy use, including embodied energy.</i></li> <li>• ...</li> </ul> </li> </ul>
REMM 18A	A construction waste management plan (or equivalent) would be prepared as part of the overall CEMP. This would implement key principles of relevant waste guidelines, and the waste management hierarchy of reduction, reuse, recycling and recovery.
REMM 18B	The waste hierarchy would be investigated and implemented where possible with avoidance of waste, re-use and recycling incorporated into construction methodologies.
REMM 18C	Consideration would be given to the selection of materials for use in construction to minimise waste generated throughout their lifecycle.
REMM 18E	Opportunities would be explored where practicable to recycle or re-use materials arising from demolition works, with a preference for onsite re-use where possible (or recycling through an appropriate recycling contractor).
REMM 18F	Where possible, site disturbance and unnecessary excavation would be minimised.
REMM 18H	Sewage waste would be disposed of by a licensed waste contractor in accordance with Sydney Water and OEH requirements
REMM 18X	Opportunities to utilise recycled building materials in the overall structure of the Project would be explored. Development of the design would seek to use

REMM / MCoA No.	Mitigation measure
	<p>construction materials that have been made with a post-consumer recycled content of 50% or greater. Table 9.4 in Chapter 9 – Project sustainability identifies other initiatives to minimise the use of materials and, where possible, use recycled materials.</p> <p>Extract from Table 9.4:</p> <ul style="list-style-type: none"> <li>• <i>Encourage material recycling and reuse</i> <ul style="list-style-type: none"> <li>• <i>Opportunities would be explored to purchase and procure a large proportion of recycled building materials in the overall construction of the Project.</i></li> <li>• ...</li> <li>• <i>Where possible, construction materials made with a post-consumer recycled content of 50% or greater would be preferred.</i></li> <li>• ...</li> </ul> </li> </ul>
<b>REMM 18Y</b>	Measures to minimise the use of energy and fuel would be investigated and implemented where appropriate. These may include using non-renewable sources such as petroleum, diesel, natural gas and liquefied natural gas.
<b>REMM 18Z</b>	Where practicable, water would be re-used onsite, including water stored in sediment basins.

In summary, impacts on waste and resource management associated with the Modification Proposal would result in a small / temporary increase in waste generation and resource usage from those assessed for the Early Works under the MPW Concept Plan EIS, MPW RtS and MPW SRtS. Through the implementation of the mitigation measures approved for the MPW Concept Plan, waste and resource recovery impacts associated with the Modification Proposal are expected to be consistent with the impacts predicted within the MPW Concept Plan EIS.

## 5.10 Other issues

Table 5-26 provides an assessment of other key environmental issues identified in the SEARs for the MPW Project, which are considered to result in a negligible or minor change from that provided within the relevant sections of the EIS, MPW RtS or MPW SRtS as a result of the Modification Proposal.

Table 5-26: Key Issues identified in the SEARs with a minor environmental impact

Key issue	Environmental assessment of Modification Proposal
<b>Hazards and risk</b>	<p>The SEARS for the MPW Concept Plan EIS required consideration of potential impacts associated with storing and handling dangerous goods on-site and transporting dangerous goods to and from the site, along with the inclusion of a Preliminary Hazard Analysis and consideration of bushfire protection.</p> <p>The purpose of the Modification Proposal is to facilitate the future development of the MPW site in accordance with the MPW Concept Plan Approval and no changes to the operational layout or processes are proposed. Therefore, the Modification Proposal does not alter the findings of the hazards and risk assessment undertaken for the MPW Concept Plan Approval.</p>
<b>Visual and urban design</b>	<p>The SEARS for the MPW Concept Plan EIS included requirements to identify and evaluate the visual impacts of the development, including:</p> <ul style="list-style-type: none"> <li>• An analysis of views from key vantage points and proposed</li> <li>• management/mitigation measures to address the visual impact of the proposal;</li> <li>• A design analysis and justification of the key built form elements of the proposal; and</li> <li>• 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.</li> </ul> <p>Chapter 22 of the MPW Concept Plan EIS assessed visual impacts incurred as a result of Early Works activities. Overall, it was concluded that Early Works would have limited impacts on visual amenity. Existing riparian vegetation along the Georges River and the retained conservation area would assist in screening a substantial amount of the Early Works activities for viewpoints west of the river.</p> <p>Modification activities would take place largely within the footprint for Early Works, and would not result in significant changes to the visual landscape to that already assessed as part of the Concept Plan Approval. The outcomes and recommendations of the assessment undertaken for Early Works under the MPW Concept Plan Approval are therefore the same as those predicted for the Modification Proposal.</p>
<b>Property and Infrastructure</b>	<p>The SEARS for the MPW Concept Plan EIS included consideration for:</p> <ul style="list-style-type: none"> <li>• Impacts on affected properties and land uses, including impacts relating to access, land use, business activities, future development potential, and property acquisition; and</li> <li>• Service demand, capacity and augmentation of existing and proposed utilities and infrastructure, including any relocation as a result of the development.</li> </ul> <p>Chapter 23 of the MPW Concept Plan EIS assessed the impacts to property and infrastructure associated with Early Works activities. The land use impacts associated with the Early Works development phase</p>

Key issue	Environmental assessment of Modification Proposal
	<p>include those related to the demolition of Defence buildings to prepare the MPW site for IMT construction and warehousing.</p> <p>The Modification Proposal would involve further site preparation activities, including the import and placement of fill. As infrastructure to buildings within the MPW site would be removed as part of Early Works, no additional impacts to existing utilities are anticipated as a result of the Modification Proposal. As discussed in Section 2.2, the area of impact of the Modification Proposal was selected to overlap with the Early Works footprint and land that is already cleared within the MPW site and no further property impacts are predicted. The impacts to property and infrastructure are therefore the same as those assessed for the Early Works under the MPW Concept Plan Approval.</p>

Other environmental impacts considered within the MPW Concept Plan EIS, but not identified as key issues within the SEARs that are considered to result in a minor or negligible change to the impacts predicted as a result of the Modification Proposal are presented in Table 5-27.

Table 5-27: Other issues with a minor environmental impact

Other issues	Environmental assessment of Modification Proposal
<b>Greenhouse gas</b>	<p>Chapter 19 of the MPW Concept Plan EIS provides a summary of investigations estimating the GHG emissions resulting from the construction and operation of the MPW Concept Plan and Early Works. One of the SEARs issued under air quality for the Concept Plan Approval included the preparation of a <i>Scope 1 greenhouse gas assessment</i>, as defined by the <i>greenhouse Gas Protocol</i>. Indicative site layouts, the estimated construction approach, vegetation clearing assumptions, projected traffic volumes, predicted terminal plant and equipment use and projected electricity consumption were all used to form the assessment.</p> <p>Early Works activities were not included discretely as part of this assessment, owing to the conclusion made that GHG emissions during this phase are likely to be negligible. Subsequent development phases, including those involving bulk earthworks to raise and level the site (activities seeking approval under this Modification proposal) were assessed as part of this assessment, captured as part of the “Phase A construction works”. GHG emissions through diesel fuel combustion (diesel heavy vehicle use - Scope 1 emissions) in transporting fill material to the site and spreading onsite would comprise the most GHG intensive activities undertaken as part of the Modification Proposal.</p> <p>The estimated GHG emissions assessed as part of the MPW Concept Plan EIS from the “Phase A construction works” relating to “heavy diesel vehicle use for transport of materials” was estimated at 4,503 t CO<sub>2-e</sub>, which comprises less than 10% of the total construction emissions from this phase.</p> <p>The GHG emissions generated by activities seeking approval under the Modification Proposal, such as additional truck movements and minor vegetation removal, have been assessed under “Phase A construction works”, are unlikely to be significant and are consistent with those predicted for the MPW Project. REMMs to minimise GHG emissions during the construction phase of the MPW Project would be implemented during the Modification Proposal.</p>

Other issues	Environmental assessment of Modification Proposal
<p><b>Social and economic</b></p>	<p>Social and economic impacts as a result of Early Works are assessed within Chapter 24 of the MPW Concept Plan EIS. The social impact assessment considered issues such as impact to the community structure, impacts on the quality of living, impacts to public open spaces, and other social impacts such as increased traffic congestion and safety for the MPW Project as a whole. Social impacts associated with Early Works were predicted to be relatively minor in nature, relating mainly to amenity issues of noise, air and visual impacts. The assessment concluded that Early Works would have a positive impact in generating jobs over the construction period.</p> <p>The Modification Proposal is not expected to create any additional social impacts that have not already been considered and assessed as part of the MPW Concept Plan EIS. In particular, the Modification Proposal would result in the same impacts assessed for Early Works under the MPW Concept Plan EIS.</p>
<p><b>Human health</b></p>	<p>Human health impacts were assessed in Chapter 25 of the MPW Concept Plan EIS. The assessment concluded that Early works activities comprising localised building demolition and site preparations work is unlikely to generate detectable health impacts beyond the site boundary and as such are considered to be negligible in relation to subsequent construction stages.</p> <p>The assessment concluded that additional emissions as a result of construction activities would not result in significant changes to the total existing local levels of PM<sub>10</sub> or PM<sub>2.5</sub>. It was concluded overall that health risks to neighbouring communities generated as a result of construction and operation of the MPW Project would be negligible.</p> <p>Given that the Modification Proposal works would be temporary, and both annual average PM<sub>10</sub> and NO<sub>x</sub> concentrations are below relevant NSW EPA and OEH Criteria (refer to Section 5.6), it is considered unlikely that the additional truck movements and activities undertaken as part of the Modification Proposal would result in any additional health impacts to those assessed under the MPW Concept Plan Approval.</p>

## 5.11 Summary of mitigation measures

This Modification Proposal has identified a range of environmental impacts and recommended management and mitigation measures to avoid, remedy or mitigate these impacts (refer to Sections 5.1 to 5.10).

In general, the existing REMMs and MCoAs are considered to be suitable to mitigate the impacts of the Early Works, as modified (in the Modification Proposal). In addition to those already part of the MPW Concept Plan Approval a summary of the measures identified as relevant to the Modification Proposal, are provided in Table 5-28.

Table 5-28: Mitigation measures in addition to the REMMs

Topic	Mitigation measure
Traffic and Transport	Road Safety Audit on Cambridge Avenue to be undertaken prior to the commencement of the Modification Proposal works period to identify the traffic safety risks and determine appropriate mitigations which would need to be implemented (e.g. truck movements to occur outside peak hours, driver awareness and safety training, speed monitoring and reporting protocols, etc.).
	Proposed Chatham Avenue/Moorebank Avenue intersection. To accommodate construction traffic as a result of the Modification Proposal, this intersection is proposed to be a signalised 3-leg intersection. The lane configuration at this intersection is proposed to remain unchanged from the existing layout on Moorebank Avenue with the exception of an increase in the turn storage length for the north approach from 20 m to 200 m. It should be noted that the SIDRA analysis has indicated that 70 m would be adequate storage length for the right-turn movement on the north approach. However, a storage length of 200 m would be provided to enhance vehicular access to the site. On the south approach, the left-turn storage length is recommended to be increased from 15 m to 25 m. The proposed changes are able to be implemented within the current right-of-way of the road. The proposed changes are able to be implemented within the current right-of-way of the road.
	Proposed MPW Access Road/Moorebank Avenue intersection. As a result of the Modification Proposal, the intersection is proposed to be a 3-leg signalised seagull intersection with the western approach facilitating access for construction traffic generated by the Modification Proposal. With the signalised seagull intersection, southbound through movements are not impeded i.e. free-flowing to provide increased intersection throughput. On the north approach, a right turn storage length of 85 m is recommended to facilitate heavy vehicle access to the MPW site. Two full approach lanes (one for left-turn movement and one lane for northbound through movement) on the south approach are recommended.
Soils and contamination	Quality control aspects relating to permanent fill and risks associated with temporary stockpiling would be addressed and managed by a site specific earthworks specification (also known as the <i>Earthworks Specification</i> ). This document is to be developed in consideration of the final design layout adopted, and operational requirements relating to the stockpiling during the construction stage.
Biodiversity	Directional lighting will be used where lighting is required in the area of impact. Lights would be directed away from the riparian vegetation adjoining the Georges River as far as is practicable.

As identified in Section 3.3, minor administrative changes are proposed to the MCoAs to facilitate the Modification Proposal. Based on the assessment provided in this Modification Report no further changes to the MCoAs, as a result of additional environmental impacts, are considered necessary.

## 6 JUSTIFICATION AND CONCLUSION

This Modification Proposal has been prepared on behalf of the SIMTA and seeks approval to modify the MPW Concept Plan Approval (SSD 5066), pursuant to Section 96(2) of the EP&A Act.

Recent civil design development relating to earthworks has re-evaluated the cut volumes, and therefore available fill volumes, on the MPW site, resulting in an increased volume of fill (approximately 1,600,000 m<sup>3</sup>) requiring importation to the MPW site. This departs from that identified within the MPW Concept Plan documentation which stated that, although fill was required, it was to be derived from on-site excavations (i.e. balanced cut to fill).

The works for which a modification is sought include the following:

- Minor vegetation removal (not EEC); slightly above that provided within Early Works)
- Demolition of buildings or structures during Early Works (those not currently included within Early Works)
- Import, by truck, of approximately 1,600,000 m<sup>3</sup> of fill (from offsite locations)
- Stripping and stockpiling of topsoil within the area of impact, cut and fill within the primary earthworks areas and stockpiling of clean fill within the primary earthworks areas
- Temporary sediment and erosion control works, including onsite detention basins (greater than those envisaged within the Early Works)
- Establishment of temporary internal haulage routes, construction compounds (including, but not limited to, a materials crusher and other plant and equipment) (additional to those included within Early Works).

The earthworks included within the Modification Proposal would occur over a period of approximately six to nine months.

The potential environmental, social and economic impacts, both direct and cumulative, have been identified and thoroughly assessed as part of this Modification Proposal. It has been determined that the Modification Proposal would result in a minor intensification of activity associated with the Early Works, however, this would be of a short duration and would be managed with minimal environmental impact through the implementation of the mitigation measures identified within the MCoAs, REMMs and the additional mitigation measures identified in this report (refer to Section 5.11).

Consequently, it is concluded that the proposed modification would result in a development that is substantially the same as the project described within the MPW Concept Plan Approval and the changes would not alter the development of the IMT facility and warehousing.

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