OPERATIONAL FLORA AND FAUNA MANAGEMENT PLAN

Moorebank Intermodal Precinct – West Precinct Stage 2

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SSD 7709

Operational Flora and Fauna Management Plan

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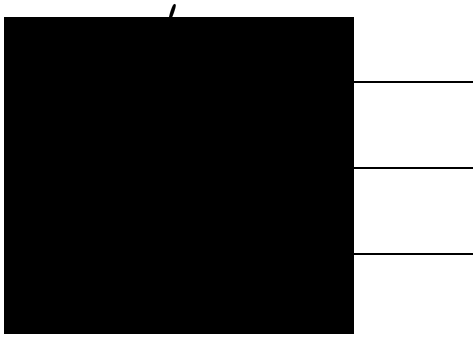

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REVISIONS

Revision	Date	Description	Prepared by	Approved by
01	18/11/2022	Draft for Client Review	[redacted]	[redacted]
02	02/12/2022	Draft for ER review	[redacted]	[redacted]
03	14/12/2022	Updated with ER review	[redacted]	[redacted]
04	19/01/2023	Updated following consultation with NSW Environment and Heritage Group	[redacted]	[redacted]
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06	29/05/2023	Updated following ER comments	[redacted]	[redacted]
07	06/05/2024	Updated to address DCCEEW comments	[redacted]	[redacted]
08	08/11/2024	Updated to address Modification 3 and operational changes	[redacted]	

Declarations of Accuracy

LOGOS MLP Development Management PTY LTD (as joint approval holder)

In making this declaration, I am aware that section 491 of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the Environment Protection and Biodiversity Conservation Regulations 2000 (Cth). The offence is punishable on conviction by imprisonment or a fine, or both. I am authrised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed [redacted]

Full name [redacted]

Organisation LOGOS MLP Development Management Pty Ltd (ACN: 649 469 778)

Date 14 February 2025

Qube Re Services (No. 2) (as joint approval holder)

In making this declaration, I am aware that section 491 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth). The offence is punishable on conviction by imprisonment or a fine, or both. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed [redacted]

Full name [redacted]

Organisation Qube Re Services (No. 2) Pty Limited (ACN: 605 751 782)

Date 26/11/24

Acronyms and Definitions

Acronym / Term	Meaning
APZ	Asset Protection Zone
BAR	Moorebank Precinct West (MPW) – Stage 2 Proposal Biodiversity Assessment Report (Arcadis, October 2016). The BAR was updated with the MPW Stage 2 RtS (Appendix G; Arcadis, June 2017) and is available on the Project website (https://moorebankintermodalprecinct.com.au/community/document-library/).
BC Act	Biodiversity Conservation Act 2016
BPEMF	Biodiversity Provisional Environmental Management Framework (PB, 3 July 2014)
CCS	Community Communication Strategy
CFFMP	MPW Stage 2 Construction Flora and Fauna Management Plan
CoC	Condition of Consent
DCCEEW	Department of Climate Change, Energy, the Environment and Water (formerly DotEE)
Development, the	The MPW Stage 2 (SSD 7709) Development, approved 11 November 2019; reissued by the NSW Land & Environment Court on 24 December 2021.
DPIE	Department of Planning, Environment and Infrastructure
DPHI	Department of Planning and Environment (formerly the Department of Planning and Environment)
DotEE	Department of the Environment and Energy
EHG	NSW DCCEEW Environment & Heritage Group
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning and Assessment Act 1979
EP&A Regulation	Environmental Planning and Assessment Regulation 2021
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ESR	ESR Australia & New Zealand
FCMM	Final Compilation of Management Measures
FM Act	Fisheries Management Act 1984
HSEQ	Health, Safety, Environment and Quality
IMT	Intermodal Terminal
IPC	Independent Planning Commission
KMP	Moorebank Precinct West Stage 2 Koala Management Plan (SIMTA/Cumberland Ecology, March 2020) – Appendix C of this OFFMP

Acronym / Term	Meaning
MIP	Moorebank Intermodal Precinct
MOD 1	Modification 1 to SSD 7709, granted by the IPC 24 December 2020
MOD 2	Modification 1 to SSD 7709, granted by the IPC 30 September 2021
MPE	Moorebank Precinct East
MPW	Moorebank Precinct West
MPW Concept Approval	MPW Concept Approval (SSD 5066), granted by (the now) DPHI on 29 September 2014 for the development of an intermodal terminal facility including a rail link connecting the site to the Southern Sydney Freight Line, an intermodal terminal, warehousing and distribution facilities and a freight village.
OEMP	Operational Environmental Management Plan
OERP	Operational Emergency Response Plan
OFFMP	Operational Flora and Fauna Management Plan
OSD	On-site detention
PB	Parsons Brinkerhoff
POEO Act	Protection of the Environment Operations Act 1997
RCMM	Revised Compilation of Mitigation Measures
REMM	Revised Environmental Management Measures
RtS	Response to Submissions
SIMTA	Sydney Intermodal Terminal Alliance
SSD	State significant development
SSFL	Southern Sydney Freight Line
TEC	Threatened ecological community
TEUs	twenty-foot equivalent units
UDDR	Moorebank Precinct West Stage 2: Urban Design Development Report (Reid Campbell, March 2021)
UDLP	Urban Design and Landscape Plan
WoNS	Weed of National Significance

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1. Introduction

1.1. Background

The Moorebank Intermodal Precinct (MIP) is an integral component of the freight, ports and transport strategies of both the NSW and Commonwealth governments located approximately 27 kilometers (km) south-west of the Sydney Central Business District and 26km west of Port Botany within the Liverpool Local Government Area.

The MIP aims to streamline the freight logistics supply chain from port to store, deliver savings to businesses and consumers, and help service the rapidly growing demand for imported goods in south-west Sydney. On completion, the MIP will move 1.55 million shipping containers annually by rail instead of road. It will also feature Australia's largest purpose-built warehouse and distribution precinct serviced by the latest automated technology which will see driverless shuttle carriers collect and transport containers around the precinct to be processed, unpacked and stored on site prior to distribution.

The MIP is divided into the Moorebank Project West (MPW) and Moorebank Precinct East (MPE) projects.

1.2. Development Ownership

In 2022, LOGOS joined the ESR group of companies and since August 2024, the LOGOS and ESR operations have been integrated to now operate under the name ESR Australia & NZ (ESR). The applicant/ approval holder entity remains unchanged at this stage until further notice and references to LOGOS and LOGOS authored documents and/or plans may continue and remains relevant where LOGOS and ESR are used interchangeably.

1.3. Purpose

This Operational Flora and Fauna Management Plan (OFFMP) is a sub-plan of the MPW Stage 2 Operational Environmental Management Plan (OEMP).

The OFFMP has been prepared to specifically address conditions of consent (CoC) B160 of the SSD 7709 consent and Condition 7 of the EPBC 2011/6086 Approval, which require the preparation of an OFFMP, to the satisfaction of the Planning Secretary and the Federal Minister for the Environment (or delegate) prior to the commencement of operation.

This OFFMP identifies the operational environmental management measures to be applied to activities undertaken across the Development, as detailed in Section 2. This OFFMP does not apply to areas outside the operational footprint of the Development.

1.4. Objectives and targets

Table 1-1 below outlines the objectives and targets for the Development for the management of flora and fauna during operations. The objectives and targets were developed based on the MPW Stage 2 Environmental Impact Statement (EIS) (Arcadis, 2016), and are consistent with the Biodiversity Provisional Environmental Management Framework (BPEMF) (PB, 3 July 2014).

Table 1-1 OFFMP objectives and targets

Objective	Target	Timeframe	Accountability
Protect threatened flora species from incidental harm	Prevent damage or removal of any threatened flora species that appear on, or occur immediately adjacent to, the Development	Ongoing	Site Health, Safety and Environment (HSE) Manager
Avoid disturbance to flora and fauna resulting from operational activities	Minimise incidents of unauthorised access and disturbance of vegetation retention area, including riparian vegetation associated with the Georges River	Ongoing	Site HSE Manager
Protect vegetated areas immediately adjacent to the Development by preventing the spread of weeds and pathogens	Weeds controlled in accordance with the requirements of the *Biosecurity Act 2015* Minimise occurrence of pathogens on site e.g. phytophthora, chytrid	Ongoing	Site HSE Manager
Minimise harm to koalas and other native fauna	No death or injury to koalas and other native fauna Control feral fauna species Minimise impacts to threatened fauna species	Ongoing	Site HSE Manager
Protect aquatic environments	No spills or pollution incidents in Anzac Creek and Georges River	Ongoing	Site HSE Manager

All Logos employees, sub-contractors and visitors are required to comply with the requirements of this OFFMP at all times.

1.5. Consultation

This OFFMP has been prepared in consultation with NSW Environment and Heritage, as required by CoC B160. A summary of consultation activities is provided in Table 1-2. Further details of consultation are included in Appendix A.

Table 1-2 Consultation summary

Agency	Date	Person contacted	Comment	Status
NSW Environment and Heritage Group	20/10/2022	info@environment.nsw.gov.au	Email to NSW Environment and Heritage to determine contact for the Development, as previous contact on long-term leave.	-

Agency	Date	Person contacted	Comment	Status
	08/11/2022	info@environment.nsw.gov.au	Follow up email.	-
	14/11/2022	-	Email response received from [redacted] with mailbox details.	-
	09/12/2022	OEH ROG Greater Sydney Planning Unit mailbox [redacted]	Draft OFFMP provided to Environment & Heritage Group (EHG) for review.	-
	14/12/2022	-	Email response received from [redacted] indicating consultation response will be provided late January at the earliest.	-
	13/01/2023	-	Email response received from [redacted] Consultation identified additional requirement for monitoring of fauna control structures. Table 5-1 updated to include monitoring requirement.	-
	10/02/2023	[redacted] Senior Conservation Planning Officer Biodiversity & Conservation - Environment and Heritage Group	Revised OFFMP provided back to EHG for consultation close-out.	-
	16/02/2023	-	Email received from [redacted] from EHG confirming consultation close-out.	Closed

1.6. Progressive implementation of the OEMP

The OEMP and sub-plans are applicable to the MPW Stage 2 Development. Operational areas will come online progressively as warehouses and the terminal

facility are constructed and tenanted. The OEMP and sub-plans are applied to operational areas on completion of construction. The progressive application of the OEMP and sub-plans is discussed in Section 1.5 of the OEMP.

1.7. Document Structure

The structure of this OFFMP is:

- **Section 1** provides a brief overview of the MIP and the purpose of the OFFMP.
- **Section 2** provides a summary of the activities being undertaken during operation of the MPW Stage 2 Development.
- **Section 3** outlines the statutory requirements and obligations which need to be fulfilled during operation of the Development in relation to the management of flora and fauna.
- **Section 4** addresses the key flora and fauna, including koalas, risks associated with operation of the Development, including the requirements of CoC B160 (a) and (b), and the environmental controls established to manage key risks.
- **Section 5** provides details for monitoring, reporting, and auditing and how environmental incidents and non-conformances are to be managed during operations.

2. Development Description

The Development is being undertaken in accordance with the following approvals:

- MPW EPBC 2011/6086 Approval, approved on 27 September 2016 by Department of Climate Change, Energy, the Environment and Water (DCCEEW) (formerly Department of the Environment and Energy (DotEE)) and varied on 17 September 2019 and 22 April 2022
- Consolidated MPW Stage 2 (SSD 7709) Development Consent (SSD 7709), approved on 11 November 2019 by NSW Independent Planning Commission (IPC); reissued by the NSW Land & Environment Court on 24 December 2021
- MPW Stage 2 Modification 1 (SSD 7709- MOD 1), approved on 24 December 2020 by IPC
- MPW Stage 2 Modification 2 (SSD 7709- MOD 2), approved on 30 September 2021 by IPC.

The MPW Stage 2 Development involves:

- Construction and 24/7 operation of an intermodal terminal (IMT) facility to support a container freight throughout volume of 500,000 twenty-foot equivalent units (TEUs) per annum, including:
  - a rail terminal with nine rail sidings and associated locomotive shifter
  - a rail link connection from the sidings to the rail link constructed under MPE Stage 1 (SSD 6766) to the Southern Sydney Freight Line (SSFL)
  - rail and truck container loading and unloading and container storage areas
  - truck waiting area and emergency truck storage areas
  - container wash-down facilities and degassing area
  - mobile locomotive refuelling station
  - engineer's workshop, administration facility and associated car parking.

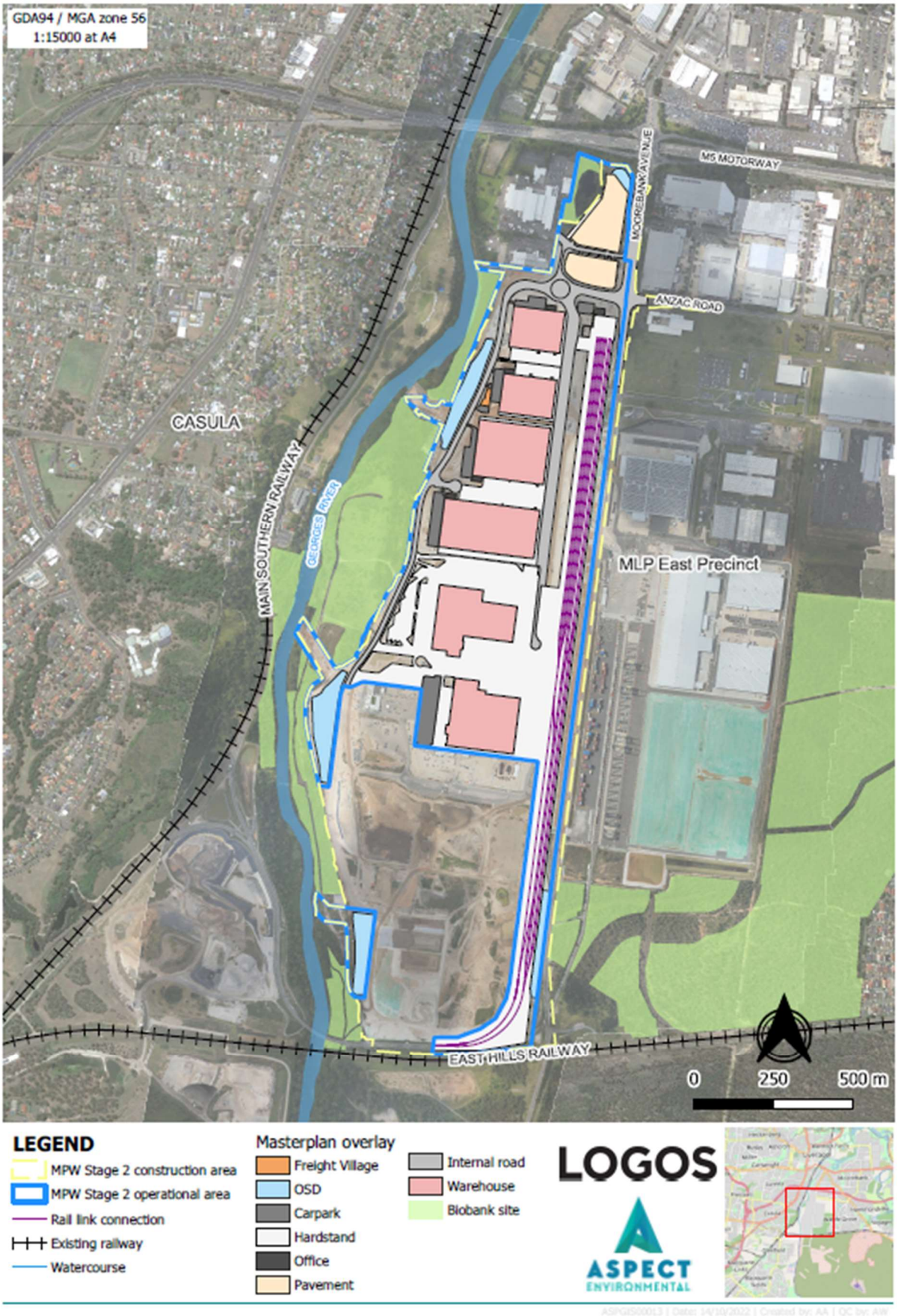
Operation of the IMT facility includes operation of rail lines which connect to the MPE rail link and subsequently to the SSFL, and container freight movement by truck to and from the MPW Site.

- Construction and 24/7 operation of a warehousing estate on the northern part of the site servicing the IMT facility and including:
  - six warehouses with a total gross floor area (GFA) of 215,000m^2 and, for each warehouse, associated offices, staff amenities, hardstands and truck and light vehicle parking
  - 800m^2 freight village (operating from 7am to 6pm, 7 days/week) including staff/ visitor amenities
  - internal roads, noise wall, landscaping, lighting and signage.
- Intersection upgrades on Moorebank Avenue at:
  - Anzac Road providing site access
  - Bapaume Road for left turn only out of the site.

- Construction and Operation of on-site detention basin, bioretention/ biofiltration systems and trunk stormwater drainage for the entire site.

The Development's operational layout is shown in Figure 2-1

Figure 2-1 Operational site layout



3. Statutory Requirements

The operation of the Development is required to comply with all relevant legislation, permits, licences, approvals, and development consents applicable to the site.

A copy of the approved OEMP and sub-plans will be kept at the Site Office and shall be made available to relevant regulatory officers, the Certifying Authority and operational staff upon request.

3.1. Development Approvals

The operation of the Development was approved under both the NSW EP&A Act and the Commonwealth EPBC Act. Both these approvals have environmental conditions relevant to the operation of the Development and its interaction and management of flora and fauna, which are discussed below.

3.1.1. EPBC Act approval

The EPBC 2011/6086 approval for the MPW Concept was granted by DotEE (now DCCEEW) in September 2016 and varied on 17 September 2019 and 22 April 2022

The operation of the Development will be consistent with the EPBC 2011/6086 Approval conditions. The specific conditions and commitments relating to the development of this OFFMP are identified in Table 3-1.

Table 3-1 OFFMP related conditions from the EPBC 2011/6086 Approval

Condition	Requirement	OFFMP section
7	Sections of the CEMP and OEMP relating to biodiversity must be prepared by a suitably qualified expert and must: a) be consistent with the Biodiversity Provisional Environmental Management Framework (3 July 2014), provided at Appendix O to the finalised EIS b) incorporate all measures 6A to 6R, 6T, 6V and 6X from Table 7.1 of the finalised EIS that are described as 'mandatory' c) explain how all measures 6A to 6R, 6T, 6V and 6X from Table 7.1 of the finalised EIS that are described as 'subject to review have been addressed d) include detailed biosecurity protocols, prepared in consultation with relevant New South Wales and Commonwealth biosecurity agencies, in relation to international and interstate container movement e) be approved by the Minister.	a) Section 1.4, Table 1-1 b) Section 4.4 c) Section 4.4 d) Section 4.2 and Appendix E e) Previous revisions of this OFFMP have been approved by the Minister's delegate

3.1.2. EP&A Act approval

MPW Stage 2 was approved under Part 4, Division 4.7 of the EP&A Act on 11 November 2019 by NSW Independent Planning Commission (IPC). The Consolidated

MPW Stage 2 (SSD 7709) Development Consent (SSD 7709) was reissued by the NSW Land & Environment Court on 24 December 2021.

The MPW S2 (SSD 7709) CoC include requirements to be addressed in this OFFMP. These requirements and where they are addressed in the OFFMP are provided in Table 3-2.

Table 3-2 details the primary conditions specific to the development of this OFFMP, while the secondary conditions, conditions which are related to the environmental aspects associated with the plan, are detailed in Appendix B.

Table 3-2 Relevant SSD 7709 MPW Stage 2 CoCs

Condition	Requirement	OFFMP section
Primary Conditions		
B160	Prior to commencement of operation an Operational Flora and Fauna Management Plan (OFFMP) must be prepared by a suitably qualified person in consultation with OEH and be submitted to the Planning Secretary for approval. The OFFMP must include: (a) monitoring, management and maintenance procedures for koala habitat corridors; and (b) management and maintenance of other measures and site operations to minimise the risk of harm to koalas and other native fauna.	a) Section 5 b) Section 4 Appendix C – MPW Stage 2 Koala Management Plan (Cumberland Ecology, 2020)

All other relevant CoCs relating to the operation of MPW Stage 2, and how they are addressed, along with division of responsibilities, are provided in Appendix B. The Final Compilation of Mitigation Measures, included as Appendix 2 of the SSD 7709 Consent, have also been considered in the preparation of this OFFMP and a list of the FCMM that apply to the Development and where they are addressed in this OFFMP is provided in Appendix B.

3.2. Legislation

The regulatory framework for the site which identifies relevant legislative instruments, their key objectives and relevance to the operation of the Development is provided in Appendix B Compliance Matrices

3.3. Roles and responsibilities

Roles and responsibilities applicable to this OFFMP are presented in Table 3-3. Further roles and responsibilities across the Development are outlined in Section 4.3 of the OEMP.

Table 3-3 Roles and responsibilities

Role	Responsibilities
Site Health, Safety & Environment (HSE) Manager	• Engages and manages contractors for flora and fauna monitoring/ management activities, weeding and landscaping • Point of contact for any flora and fauna related incidents and ensuring incidents are reported • Liaises with DPHI and NSW DCCEEW Environment and Heritage, as necessary • Verifies qualifications and certifications of contractors • Reviews monitoring reports • Reports to relevant Area Managers/Terminal Manager
Landscape Contractor	• Weed management • Complies with certification, monitoring and records requirements under the *Pesticides Act* 1999 and *Pesticides Regulation 2017*
Ecologist	• Supervises activities in ecologically sensitive areas (if required) • Monitoring, management and maintenance requirements as informed by CoC B160 and the FCMMs. • Fauna handling (which can also be undertaken by a vet, an appropriate Council Officer or a WIRES representative).

4. Implementation

This section identifies the key flora and fauna environmental controls established to manage potential impacts of the Development on koala habitat corridors, other native fauna and native vegetation.

4.1. Existing environment

Flora and fauna values relevant to the Development are summarised below.

4.1.1. MIP Precinct West

The operational layout of the Development, described in detail in Section 2 and shown in Figure 2-1, includes warehousing, the intermodal rail terminal (IMT), stormwater detention and water quality treatment structures, hardstand pavement (e.g. roads, car parks, loading and storage areas) and landscaped areas.

Vegetation in operational areas of the site was cleared during construction in accordance with the approved CFFMP. Planting/landscaping is guided by the UDDR (Reid Campbell, March 2021).

Landscaping is present on public road setbacks, site access and internal road frontages, warehouse and car park areas, MPW Site boundaries, and onsite detention basins (OSDs). Landscaping is managed and maintained in accordance with the approved Landscape Vegetation Maintenance Plan (Aspect, 2022).

4.1.2. Adjacent Areas

4.1.2.1. Georges River

The Georges River comprises a major permanently flowing river and as such, is classified as Class 1 (Major Fish Habitat) in accordance with Fairfull and Witheridge (2003). It is also mapped as ‘Key Fish Habitat’ on DPHI’s Key Fish Habitat map for the Sydney Metropolitan area. Aquatic habitats of the Georges River adjacent to the Development Site included soft substrate pool habitat, large woody debris and extensive macrophyte cover.

The Georges River riparian corridor, comprising native and introduced highly disturbed vegetation, provides some wildlife habitat and a buffer for the protection of soil stability, water quality and aquatic habitats. No threatened flora species have been identified in the Georges River riparian corridor. CoC B2 prevents operations occurring within the riparian corridor and provides a further 10m offset where the corridor (40m from top of bank) is vegetated.

Stormwater discharge from the Development is managed through three OSDs (5, 6 and 8). These OSDs provide a water quality treatment train via biofiltration beds. The OSDs are operated and maintained in accordance with the approved Stormwater Infrastructure Operations Management Plan (SIOMP). There are no other operational management requirements for the Georges River and riparian corridor.

4.1.2.2. Boot Land

The Boot Land lies adjacent to the southern MPW boundary, and the eastern and southern boundaries of the MPE Site. There are five different plant community types,

each associated with a threatened ecological community (TEC), present in the Boot Land.

The MPW 2 operations are separated from the Boot Land by Moorebank Avenue. There is surface water drainage connectivity via OSD 3 in the south-east of the Development. OSD 3 provides a water quality treatment train for the Development, via biofiltration beds, prior to discharge under Moorebank Avenue to Anzac Creek. Apart from maintaining the operational performance of OSD 3 in accordance with the approved SIOMP, there are no other operational management requirements for the Development in respect of the Boot Land.

4.1.2.3. Anzac Creek

Anzac Creek, to the south of MPW, is a watercourse with intermittent flow supporting semi-permanent to permanent water in pools and as such, is classified as Class 3 (Minimal Fish Habitat) in accordance with Fairfull and Witheridge (2003). As identified above, OSD 3 provides the water quality treatment for Development stormwater being discharged to Anzac Creek. OSD 3 is to be maintained in accordance with the approved SIOMP.

4.1.3. Biobanking Agreement 341

Environmental management of the conservation, riparian and offset areas in the western portion of the MPW Site as identified in SSD 7709, is covered by an executed Biobanking Agreement (ID number BA341) under Division 2 of Part 7A of the *Threatened Species Conservation Act 1996* (NSW), in addition to a number of management plans required by the SSD 7709 development consent. The Biobank Sites include three identified offset areas: Moorebank Offset Area, Casula Offset Area and Wattle Grove Offset Area.

Responsibility for the environmental management of areas covered by the Biobanking Agreement sits outside of the operational area of the Development and corresponding landowner obligations, and as such, is not covered by this OFFMP.

4.1.4. Weeds

Twelve priority weeds listed under the *Biosecurity Act 2015* have been identified within, or immediately adjacent to the Development site. Nine of these are also listed as a Weed of National Significance (WoNS). The weeds identified within the Development are listed in Table 4-1.

Table 4-1 Weeds recorded in the Development Site

Weed	Status
Alligator Weed; *Alternanthera philoxeroides*	WoNS, priority weed
Ground Asparagus; *Asparagus aethiopicus*	WoNS, priority weed
Bridal Creeper; *Asparagus asparagoides*	WoNS, priority weed

Weed	Status
Boneseed; *Chrysanthemoides monilifera* subsp. *monilifera*	WoNS, priority weed
Bitou Bush; *Chrysanthemoides monilifera* subsp. *rotundata*	WoNS, priority weed
Lantana; *Lantana camara*	WoNS, priority weed
Blackberry; *Rubus fruticosus*	WoNS, priority weed
Sagittaria; *Sagittaria platyphylla*	WoNS, priority weed
Salvinia; *Salvinia molesta*	WoNS, priority weed
Fireweed; *Senecio madagascariensis*	WoNS, priority weed
Giant Reed; *Arundo donax*	Priority weed
Peruvian Primrose; *Ludwigia peruviana*	Priority weed
African Olive; *Olea europaea* subsp. *cuspidata*	Priority weed

4.2. Biosecurity protocols

Biosecurity for container freight movements is typically controlled at the port of entry, by way of quarantine and inspections prior to a container leaving the stevedore terminals to its given destination.

Notwithstanding, biosecurity protocols are implemented for each tenancy during operations. A general Biosecurity Protocol is provided as Appendix E of this OFFMP.

4.3. Aspects, impacts and risks

4.3.1. Operational activities

The following operational activities have the potential to impact flora and fauna:

- Maintenance of stormwater management infrastructure, including landscaping in OSDs
- Landscaping activities – weed control and application of herbicides
- Noise-generating activities
- Plant and vehicle operation
- Truck movements
- Train movements (Intermodal Terminal facility)
- Emergency response activities.

4.3.2. Potential Operational Impacts

The potential impacts on flora and fauna associated with specific operational activities are listed in Table 4-2. No clearing of native vegetation will be undertaken during operations.

Table 4-2 Potential flora and fauna impacts associated with operational activities

Activity	Potential impacts
Maintenance of stormwater management infrastructure	• Weed spread into biofiltration beds and into watercourse • Blockage of biofiltration system resulting in reduced treatment performance • Risk of pathogen spread (e.g. chytrid)
Landscaping activities, planting and weeding	• Weed spread • Herbicide application – overspray, drift, and selection of appropriate herbicide.
Plant and vehicle operation	• Fauna injury or mortality as a result of collisions with vehicles or plant in the Development or road network as a result of increased truck movements
Train movements	• Fauna injury or mortality as a result of train collision
Emergency response	• Removal of or damage to vegetation to facilitate emergency access • Fauna injury or mortality as a result of vehicle strike
Site lighting	• Impact to foraging, predation and mating behaviours of some flora and fauna species due to light spill
Leakage or spills of pollutants	• Impact of potential leaks or spills of pollution entering the surrounding area, including via surface water and the stormwater management system

4.4. Management measures

This section describes the overall approach to managing and mitigating operational risks to flora and fauna, including koalas, during operations. Recommended management measures are summarised in Table 4-3, which includes the relevant management and monitoring measures detailed in the approved Koala Management Plan (KMP) (Cumberland Ecology, 2020), required by CoC B152 and provided as Appendix C of this OFFMP.

Table 4-3 Management measures

ID	Management Measure	Timing	Responsibility	Reference/Source
GENERAL				
FF-01	Management of a contaminant spill or leak will be undertaken in accordance with the Environmental Pollution Incident response outlined in Section 4.10 of the Operational Emergency Response Plan. Spill kits will be located throughout the Development.	As required	Site HSE Manager	OERP, Section 4.10
FF-02	On declared 'Total Fire Ban' days, hot works will not be undertaken in proximity to vegetation or ground cover without establishing a clearance zone around the works and there will be no: • Grass or vegetation reduction works (including mowing/slashing) • Arborist works (chainsaw) • Vehicle operations in long grass.	As required	Site HSE Manager	Best practice
FF-03	Vehicles, plant and equipment will not block fire trails	Ongoing	Site HSE Manager	Best practice
WEED CONTROL AND PEST MANAGEMENT				
FF-04	Control of priority weeds will be undertaken in accordance with the Weed, Pest and Vermin Management Protocol to prevent the spread into adjacent and nearby bushland.	Ongoing	Site HSE Manager Landscape contractor	Appendix D of this OFFMP

ID	Management Measure	Timing	Responsibility	Reference/Source
FF-05	Equipment used for treating weed infestation will be cleaned prior to moving to a new area within the Development to minimise the likelihood of transferring any plant material and soil.	As required	Site HSE Manager Landscape contractor	MPW Stage 2 Proposal RtS – Appendix G: Updated BAR (Arcadis, 2017)
FF-06	Vegetative material and topsoil that contains or is likely to contain priority weeds and propagules must be disposed of at an appropriate waste facility that accepts such material. The nearest waste facilities are located at: • Chullora (15 Muir Rd, Chullora NSW 2190) • Lucas Heights (New Illawarra Rd, Lucas Heights NSW 2234).	As required	Site HSE Manager Landscape contractor	Best practice
FF-07	If feral fauna species and/or vermin are identified in the Development, or to minimise the potential impacts from feral fauna species and/or vermin, the Weed Pest and Vermin Management Protocol will be implemented.	Ongoing	All site staff and visitors	Appendix D of this OFFMP
FF-08	Manage undesirable animal species by: • Monitoring the site for the presence of undesirable animal species • Cooperating with government bodies, interest groups and adjacent landowners in regional pest management programs • Manage the use of nest boxes by undesirable species.	Ongoing / as required	Site HSE Manager Landscape contractor	MPW Stage 2 Proposal RtS – Appendix G: Updated BAR (Arcadis, 2017) SSD 5066 REMM 6AA Appendix C of this OFFMP

ID	Management Measure	Timing	Responsibility	Reference/Source
PATHOGEN MANAGEMENT				
FF-09	Pathogen management will be undertaken in accordance with the Weed Pest and Vermin Management Protocol.	As required	Site HSE Manager	Appendix D of this OFFMP
FF-10	Vehicles, equipment, materials and footwear used in landscaping activities and activities involving soil disturbance will be cleaned on entry (free of soil, mud and/or seeds) to minimise the introduction or spread of *Phytopthora cinnamomi.*	Ongoing	Site HSE Manager	*Saving Our Species Hygiene Guidelines – Protocols to protect priority biodiversity areas in NSW from Phytophthora cinnamomic, myrtle rust, amphibian chytrid fungus and invasive plants* (NSW DPIE 2020)
FF-11	In the event frogs are encountered on site and require relocation, a suitably qualified ecologist will be engaged to supervise relocation actions. If handling is deemed necessary by the ecologist, the risk of Chytrid pathogen transfer will be minimised by following the *Saving Our Species Hygiene Guidelines – Protocols to protect priority biodiversity areas in NSW from Phytophthora cinnamomic, myrtle rust, amphibian chytrid fungus and invasive plants* (NSW DPIE 2020).	As required	Suitably qualified and experienced ecologist, vet, appropriate Council officer or W.I.R.E.S. representative	*Saving Our Species Hygiene Guidelines – Protocols to protect priority biodiversity areas in NSW from Phytophthora cinnamomic, myrtle rust, amphibian chytrid fungus and invasive plants* (NSW DPIE 2020)
FAUNA				
FF-12	If an animal is injured, contact a local wildlife rescue agency (e.g. WIRES) and/or veterinary surgery immediately. Until the animal can be cared for by a suitably qualified animal handler, minimise stress to the animal and reduce the risk of further injury by:	As required	Site HSE Manager Suitably qualified and experienced ecologist, vet, appropriate Council	MPW Stage 2 Proposal RtS – Appendix G: Updated BAR (Arcadis, 2017)

ID	Management Measure	Timing	Responsibility	Reference/Source
	• Handling fauna with care and as little as possible • Covering larger animals with a towel or blanket and placing in a large cardboard box • Placing small animals in a cotton bag, tied at the top • Keeping the animal in a quiet, warm, ventilated and dark area.		officer or W.I.R.E.S. representative All site staff and visitors	
FF-13	In the case of arboreal or flying mammals, attempts will be made to relocate the den or nest under the supervision of the Project Ecologist. After capture, the animal(s) will be held by a trained wildlife carer for a period of no longer than two weeks until the roost or den can be relocated, either as an entire tree or part thereof.	As required	Site HSE Manager Suitably qualified and experienced ecologist, vet, appropriate Council officer or W.I.R.E.S. representative All site staff and visitors	MPW Stage 2 Proposal RtS – Appendix G: Updated BAR (Arcadis, 2017)
FF-14	If fauna are present, allow that fauna to move through the Development and off site, where practical. If fauna does not relocate off site, is injured or a threat is evident, contact an ecologist, fauna handler, WIRES or local veterinary surgery as soon as practical to assist in relocation to adjacent retained habitat. HSEQ Manager/Advisor will be contacted immediately. Activities within that locality may need to cease if the animal is in danger or harmed until it has been relocated.	As required	Site HSE Manager Suitably qualified and experienced ecologist, vet, appropriate Council officer or W.I.R.E.S. representative All site staff and visitors	MPW Stage 2 Proposal RtS – Appendix G: Updated BAR (Arcadis, 2017)
FF-15	All vehicles and plant are to adhere to site speed limits.	Ongoing	All site staff and visitors	Best practice
KOALA MANAGEMENT				

ID	Management Measure	Timing	Responsibility	Reference/Source
FF-16	Maintenance of habitat corridors to enable koalas to disperse to adjacent areas including: • Fencing • Culverts • Restriction of access to habitat corridor.	Ongoing	Site HSE Manager	B160(a) Section 8.3.5 of KMP
FF-17	Watering of plant stock during dry conditions.	Annually for 5 years	Site HSE Manager Landscape contractor	Section 9.1.3 of KMP
VEGETATION MANAGEMENT				
FF-18	Native vegetation within the basin outlets is to be managed to maintain fauna passage and connectivity values.	Ongoing	Site HSE Manager Landscape contractor	Section 2.4 of the UDDR (Reid Campbell, 2021) MPW Stage 2 Proposal RtS – Appendix G: Updated BAR (Arcadis, 2017)
FF-19	Enhance site habitat by implementing the following elements of a planting scheme: • Provide structurally diverse vegetation • Choose plant species to maximise fauna habitat • Install nest boxes for hollow-dependent native animals • During construction of stormwater outlets, create frog habitat • Create rocky habitat.	Ongoing	Site HSE Manager Landscape contractor	MPW Stage 2 Proposal RtS – Appendix G: Updated BAR (Arcadis, 2017) SSD 5066 REMM 6AA

ID	Management Measure	Timing	Responsibility	Reference/Source
THREATENED FLORA				
FF-20	Upon detection of a threatened species the MPW Stage 2 Operational Unexpected (Biodiversity) Finds Protocol will be implemented.	As required	Site HSE Manager	MPW Stage 2 Operational Unexpected (Biodiversity) Finds Protocol – Appendix F of this OFFMP
BUSHFIRE				
FF-21	Bushfire risk management strategies detailed in the Bushfire Management Plan (Appendix F of the MPW Stage 2 Operation Emergency Response Plan (OEMP)), including maintenance of vegetation within asset protection zones (APZs) is to be implemented to reduce the risk from bushfire to an acceptable level.	As required	Site HSE Manager	Appendix F of the MPW Stage 2 OERP
MONITORING				
FF-22	Monitoring of fauna, flora and aquatic species within the Project site is to be completed in accordance with Section 5.	Ongoing, as required	Site HSE Manager Landscape contractor	MPW Stage 2 Proposal RtS – Appendix G: Updated BAR (Arcadis, 2017)

5. Monitoring, auditing and review

5.1. Monitoring requirements

Flora, fauna, water quality and other monitoring to be completed during operations is summarised in Table 5-1.

Table 5-1 Biodiversity monitoring activities

Monitoring Activity	Frequency	Responsibility	Reference/ Source
Inspect the Project site to determine weeds, vermin and pest species are not present in sufficient numbers to pose an environmental hazard, or cause the loss of amenity in the surrounding area.	No less than every three months	Site HSE Manager Landscape contractor	MPW Stage 2 Proposal RtS – Appendix G: Updated BAR (Arcadis, 2017) Appendix D of this OFFMP
Inspect the nest boxes as per the Nest Box Strategy.	Annually during spring	Site HSE Manager Landscape contractor	SSD 5066 REMM 6AA
Monitor fauna control structures including connectivity structures, fences, grids, gates and bridges.	Annually during spring Event based inspections	Site HSE Manager Landscape contractor	Consultation with EHG (DOC22/1114696).
Monitor Boot Land and Moorebank Offset areas for koala presence and koala habitat monitoring.	Annually (in conjunction with other flora and fauna monitoring activities)	Site HSE Manager Ecologist	KMP, Section 9.1

5.1.1. Monitoring Criteria

Monitoring criteria applicable to the OFFMP are provided in Table 5-2.

Table 5-2 Triggers for remedial measures

Monitoring Focus	Trigger	Action	Responsibility
Weeds	Weed infestations on the Development Identification of weed spread into adjacent areas attributed to the Development Biosecurity direction issued from DPHI	Implement weed controls in accordance with the Weed Pest and Vermin Management Protocol (Appendix D of this OFFMP)	Site HSE Manager Landscape Contractor
Feral fauna	If any feral fauna species is identified within the Development	Undertake active management to eliminate the species from the Development	Landscape Contractor
Nest boxes	Pest species taken up residence Damaged boxes Excessive nesting material Inadequate drainage Inadequately functioning	Remove pests Replace damaged boxes or components Remove excessive nesting material Other remedial actions as required	Landscape Contractor
Fencing	Inspect for damage, holes, points of entry	Undertake repairs as needed	Site HSE Manager to engage contractor
Habitat	If any problem is identified within the Development site for koala habitat	Implement appropriate measures	Site HSE Manager

Monitoring Focus	Trigger	Action	Responsibility
Fauna connectivity	Dry cells of OSD outlet structures blocked by deposited coarse woody debris or other alluvial material Structure not being used by approaching fauna	Remove debris Investigate the potential for retrospectively fitting fauna furniture within the dry cells to promote use	Site HSE Manager to engage contractor

5.2. Environmental auditing

Auditing against the requirements of this OFFMP is detailed in Section 6.3 of the OEMP. Auditing will be incorporated as part of the internal audit process and undertaken in accordance with the ISO 19011.

5.3. Reporting

Reporting requirements for monitoring, auditing and as required in the CoC are to be undertaken in accordance with the OEMP.

The reporting requirements that are applicable to this OFFMP are summarised in Table 5-3.

Table 5-3 Environmental reporting requirements

Requirement	Area/Location	Responsibility	Frequency	Regulatory Authority
Weed control records including pesticide / herbicide applications	Any areas requiring weed control	Site HSE Manager	Ongoing	DPHI
Threatened flora monitoring	Whole MIP Precinct	Ecologist	Annual (in Spring)	DPHI DCCEEW
Koala monitoring	Boundary fences of the Development	Ecologist	Annual (in spring)	DPHI

5.4. Review and improvement

Review and improvement of this OFFMP is to be undertaken in accordance with Section 6.2 of the OEMP. Continuous improvement will be achieved by the ongoing evaluation of environmental management performance and effectiveness of this OFFMP against environmental policies, objectives and targets.

A copy of any updated OFFMP and the changes is to be distributed to all relevant stakeholders in accordance with the approved document control procedure, as outlined in Section 1.4.1 of the OEMP.

5.5. Incidents

All flora and fauna related incidents are to be reported and managed in accordance with the incident reporting procedure included in the OEMP. Incidents are classified based on the incident's likelihood to cause or threaten to cause material harm on the environment or to human health as identified in Section 4.6 of the OEMP.

All incidents are to be managed and reported according to Section 4.6 of the OEMP.

5.6. Complaints

Any complaints relating to flora or fauna are to be handled in accordance with Section 4.5.1 of the OEMP and the Community Communication Strategy (CCS).

5.7. Non-compliance, non-conformances and corrective actions

Non-compliance, non-conformances and resulting corrective actions relating to this OFFMP are to be managed in accordance with Section 6.4 of the OEMP.

Appendix A Evidence of Consultation

Subject: FW: HPE CM: FW: MPW Stage 2 (SSD 7709) - Operational Environmental Management Plan Consultation [ref:_00D7F6iTix._5007F1LEZBz:ref]
Date: Friday, 13 January 2023 at 9:48:17 am Australian Western Standard Time
From: [redacted]
To: [redacted]
CC: [redacted]
Attachments: image001.png, image002.png, image003.png, image004.png, image005.png, image006.png, image007.png, image008.png, image009.png, image010.png, image011.png, image012.png, EHG Consultation Advice Operational Flora and Fauna Management Plan SSD-7709.pdf

Good Afternoon [redacted]a

Thank you for your email. Please find attached EHG's consultation advice relating to the submitted Operational Flora and Fauna Management Plan for the Moorebank Intermodal Precinct West Project (SSD-7709).

Please do not hesitate to contact me if you have any questions.

Kind regards
[redacted]

[redacted]
Senior Conservation Planning Officer
Biodiversity & Conservation
Environment and Heritage Group
Department of Planning and Environment

T (02) 9585 6146 **E** [redacted]

environment.nsw.gov.au

Locked Bag 5022
Parramatta NSW 2150

I acknowledge the traditional custodians of the land and pay respects to Elders past and present. I also acknowledge all the Aboriginal and Torres Strait Islander staff working with NSW Government at this time.

Please consider the environment before printing this email.

From: [redacted]
Sent: Friday, 9 December 2022 3:45 PM
To: OEH ROG Greater Sydney Region Planning Unit Mailbox <rog.gsrplanning@environment.nsw.gov.au>; INFOEnvironment <info@environment.nsw.gov.au>; [redacted]
Cc: [redacted]
Subject: RE: MPW Stage 2 (SSD 7709) - Operational Environmental Management Plan Consultation [

ref:_00D7F6iTix._5007F1LEZBz:ref]

Good Afternoon,

Aspect Environmental is in the process of preparing the Operational Environmental Management Plans for operational activities at Moorebank Intermodal Precinct – West. As required by CoC B38 and B118 of SSD 7709, Environment and Heritage Group (formally OEH) must be consulted with on the Operational Flora and Fauna Management Plan (OFFMP).
This plan is now ready for consultation and is attached to this email.
It would be greatly appreciated if you could please provide comment (if any) by **COB Friday 23 December 2022.**
If there are any issues or if you have any questions or require additional information, please let me know.
Kind regards,

[redacted]
Consultant – Environment
[redacted]
www.aspectenvironmental.com.au
Suite 117, 25 Solent Circuit, Baulkham Hills NSW 2153

ISO 45001 ISO 14001 ISO 9001

From: [redacted] **On Behalf Of** OEH ROG Greater Sydney Region Planning Unit Mailbox
Sent: Monday, 14 November 2022 11:47 AM
To: [redacted]
Subject: MPW Stage 2 (SSD 7709) - Operational Environmental Management Plan Consultation [ref:_00D7F6iTix._5007F1LEZBz:ref]

Hi [redacted]

The request for consultation should be emailed to the Greater Sydney Planning Team mailbox at rog.gsrplanning@environment.nsw.gov.au.

Kind regards,

[redacted]
Senior Project Officer – Planning
Greater Sydney

Biodiversity & Conservation | Environment and Heritage
Department of Planning and Environment
T 02 9995 6868 | **E** [redacted]
4 Parramatta Square, 12 Darcy St, Parramatta NSW 2150
www.dpie.nsw.gov.au

From: Environment Line <info@environment.nsw.gov.au>

Sent: Friday, 11 November 2022 3:31 PM
To: OEH ROG Greater Sydney Region Planning Unit Mailbox <rog.gsrplanning@environment.nsw.gov.au>
Subject: HPE CM: RE: MPW Stage 2 (SSD 7709) - Operational Environmental Management Plan Consultation [ref:_00D7F6iTix._5007F1LEZBz:ref]

---------- Forwarded Message ----------
From: [redacted]
Sent: 08/11/2022 14:06
To: info@environment.nsw.gov.au
Cc: [redacted]
Subject: RE: MPW Stage 2 (SSD 7709) - Operational Environmental Management Plan Consultation

Good Afternoon,

As per by below email on the 20th of October, Aspect Environmental is in the process of preparing the Operational Environmental Management Plans for operational activities at Moorebank Intermodal Precinct – West.

As required by CoC B38 and B118 of SSD 7709, Environment and Heritage Group (formally OEH) must be consulted with on the Operational Flora and Fauna Management Plan (OFFMP).

We expect these plans to be ready for consultation on mid-November and have not yet received a response from the Environment and Heritage Group about an appropriate contact person.

Can you please confirm the correct person with in the Environment and Heritage Group to direct this plan to for consultation?

Thanks,

ASPECT
[redacted]
Consultant – Environment
[redacted]
www.aspectenvironmental.com.au
Suite 117, 25 Solent Circuit, Baulkham Hills NSW 2153

ISO 45001 ISO 14001 ISO 9001

From: [redacted]
Sent: Thursday, 20 October 2022 10:54 AM
To: 'info@environment.nsw.gov.au' <info@environment.nsw.gov.au>
Subject: MPW Stage 2 (SSD 7709) - Operational Environmental Management Plan Consultation

Hi,

Aspect Environmental is in the process of preparing the Operational Environmental Management Plans

for operational activities at Moorebank Intermodal Precinct – West.

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Thanks,

[redacted]
Consultant – Environment
[redacted]
www.aspectenvironmental.com.au
Suite 117, 25 Solent Circuit, Baulkham Hills NSW 2153

ISO 45001 ISO 14001 ISO 9001

ref:_00D7F6iTix._5007F1LEZBz:ref

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Any views expressed in this email are those of the individual sender except where the sender expressly and with authority states them to be the views of the NSW Office of Environment, Energy and Science.

PLEASE CONSIDER THE ENVIRONMENT BEFORE PRINTING THIS EMAIL

Department of Planning and Environment

Our ref: DOC22/1114696
Your Ref: SSD-7709

[redacted]
Consultant - Environment
Aspect Environmental
Suite 115-117/25 Solent Circuit
BAULKHAM HILLS NSW 2153

13 January 2023

Subject: EHG Consultation Request– Operational Flora and Fauna Management Plan Moorebank Intermodal Precinct West (SSD-7709)

Dear [redacted]

Thank you for your email received on 9 December 2022 regarding consultation with the Environment and Heritage Group (EHG) on the Operational Flora and Fauna Management Plan (OFFMP) for the Moorebank Intermodal Project (SSD-7709). EHG notes that this consultation is being undertaken in accordance with the requirements of the Conditions of Consent for SSD-7709.

EHG has reviewed the submitted OFFMP and notes that Table 5-1 of Section 5 Monitoring, Auditing and Review of the OFFMP does not include any monitoring requirements for fauna control structures such as fences, grids, gates, bridges and so on. If fauna connectivity devices are not monitored issues with their effectiveness will not be identified. In the absence of such monitoring, the criteria for remedial measures regarding fauna connectivity including those identified in Table-5.2 of the OFFMP will not be triggered. EHG therefore requests that Table 5-1 of the submitted OFFMP is amended to include the monitoring of fauna control structures.

If you have any queries please contact [redacted], Senior Conservation Planning Officer via [redacted]

Yours sincerely

[redacted]

[redacted]

Senior Team Leader Planning
Greater Sydney Branch
Biodiversity and Conservation

Subject: RE: HPE CM: Re: HPE CM: FW: MPW Stage 2 (SSD 7709) - Operational Environmental Management Plan Consultation [ref:_00D7F6iTix._5007F1LEZBz:ref]
Date: Thursday, 16 February 2023 at 7:49:42 am Australian Western Standard Time
From: [redacted]
To: [redacted]
CC: [redacted]
Attachments: image006.png, image007.png, image008.png, image009.png, image010.png, image011.png, image012.png, image013.png, image014.png, image015.png, image016.png, image017.png, image018.png, image019.png, image020.png, image021.png

Hi [redacted]

EHG notes that the MPW S2 OFFMP has been updated to address issues raised in EHG's consultation advice. EHG does not require any further amendments to the OFFMP.

Kind regards

[redacted]

[redacted]
Senior Conservation Planning Officer
Biodiversity & Conservation
Environment and Heritage Group
Department of Planning and Environment

T (02) 9585 6146 **E** [redacted]

environment.nsw.gov.au

Locked Bag 5022
Parramatta NSW 2150

I acknowledge the traditional custodians of the land and pay respects to Elders past and present. I also acknowledge all the Aboriginal and Torres Strait Islander staff working with NSW Government at this time.

Please consider the environment before printing this email.

From: [redacted]
Sent: Friday, 10 February 2023 3:46 PM
To: [redacted]
Cc: [redacted]
Subject: HPE CM: Re: HPE CM: FW: MPW Stage 2 (SSD 7709) - Operational Environmental Management Plan Consultation [ref:_00D7F6iTix._5007F1LEZBz:ref]

Hi [redacted]

The MPW S2 OFFMP has been updated in accordance with EHG's consultation advice and is available at the link below in track changes and as a clean PDF.

https://www.dropbox.com/t/ZY0z4P29qk4T9ykl

Please review and confirm that EHG are comfortable with the changes, so that we are able to close-out consultation.

Regards,

[redacted]

[redacted]
Associate
[redacted]
www.aspectenvironmental.com.au
Suite 117, 25 Solent Circuit, Baulkham Hills NSW 2153

ISO 45001 ISO 14001 ISO 9001

From: [redacted]
Date: Friday, 13 January 2023 at 9:48 am
To: [redacted]
Cc: [redacted]
Subject: FW: HPE CM: FW: MPW Stage 2 (SSD 7709) - Operational Environmental Management Plan Consultation [ref:_00D7F6iTix._5007F1LEZBz:ref]

Good Afternoon [redacted]

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Please do not hesitate to contact me if you have any questions.

Kind regards
[redacted]

[redacted]
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Biodiversity & Conservation
Environment and Heritage Group
Department of Planning and Environment

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Senior Project Officer – Planning
Greater Sydney

Biodiversity & Conservation|Environment and Heritage
Department of Planning and Environment
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4 Parramatta Square, 12 Darcy St, Parramatta NSW 2150
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ISO 45001 ISO 14001 ISO 9001

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ISO 45001 ISO 14001 ISO 9001

ref:_00D7F6iTix._5007F1LEZBz:ref

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Appendix B Compliance Matrices

1. Legislation and Guidelines

The legislation, planning instruments and guidelines considered during development of this OFFMP are listed below. Further detail is provided in the Legislation Register within Appendix F of the OEMP.

- *Environmental Planning and Assessment Act 1979* (EP&A Act) and *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation)
- *Environment Protection and Biodiversity Act 1999* (EPBC Act)
- *Biodiversity Conservation Act 2016* (BC Act)
- *Biosecurity Act 2015* and *Biosecurity Regulation 2017*
- *Fisheries Management Act 1994* (FM Act)
- *Pesticides Act* 1999 and *Pesticides Regulation* 2017.

2. Development approvals

The operation of the Development was approved under both the EP&A Act and the EPBC Act. Both these approvals have environmental conditions relevant to the operation of the Development, which are discussed below.

The operational flora and fauna requirements for the Development, including consultation, impact mitigation and management, is documented in the following suite of documents:

- EPBC 2011/6086 Approval, September 2016 and varied on 17 September 2019 and 22 April 2022
- MPW Concept and Stage 1 Approval (SSD 5066), approved 3 June 2016
- Consolidated MPW Stage 2 (SSD 7709) development consent, approved 11 November 2019; reissued by the NSW Land & Environment Court on 24 December 2021.

In addition to the above documentation, this OFFMP has also considered the following documents:

- Moorebank Precinct West (MPW) – Stage 2 Proposal Biodiversity Assessment Report (BAR) (Arcadis, October 2016)
- Moorebank Precinct West (MPW) – Stage 2 Proposal Response to Submissions (RtS) – Appendix G: Updated Biodiversity Assessment Report (Arcadis, June 2017)
- Moorebank Precinct West Stage 2: Urban Design Development Report (UDDR) (Reid Campbell, March 2021)
- Moorebank Precinct West Stage 2 Koala Management Plan (KMP) (Cumberland Ecology, March 2020) – included in Appendix C
- Moorebank Intermodal Terminal Project – Biodiversity Provisional Environmental Management Framework (BPEMF) (PB, 3 July 2014).

These documents are available on the Project website (https://moorebankintermodalprecinct.com.au/community/document-library/).

2.1. EPBC Act approval

The EPBC 2011/6086 Approval for the MPW Concept was granted by DotEE (now DCCEEW) in September 2016 and varied on 17 September 2019 and 22 April 2022. This approval was provided for the impacts 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).

The operation of the Development will be consistent with the EPBC 2011/6086 Approval conditions. The specific conditions and commitments relating to the development of this OFFMP are identified in Table A-1.

Table A-1 OFFMP related conditions from the EPBC 2011/6086 Approval

Condition	Requirement	OFFMP section
7	Sections of the CEMP and OEMP relating to biodiversity must be prepared by a suitably qualified expert and must: a) be consistent with the Biodiversity Provisional Environmental Management Framework (3 July 2014), provided at Appendix O to the finalised EIS b) incorporate all measures 6A to 6R, 6T, 6V and 6X from Table 7.1 of the finalised EIS that are described as 'mandatory' c) explain how all measures 6A to 6R, 6T, 6V and 6X from Table 7.1 of the finalised EIS that are described as 'subject to review have been addressed d) include detailed biosecurity protocols, prepared in consultation with relevant New South Wales and Commonwealth biosecurity agencies, in relation to international and interstate container movement e) be approved by the Minister.	a) Section 1.4, Table 1-1 b) Section 4.4 c) Section 4.4 d) Section 4.2 and Appendix E e) TBA

2.2. EP&A Act approval

MPW Stage 2 was approved under Part 4, Division 4.7 of the EP&A Act.

The MPW S2 (SSD 7709) CoC include requirements to be addressed in this OFFMP. These requirements and where they are addressed within OFFMP are provided in Table A-2.

In the compliance tables, Primary Conditions are specific to the development of this management plan, while Secondary Conditions are conditions which are related to the environmental aspects associated with the plan.

Table A-2 Relevant SSD 7709 MPW Stage 2 CoCs

Condition	Requirement	OFFMP section
Primary Conditions		
B160	Prior to commencement of operation an Operational Flora and Fauna Management Plan (OFFMP) must be prepared by a suitably qualified person in consultation with OEH and be submitted to the Planning Secretary for approval. The OFFMP must include: (a) monitoring, management and maintenance procedures for koala habitat corridors; and (b) management and maintenance of other measures and site operations to minimise the risk of harm to koalas and other native fauna.	This OFFMP a) Section 5 b) Section 5
C1	Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:	
	(a) detailed baseline data	Section 4.1
	(b) details of: (i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);	Section 3.1, Table 3-1, Table 3-2, Table 3-3
	(ii) any relevant limits or performance measures and criteria; and	Section 5.1, Table 5-1
	(iii) the specific performance indicators that are proposed to be used to judge the performance of, or	Section 5.1, Table 5-1
	(iv) guide the implementation of, the development or any management measures;	Section 5.1, Table 5-1
	(c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Section 4.4, Table 4-3
	(d) a program to monitor and report on the: (i) impacts and environmental performance of the development (ii) effectiveness of the management measures set out pursuant to paragraph (c) above;	Section 5.1

Condition	Requirement	OFFMP section
	(e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	Section 5.5
	(f) a program to investigate and implement ways to improve the environmental performance of the development over time;	Section 5.4
	(g) a protocol for managing and reporting any: (i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria); (ii) complaint; (iii) failure to comply with statutory requirements;	Section 5.5 and 5.7 Section 5.6 Section 5.7
	(h) roles and responsibilities for implementing the plan; and	Table 4-3 and Table 5-1
	(i) a protocol for periodic review of the plan.	Section 5.4
C6	As part of the OEMP required under Condition C5 of this consent, the Applicant must include the following: (a) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development;	Refer to the OEMP
	(b) describe the procedures that would be implemented to: (i) keep the local community and relevant agencies informed about the operation and environmental performance of the development; (ii) receive, handle, respond to, and record complaints; (iii) resolve any disputes that may arise; (iv) respond to any non-compliance; (v) respond to emergencies; and	Refer to the OEMP

Condition	Requirement	OFFMP section
	(c) include the following environmental management plans: (i) Operational Traffic and Access Management Plan (see Condition B118); (ii) Stormwater Infrastructure Operation and Maintenance Plan (see Condition B36); (iii) Stormwater Quality Monitoring Program (see Condition B38); (iv) Landscape Vegetation Management Plan (see Condition B82); (v) Operational Traffic and Access Management Plan (see Condition B118); (vi) Operational Noise Management Plan (see Condition B136); and (vii) Operational Flora and Fauna Management Plan (see Condition B160).	(vii) This OFFMP

2.3. Final Compilation of Mitigation Measures

The Final Compilation of Mitigation Measures (FCMMs), prepared as part of the MPW Stage 2 RtS consolidated assessment clarification responses (Arcadis 2017-2018) are included in Appendix 2 of the SSD 7709 Consent.

A list of the relevant FCMMs and where they are addressed in this OFFMP is in Table A-3.

Table A-3 Final Compilation of Mitigation Measures

No.	Requirement	Where Addressed
FCMM		
0C	The Operational Environmental Management Plan (OEMP), or equivalent, for the Proposal would be based on the following preliminary management plans • Preliminary Operational Traffic Management Plan (POTMP) (Appendix M of the EIS) • Air Quality Management Plan (Appendix O of the EIS) • Erosion and Sediment Control Plans (ESCPs) and Bulk Earthworks Plans, within the Stormwater Drainage Design Drawings (Appendix R of the EIS) As a minimum, the OEMP would include the following sub-plans • Operational Traffic Management Plan (OTMP)	This OFFMP

No.	Requirement	Where Addressed
	• Operational Noise and Vibration Management plan (ONVMP) • Air Quality Management Plan • Flooding and Emergency Response Plan (FERP) • Groundwater Monitoring Program • Long term Environmental Management Plan (LTEMP) • Pollution Incident Response Management Plan (PIRMP), including Spill Management Procedure, prepared under the EPA's Environmental Guidelines: Preparation of Pollution Incident Response Management Plans (EPA, 2012) • Fire Safety and Evacuation Plan • Community Information and Awareness Strategy. • Flora and Fauna Management Plan • Emergency Vehicle Response Plan	
4P	The CEMP and OEMP for the Proposal would consider and have reference to the weed removal and riparian vegetation restoration undertaken within parts of the Georges River corridor under the MPW Concept Approval (identified within the Biodiversity Offset Package for the MPW Project).	Section 4.1.2.1and Section 4.1.3 MPW Stage 2 Proposal RtS – Appendix G: Updated BAR (Arcadis, 2017)
4R	The OEMP would include a biodiversity monitoring program designed to detect operational impacts of the Georges River riparian corridor (within the offset site).	Section 4.1.3 and Section 5 MPW Stage 2 Proposal RtS – Appendix G: Updated BAR (Arcadis, 2017)
4S	Ongoing monitoring of macroinvertebrate communities would be undertaken prior to, during and following construction upstream and downstream of the potential impacts at the proposed basin outlets in the Georges River and reference locations to assist in identifying any changes in aquatic communities.	MPW Stage 2 Proposal RtS – Appendix G: Updated BAR (Arcadis, 2017) This OFFMP only applies to the MPW Stage 2 operational area.
4U	The native vegetation and connectivity values in the proposed basin outlets would be monitored to ensure that fauna passage is maintained.	Section 4.1.2.1and Section 4.1.3 MPW Stage 2 Proposal RtS – Appendix G:

No.	Requirement	Where Addressed
		Updated BAR (Arcadis, 2017)
4W	A monitoring program would be developed and implemented to measure the performance of revegetation activities in the Georges River riparian zone and associated conservation area.	MPW Stage 2 Proposal RtS – Appendix G: Updated BAR (Arcadis, 2017) This OFFMP only applies to the MPW Stage 2 operational area.

3. Legislation

The regulatory framework for the site is outlined in Table A-4 to identify relevant legislative instruments, their key objectives and relevance to the operation of the Development.

This list will be revised and updated in conjunction with the management review outlined in Section 6.2.1 of the OEMP or when there has been a change to relevant legislation.

Table A-4 Legislation register

Legislation	Relevance
Commonwealth Legislation	
EPBC Act 1999	The main purpose of the EPBC Act is to provide a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places as defined in the EPBC Act as Matters of National Environmental Significance (MNES), the impacts of Commonwealth activities on the environment and the impact to the environment on Commonwealth land. In accordance with Sections 67 and 67A of the EPBC Act, any works that have the potential to result in a significant impact on any MNES or on Commonwealth land are considered 'controlled actions' and require a referral to the Federal Minister for the Environment for approval. The MPW Development was determined to be a controlled action under the EPBC Act, as a result of the Development's likely impacts on listed threatened species and communities on Commonwealth land. The EPBC 2011/6086 Approval for the MPW Development was granted by DotEE (now DCCEEW) in September 2016 and varied on 17 September 2019 and 22 April 2022. This OFFMP identifies measures to avoid and minimise impacts on threatened species and communities listed under the EPBC Act, that are known or considered likely to occur in the Development Site, and has been prepared to specifically address Condition 7 of the EPBC 2011/6086 Approval.

Legislation	Relevance
NSW Legislation	
EP&A Act 1979 and *Regulation 2021*	The EP&A Act establishes a system of environmental planning and assessment of development proposals for NSW. One of the objectives of the Act is "to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats". The preparation of this OFFMP is a CoC of the SSD 7709 development consent issued by the IPC under Section 4.38 of the EP&A Act.
Biodiversity Conservation Act 2016	The BC Act broadly incorporates similar objectives to those identified in the Threatened Species Act (TSC Act) (repealed 25 August 2017), and additionally seeks to establish a framework for assessment and offsetting of development impacts as well as investment in biodiversity conservation. This OFFMP identifies measures to avoid and minimise impacts on threatened species and communities listed under the BC Act, that are known or considered likely to occur in the Development Site.
Biosecurity Act 2015 and *Biosecurity Regulation 2017*	This Act repealed the *Noxious Weed Act* 1993 as of July 1, 2017. The primary objective of this Act is to provide a framework for the prevention, elimination and minimisation of biosecurity risks posed by biosecurity matters, dealing with biosecurity matters, carriers and potential carriers. Division 2 of the Act defines local control authorities for weeds. Schedule 1 outlines special provisions relating to weeds, including the duty of land occupiers to control and manage weeds. This OFFMP identifies measures to manage weeds and pests within the Development site.
Fisheries Management Act 1994	The FM Act aims to conserve, develop and share the fishery resources of the State for the benefit of present and future generations, including conserving threatened species, populations and ecological communities of fish and marine vegetation. The FM Act requires permits for the harming of aquatic vegetation, blockage of fish passage and dredging and reclamation. Although the Development could result in these impacts, Section 4.41 of the EP&A Act provides an exemption for these permits for SSD assessed under Part 4, Division 4.1 of the EP&A Act.
Pesticides Act 1999 and *Pesticides Regulation 2017*	This Act controls the use of pesticides in NSW and aims to reduce risks to human health, the environment, property, industry and trade. Herbicides are included as a pesticide by definition under the Act. The Act defines prescribed pesticide works. The Regulation identifies licensing, qualification, record and notification requirements. A Weeds, Pest and Vermin Management Plan (Appendix D of this OFFMP) has been prepared to manage weeds, pests and vermin found on the project site.

4. Secondary SSD 7709 Conditions of Consent

Table B-1 Secondary Conditions of Consent

CoC No.	Condition	OFFMP Section	How Addressed
Secondary Conditions			
A3(d)	The development may only be carried out: …. (d) in accordance with the management and mitigation measures in **Appendix 2**	Section 4.3	Section 4.3 details the mitigation measures outlined in Appendix 2 of the CoC.
A27	References in the conditions of this consent to any guideline, protocol, Australian Standard or policy are to such guidelines, protocols, Standards or policies in the form they are in as at the date of this consent. However, consistent with the conditions of this consent and without altering any limits or criteria in this consent, the Planning Secretary may, when issuing directions under this consent in respect of ongoing monitoring and management obligations, require compliance with an updated or revised version of such a guideline, protocol, Standard or policy, or a replacement of them.	Section 3.1	Guidelines, protocols and Australian Standards relevant to biodiversity are listed in Section 3.1.
A28	Where conditions of this consent require consultation with an identified party, the Applicant must: a) consult with the relevant party prior to submitting the subject document to the Planning Secretary for approval; and b) provide details of the consultation undertaken in the document submitted to the Planning Secretary including:	Section 1.5 Appendix A of this OFFMP – Evidence of Consultation	Section 1.5 details consultation undertaken in preparation of this OFFMP. Appendix A provides evidence of consultation undertaken for the preparation of this OFFMP.

CoC No.	Condition	OFFMP Section	How Addressed
	i. the outcome of that consultation, matters resolved and unresolved (and the justification for matters remaining unresolved); and		
	ii. details of any disagreement remaining between the party consulted and the Applicant and how the Applicant has addressed the matters not resolved.		
B2	Prior to commencement of construction, the Applicant must submit revised Development Layout Drawings to the Planning Secretary for approval. The revised Development Layout Drawings must be at a scale of approximately 1:2000 at A1 showing the key development elements including but not limited to estate infrastructure, internal roads, warehouse and associated carpark footprints, the freight village, intermodal terminal facility including the truck waiting area and emergency truck storage area, rail line and rail line vehicle access roads. The revised Development Layout Drawings must show the site, construction and operational boundaries and demonstrate:	MPW S2 Development Layout Drawings	The Development Layout Drawings show the key development elements as prescribed by the condition.
	a) provision of a riparian corridor, comprising the following: i. a buffer zone to the most inland of: • 40 metres from the top of bank, as surveyed by a registered surveyor, or • the 1% AEP flood extent, excluding the localised depression at the existing major east-west drainage channel, and		
	ii. an additional 10 metre extension to the buffer zone established in (i) above, where native vegetation is located on or within 10 metres east of the buffer;		
	b) the siting of biofiltration/ bioretention areas and OSD basins (with the exception of outlets to the Georges River and associated maintenance access) are outside the riparian corridor and outside the warehouse footprints;		

CoC No.	Condition	OFFMP Section	How Addressed
	c) no construction or operation works would take place inside biodiversity offset areas;		
	g) a minimum 3 m wide maintenance access has been provided between the fill slopes and the riparian corridor, the ABB site and at the southern end of the development area, where necessary to ensure ongoing maintenance works can be carried out without impacting on the riparian corridor or adjoining sites;		
	i) identify habitat corridor/s, of adequate dimensions to provide an adequate Koala habitat corridor as supported by a Koala specialist, to provide connectivity both within the Intermodal Precinct area and with other core koala habitat areas, as required under **Condition B152**. The drawings are to show any required connectivity structures and fencing;		
	f) the bushfire asset protection requirements are within the development area; and		
B83	The Applicant must: a) implement measures to manage pests, vermin and declared noxious weeds on the site; and	Appendix D of this OFFMP – Weed, Pest and Vermin Management Protocol	Appendix D outlines measures to manage pests, vermin and weeds on site.
	b) inspect the site on a regular basis to ensure that these measures are working effectively, and that pests, vermin or noxious weeds are not present on site in sufficient numbers to pose an environmental hazard or cause the loss of amenity in the surrounding area. **Note**: *For the purposes of this condition, noxious weeds are those species subject to an order declared under the Biosecurity Act 2015.*	Section 5.1 Appendix D of this OFFMP – Weed, Pest and Vermin Management Protocol	The monitoring requirements for weed, pests and vermin are identified in Section 5.1 and Appendix D.

CoC No.	Condition	OFFMP Section	How Addressed
B152	Prior to clearing of native vegetation, a Koala Management Plan (KMP) must be prepared by a suitably qualified person in consultation with OEH and be submitted to the Planning Secretary for approval. The KMP must: a) make reference to *A review of koala tree use across New South Wales* (OEH 2018); b) identify habitat corridors, of adequate dimensions to provide an adequate Koala habitat corridor as supported by a Koala specialist, to provide connectivity both within the Intermodal Precinct area and with other core koala habitat areas (i.e. to the south and to the west along Georges River); c) include commitment to retain Koala use trees on site in line with phased earthworks (see e.g. **Condition B40**); d) include details of structures to eliminate barriers to movement (presented by fences, roads, drainage culverts or pits, rail lines and the like) for koalas and other native fauna likely to use the site or habitat corridor; e) include details on koala habitat rehabilitation/ restoration within the identified habitat corridors; and f) include other measures to minimise the risk of harm to koalas.	Appendix C of this OFFMP – MPW Stage 2 Koala Management Plan (Cumberland Ecology, 2019)	Koala Management Plan has been prepared to address this condition and was approved by DPHI on 4 May 2020. The approved KMP is being implemented during construction for MPW S2 and will continue to be implemented during operations.
B189	Bushfire asset protection zones must not be within the riparian corridor as defined in Condition B2 other than within areas greater than 40m from top of bank as determined in accordance with condition B2 where evidence is provided to the satisfaction of the	-	BRMP

CoC No.	Condition	OFFMP Section	How Addressed
	Planning Secretary that riparian vegetation, and any trees over 3 m in height, will be retained.		
B190	The entire site must be managed as an inner protection area (IPA) as outlined within section 4.1.3 and Appendix 5 of the *Planning for Bush Fire Protection* (RFS, 2006) and the NSW Rural Fire Service's document *Standards for asset protection zones*.	-	BRMP
B191	An updated **Bushfire Risk Management Plan** must be prepared by a suitably qualified person(s) demonstrating that the bushfire asset protection zones can be contained wholly within the development area and that management of the inner protection zone will not impact on the proposed Biodiversity Offset Area. The Bushfire Risk Management Plan must be submitted to the Planning Secretary prior to construction of permanent built surface works.	-	BRMP

Appendix C MPW Stage 2 Koala Management Plan (Cumberland Ecology, 2019)

Moorebank Precinct West Stage 2

Koala Management Plan

SIMTA

12 March 2020

Final

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Report No. 18194RP1

The preparation of this report has been in accordance with the brief provided by the Client and has relied upon the data and results collected at or under the times and conditions specified in the report. All findings, conclusions or commendations contained within the report are based only on the aforementioned circumstances. The report has been prepared for use by the Client and no responsibility for its use by other parties is accepted by Cumberland Ecology.

Version	Date Issued	Amended by	Details
1	15/10/2019	[redacted]	Draft for DPIE review
2	5/12/2019	[redacted]	Updates for EES and ER comments
3	12/03/2020	[redacted]	Final

Approved by:	**David Robertson**
Position:	Director
Signed:	[redacted]
Date:	12 March, 2020

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Glossary

BAM	Biodiversity Assessment Method
BAR	Biodiversity Assessment Report
BC Act	NSW *Biodiversity Conservation Act 2016*
Bootland	The approved Wattle Grove Biobank Area
CEMP	Construction Environment Management Plan
CFFMP	Construction Flora and Fauna Management Plan
CKPoM	Comprehensive Koala Plan of Management
DA	Development Application
DoEE	Commonwealth Department of Environment and Energy
DPE	NSW Department of Planning and Environment
DPIE	NSW Department of Planning, Industry and Environment
EES	NSW Environment, Energy and Science Group, a division of DPIE
EIS	Environmental Impact Statement
EP&A Act	NSW *Environmental Planning and Assessment Act 1979*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
FBA	Framework for Biodiversity Assessment
IPC	Independent Planning Commission
KMA	Koala Management Area
KMP	Koala Management Plan
LEC	NSW Land and Environment Court
LGA	Local Government Area
MNES	Matters of National Environmental Significance
Moorebank site	The approved Moorebank Biobank Area
MPE	Moorebank Precinct East, parts of the Moorebank Intermodal Terminal as approved under Concept Plan Approval (MP 10_0913) and the MPE Stage 1 Approval (14_6766)
MPW	Moorebank Precinct West, parts of the Moorebank Intermodal Terminal as approved under to MPW Concept Plan Approval (SSD_5066) and the MPW EPBC Approval (No. 2011/6086)
OEH	Office of Environment and Heritage
OEMP	Operational Environment Management Plan
OSD basin	On-site detention basin
PKFT	Preferred Koala Food Tree
the Review	A review of koala tree use across New South Wales (OEH 2018)
SAT	Spot Assessment Technique
SEPP 44	State Environment Planning Policy No 44

SIMTA	Sydney Intermodal Terminal Alliance
SSD	State Significant Development
the Intermodal Precinct	The Moorebank Intermodal Terminal Precinct, comprising Moorebank Precinct West, Moorebank Precinct East, three offset (biobank) sites and a portion of Railcorp land
TSC Act	NSW Threatened Species Conservation Act 1995

1. Introduction

Cumberland Ecology has been requested by Sydney Intermodal Terminal Alliance (SIMTA) on behalf of Qube Holdings Pty Ltd ('the client') to prepare a Koala Management Plan in relation to the Moorebank Precinct West Stage 2 development (MPW Stage 2).

1.1. Background

The MPW Stage 2 development is a State Significant Development (SSD 7709) that forms part of the wider Moorebank Intermodal Terminal Precinct (the Intermodal Precinct). The Intermodal Precinct is broadly comprised of two main development areas: Moorebank Precinct West (MPW) and Moorebank Precinct East (MPE) with three associated conservation or offset sites: the Wattle Grove offset area (also known as the 'Bootland'), the Moorebank offset area and the Casula offset area and some adjacent land owned by RailCorp (**Figure 1**). Concept plans and associated modifications have been approved for the MPW and MPE development areas which are progressively being developed in stages.

Development Consent Conditions have been provided by the Independent Planning Commission (IPC) for the proposed development of MPW Stage 2, located within Lots 1, 2, 3 (partial) DP 1197707, and Lots 100 and 101 DP 1049508 (Figure 2). The MPW Stage 2 development is expected to involve the removal of approximately 42.89 ha of native vegetation, which also comprises habitat for various native flora and fauna, including threatened species. Consent Condition B152 requires preparation of a Koala Management Plan (KMP), with cross referenced requirements included in Conditions B2, B155 and B160. Consent Condition B152 states:

> *"B152. Prior to clearing of native vegetation, a Koala Management Plan (KMP) must be prepared by a suitably qualified person in consultation with the Office of Environment and Heritage (OEH) and be submitted to the Planning Secretary for approval. The KMP must:*
>
> *(a) make reference to 'A review of koala tree use across New South Wales (OEH 2018)';*
>
> *(b) identify habitat corridors, of adequate dimensions to provide an adequate Koala habitat corridor as supported by a Koala specialist, to provide connectivity both within the Intermodal Precinct area and with other core koala habitat areas (i.e. to the south and to the west along Georges River);*
>
> *(c) include commitment to retain Koala use trees on site in line with phased earthworks (see e.g. Condition B40);*
>
> *(d) include details of structures to eliminate barriers to movement (presented by fences, roads, drainage culverts or pits, rail lines and the like) for koalas and other native fauna likely to use the site or habitat corridor;*
>
> *(e) include details on koala habitat rehabilitation/ restoration within the identified habitat corridors; and*
>
> *(f) include other measures to minimise the risk of harm to koalas".*

This KMP forms part of the documentation prepared by the client to fulfil the requirements of the consent conditions issued by the IPC. The purpose of this KMP is to provide a management framework for the local

Koala population and associated habitat known to exist within the MPW Stage 2 development area and relevant offset areas.

1.2. The Project

The Intermodal Precinct development generally comprises:

- Construction and 24/7 operation of an intermodal terminal facility to support a container freight throughput volume of 500,000 twenty-foot equivalent units per annum, including:
    - a rail terminal with nine rail sidings and associated locomotive shifter;
    - a rail link connection from the sidings to the rail link constructed under MPE Stage 1 (SSD 6766) to the Southern Sydney Freight Line (SSFL);
    - rail and truck container loading and unloading and container storage areas;
    - truck waiting area and emergency truck storage area;
    - container wash-down facilities and degassing area;
    - mobile locomotive refuelling station;
    - engineer's workshop, administration facility and associated car parking; and
    - operation of the rail link to the SSFL and container freight movements by truck to and from the MPE site.
- Construction and 24/7 operation of a warehousing estate on the northern part of the site servicing the IMT facility and including:
    - six warehouses with a total gross floor area of 215,000 m^2 and, for each warehouse, associated offices, staff amenities, hardstands and truck and light vehicle parking;
    - 800 m^2 freight village (operating from 7am to 6pm, 7 days/ week) including staff/ visitor amenities; and
    - internal roads, noise wall, landscaping, lighting and signage.
- Intersection upgrades on Moorebank Avenue at:
    - Anzac Road providing site access; and
    - Bapaume Road for left turn only out of the site.
- Construction and operation of on-site detention basins, bioretention/ biofiltration systems and trunk stormwater drainage for the entire site.
- Construction works and temporary ancillary facilities, including:

- vegetation clearing, topsoil stripping and stockpiling and site earthworks and temporary onsite detention;
- importation of up to 1,600,000 m^3 of uncompacted fill, temporary stockpiling and placement over the entire site to raise existing ground levels by up to 3 m;
- materials screening, crushing and washing facilities;
- importation and placement of engineering fill and rail line ballast;
- installation and use of a concrete batching plant; and
- utilities installation/ connection.

Components of the Intermodal Precinct that form the MPW Stage 2 development area (**Figure 2**) include:

- Truck processing, holding and loading areas – with entrance and exit from Moorebank Avenue via an upgraded intersection and a round-about to distribute traffic between the warehousing precinct and the wider Intermodal Precinct;
- Rail loading and container storage areas – installation of nine rail sidings, with an adjacent container storage area serviced by manual handling equipment;
- Administration facility – office building with associated car parking and light vehicle access from Moorebank Avenue;
- The Rail link connection – rail sidings within the Intermodal precinct facility, which would be linked (to the south – to the Rail link (constructed as part of the MPE Project (SSD 14- 6766));
- Warehousing area – construction and operation of approximately 215,000 m^2 GFA of warehousing, with warehouses ranging in size from 4,000 m^2 to 71,000 m^2 along with ancillary offices, truck and light vehicle parking and associated warehouse access roads;
- Upgraded intersection on Moorebank Avenue and internal road – including works to Moorebank Avenue, Anzac Road to accommodate the proposed site entrance to Moorebank Avenue, and construction of an internal road; and
- Ancillary works – including vegetation clearing, earth works, drainage and on-site detention, utilities installation/connection, signage and landscaping.

1.3. Koala Survey History

In November 2018, Cumberland Ecology was requested on behalf of the client and SIMTA, to provide additional ecological advice in relation to the adequacy of the biodiversity assessment documents submitted to the then Department of Planning and Environment (DPE) for SSD Application No. 16_7709 for Stage 2 of the MPW development (MPW Stage 2 DA) in light of recent unexpected discoveries of koala activity within parts of the Intermodal Precinct.

Although the MPW and MPE development sites and the various stages therein have been assessed as separate SSD applications, the proposed offset sites – the Bootland, the Moorebank offset area and the Casula offset area – collectively service offsetting requirements for the entire Intermodal Project (**Figure 1**). The Land and Environment Court of NSW (LEC) granted consent for the MPE Stage 1 project on 13 March 2018 subject to Conditions of Consent including, but not limited to, ongoing mitigation and management under a Construction Flora and Fauna Management Plan (CFFMP).

On 6 November 2018, a Koala (*Phascolarctos cinereus*) was recorded in the northern parts of the Bootland during routine nest box monitoring, being conducted by Arcadis as per the requirements of the CFFMP for the MPE Stage 1 project. The discovery of the Koala within the Bootland was actioned as an 'unexpected threatened species' find as per the CFFMP as this species was considered unlikely to occur within the MPE and wider Intermodal Precinct area on the basis of existing ecological assessments.

As the unexpected finds affected the biodiversity assessment outcomes for the MPW Stage 2 DA being assessed by DPE at the time of the unexpected find, koala surveys were conducted by Cumberland Ecology in December 2018 within the MPW Stage 2 area, the Moorebank offset area and the Bootland. The purpose of these surveys was to determine the potential occurrence of koalas within vegetated areas of the Intermodal Precinct and assess if further mitigation and/or compensation strategies, beyond those proposed within the documentation submitted at the time were required in light of the unexpected finds.

No koalas were observed during the surveys conducted by Cumberland Ecology. However, koala faecal pellets (scats) were found at multiple locations within both the Bootland and the south-eastern parts of MPW. A single koala was again detected on an Infra-red (IR) camera within the Bootland in the vicinity of the initial 'unexpected find' sighting. Based on the preceding information and survey history, there is no substantive evidence of a resident population existing on-site, the data instead indicating the presence of 1 – 2 transient or recently arrived koalas. Recent koala studies in the Cumberland Plain area indicate that shale-influenced koala habitat can support approximately 0.07 koalas/ha. As such, it is estimated that up to three koalas could be sustained in the Bootland area.

Nonetheless, based on the finding of koala scats within MPW and the Bootland, additional mitigation measures for koalas, including but not limited to, preparation of a KMP were deemed necessary.

1.4. Project Team

1.4.1. Cumberland Ecology

This KMP has been prepared by a team of ecologists at Cumberland Ecology, led by [redacted]tson as the project director.

[redacted] has over 30 years experience as a specialist ecologist in both botany and zoology. He is also an accredited Biodiversity Assessment Method (BAM) Assessor and was an accredited Biobanking assessor under the former NSW legislation.

[redacted] has extensive consultancy experience including direction of numerous ecological assessments for large extractive and infrastructure projects in the Hunter Valley and Central Coast of New South Wales, and the

Bowen and Galilee Basins in Queensland; direction of numerous large, complex and contentious projects in NSW including the ADI site at St Marys in western Sydney and the Clarence Valley Water Supply Project; extensive experience consulting and negotiating outcomes with New South Wales government agencies as well as the Commonwealth; and provision of expert evidence in the New South Wales Land and Environment Court

The primary Cumberland Ecology staff involved in the project have worked extensively within the Western Sydney region and include:

[redacted] is a Senior Project Manager/Ecologist at Cumberland Ecology with over ten years of academic and ecological consulting experience. [redacted] is an accredited BAM assessor and an accredited AusRivAS assessor for NSW, NT and Qld. [redacted] was also an accredited Biobanking assessor under the former NSW legislation.

[redacted] has conducted numerous flora, fauna and aquatic surveys and has been involved in a diverse array of projects in the extractive, infrastructure, residential and commercial development sectors. This has included several SSD and local development assessments with endangered ecological communities, threatened species and offsetting issues. She has been the lead ecologist for several projects in the wider Western Sydney area including: the Gables Residential development at Box Hill, the former ADI site at St Marys, the Caledonia precinct in Campbelltown and the Riverlands Golf Course development in Milperra.

[redacted] is a Project Manager/GIS Specialist at Cumberland Ecology who has worked as an ecological consultant since 2017. [redacted] has successfully completed the BAM Assessor Accreditation Course and has been involved in several assessments utilising the Biodiversity Assessment Methodology (BAM). [redacted] has assisted on several projects in the wider Western Sydney area including: the Gables Residential development at Box Hill, the Riverlands Golf Course development in Milperra and the Greater MacArthur Priority Growth Area.

1.4.2. Koala Specialist

[redacted] is the managing Director/Principal Ecologist of Biolink Ecological Consultants. [redacted] has significant expertise in flora and fauna monitoring techniques and survey design, Koala ecology, GIS-based habitat modelling, landscape ecology, vegetation mapping and natural area management. [redacted] has extensive Koala ecology experience and was a member of the NSW Koala Recovery Team that guided the preparation of the Koala Recovery Plan. [redacted] has authored or co-authored a number of publications relevant to the Koala including publications on issues such as relocation, conservation and feed tree preferences as well as studies on the Koala populations of Campbelltown and Port Stephens LGAs. [redacted] and colleague [redacted] developed the Spot Assessment Technique (SAT) for monitoring habitat utilisation by Koalas (Phillips and Callaghan, 2011). SAT methodology is widely recognised as best practice for the assessment of habitat use by Koalas and has been further refined with the development of the Rapid SAT survey methodology (Phillips and Wallis, 2016). [redacted] is also an approved koala expert as per the list of approved biodiversity experts published by the Environment Agency Head (delegate) under Section 6.5.2.4 of the Biodiversity Assessment Method. [redacted] has been commissioned by the client to assist in preparation

of the KMP as the "suitably qualified person" required by Consent Condition B152 and has been involved in advisory discussions, a site inspection and reviewing documentation.

1.5. Document Structure

This remainder of this report is structured as follows:

- **Chapter 2**: Description of Statutory Considerations relevant to this KMP;
- **Chapter 3**: Provides a description of the environment of the intermodal precinct, offset areas and locality;
- **Chapter 4**: Provides the results of a literature review, including a summary of the documents utilised in the preparation of this management plan;
- **Chapter 5**: Provides a description of the field survey and assessment methodology and survey results used in this KMP;
- **Chapter 6**: Provides details of general Koala habitat requirements, conservation status and threatening processes that affect them;
- **Chapter 7**: Provides details of the Koala habitat and movement in the intermodal precinct and offset areas;
- **Chapter 8**: Presents details of the mitigation and offset measures that will be implemented as part of the KMP; and
- **Chapter 9**: Presents details of the monitoring and reporting that will be undertaken as part of the KMP as well as measures for review and improvement of management strategies and roles and responsibilities for implementation of this KMP.

1.6. Purpose and Aims

This KMP is a sub-plan to the Construction Flora and Fauna Management Plan and the Operation Flora and Fauna Management Plan and has been developed to address the requirements of MPW Stage 2 consent condition B152 (SSD 7709).

The primary aims of this KMP are:

- To assist in the dispersal into adjoining offset areas of the 1-2 koalas possibly present within approved development areas;
- Undertake clearing activities in approved development areas in a manner that enables passive dispersal of koalas to occur; and
- Facilitate maintenance of connectivity between the Intermodal Precinct and areas of koala habitat to the south of the Intermodal Precinct.

2. Statutory Considerations

2.1. Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) prescribes the Commonwealth's role in environmental assessment, biodiversity conservation and the management of protected areas of national significance. It also provides a mechanism for national environment protection and biodiversity conservation.

The EPBC Act is administered by the Department of Environment and Energy (DoEE) and provides protection for listed Matters of National Environmental Significance (MNES) including:

- Listed species and communities (e.g. listed threatened species and ecological communities and migratory species);
- Protected areas (e.g. World Heritage properties, Ramsar wetlands of international significance, conservation zones); and
- National, Commonwealth and Indigenous Heritage.

Under the EPBC Act, any action (which includes a development, project or activity) that is considered likely to have a significant impact on MNES must be referred to the Commonwealth Minister for DoEE. The Koala (combined populations of QLD, NSW and ACT) is listed as Vulnerable under the EPBC Act.

The MPW Project was determined to be a controlled action under the EPBC Act (EPBC Reference 2011/6086) and the MPW Concept Environmental Impact Statement (EIS) prepared under NSW legislation was expanded to also address the EPBC Act assessment requirements.

The Ecological Impact Assessment prepared by Parsons Brinckerhoff in 2014 as part of the EIS (Volume 4 – Technical Paper 3) did not record any koalas during field surveys (Parsons Brinckerhoff, 2014). However, koalas were presumed as likely to occur intermittently on site based on habitat assessment and the proposed Biodiversity Offset Strategy included offsets for residual impacts for removal of koala habitat. The MPW Project was granted approval as a controlled action under the EPBC Act in late 2016 (MPW EPBC Approval).

In February 2015, a bilateral agreement was made under Section 45 of the EPBC Act between Commonwealth of Australia and the State of New South Wales relating to environmental assessment. Under the bilateral agreement, the NSW Biodiversity Offsets Policy for Major Projects (OEH, 2014b) and the Framework for Biodiversity Assessment (FBA) (OEH, 2014a) are Accredited Processes. Therefore, any biodiversity offset strategy proposed under the FBA comprises an offset for MNES. Following the records of koalas within the Intermodal Precinct, an EPBC Biodiversity Offset Strategy was prepared by Arcadis in May 2019 (Arcadis, 2019b).

The Commonwealth approval (dated 2016) requires the preparation of environmental management plans, in particular a Construction Environmental Management Plan (CEMP) and an Operational Environmental Management Plan (OEMP), for the protection of the environment, including listed threatened species and communities. This KMP will form a sub-plan within the CEMP and OEMP.

Therefore, the KMP prepared in respect of MPW Stage 2 SSD 7709 is considered to be consistent with the conditions of approval under EPBC 2011/6086.

2.2. Environmental Planning and Assessment Act 1979

The EP&A Act is the overarching planning legislation in NSW that provides for the creation of planning instruments that guide land use. The EP&A Act also provides for the protection of the environment, including the protection and conservation of native animals and plants. This includes threatened species, populations and ecological communities, and their habitats of biodiversity values, as listed in the NSW *Biodiversity Conservation Act 2016* (BC Act) (replacing the repealed *Threatened Species Conservation Act 1995* (TSC Act)) and NSW *Fisheries Management Act 1994*. The protection of the environment is prescribed in Section 5A of the EP&A Act (significant effect on species, populations or ecological communities or their habitats).

2.2.1. Division 4.1 of Part 4 of the EP&A Act

Upon the repeal of Part 3A of the EP&A Act on 1 October 2011, the *Environmental Planning and Assessment Amendment (Part 3A Repeal) Act 2011* inserted a new Division 4.1 in Part 4 of the EP&A Act. This Division provides for a new planning assessment and determination regime for SSDs. A SSD is a development declared by a State Environmental Planning Policy or Regional Environmental Planning Policy to be a SSD, or development which the Minister for Planning has called in for determination. The Minister for Planning is the consent authority for SSD.

Secretary's Environmental Assessment Requirements (SEARs) for the MPW Stage 2 development were provided by the then DPE in July 2016 (ref: SSD 16-7709, dated 14 July 2016). The MPW Stage 2 project has been approved as a SSD.

2.3. NSW Threatened Species Conservation Act 1995 and Biodiversity Conservation Act 2016

The TSC Act was the key piece of legislation in NSW relating to the protection and management of biodiversity and threatened species prior to August 2017. The TSC Act aimed to protect and encourage the recovery of threatened species, populations and communities that are listed under the Act through threat abatement and species recovery programs. The TSC Act required consideration of whether a development (Part 4) or an activity (Part 5) is likely to significantly impact threatened species, populations, communities or their habitat. The potential impacts of any developments, land use changes or activities would need to undergo an "Assessment of Significance" under Section 5A of the EP&A Act.

The TSC Act was repealed on 25 August 2017 and replaced with the BC Act. The purpose of the BC Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development. The BC Act is supported by a number of regulations, including the *Biodiversity Conservation Regulation 2017* (BC Regulation).

The Koala is listed as Vulnerable under the BC Act and was previously listed as Vulnerable under the TSC Act.

2.4. NSW Biodiversity Offsets Policy for Major Projects and the Biodiversity Offsets Scheme

The NSW Biodiversity Offsets Policy for Major Projects was released in October 2014 and was applicable to projects that are SSD or State significant infrastructure (SSI) under the EP&A Act. The NSW Biodiversity Offsets Policy for Major Projects requires proponents to apply the *Framework for Biodiversity Assessment* (FBA) to assess impacts on biodiversity. The FBA also guides the identification of reasonable measures and strategies that can be taken to avoid and minimise impacts on biodiversity associated with a proposal.

The Biodiversity Offsets Policy for Major Projects has recently been replaced by the Biodiversity Offsets Scheme, which was established by the *Biodiversity Conservation Regulation 2017* commencing on 25 August 2017. As the SEARs for the SSD 16-7709 were issued prior to 25 August 2017 (ref: SSD 16-7709, dated 14 July 2016), the MPW Stage 2 development comprised a 'pending or interim application' under the *Biodiversity Conservation (Savings and Transitional) Regulation 2017*. Therefore, the MPW Stage 2 development continued to be assessed under the planning provisions of the TSC Act, FBA and Biodiversity Offsets Policy for Major Projects, as required by the SEARs. The MPW Stage 2 project has been approved as a SSD based on assessments conducted using the FBA.

2.5. State Environmental Planning Policy No. 44 – Koala Habitat Protection

The aim of State Environment Planning Policy No 44 (SEPP 44) is to "*encourage the conservation and proper management of areas of natural vegetation that provide habitat for Koalas, to ensure permanent, free-living populations over their present range and to reverse the current trend of population decline*". The requirement to prepare a KMP is outlined in SEPP 44 and defined in clauses 11(1)(a) and (b).

According to SEPP 44, a KMP is required to accompany development applications (DAs) which affect core koala habitat in Local Government Areas (LGAs) for which a Comprehensive Koala Plan of Management (CKPoM) has not been completed.

As a resident population evidenced by presence of breeding females has not been confirmed within the Intermodal Precinct to date, the site does not strictly fit the definition of 'Core Koala Habitat' under SEPP 44. Nonetheless, given the presence of historic records (**Figure 3**) and recent sightings/evidence of koala occupation, as a conservative measure the site is being treated in a similar manner to core koala habitat and a KMP, in accordance with the conditions of consent issued by the IPC is being prepared, especially as no CKPoM has been completed for the Liverpool LGA, where the Intermodal Precinct is located. As Liverpool LGA is listed in Schedule 1 (Local Government Areas) of SEPP 44, this KMP has been prepared in accordance with the working provisions of the SEPP.

Guidelines for the preparation of a KMP are provided in the SEPP 44 Circular B35 from the-then Director-General of the Department of Urban Affairs and Planning (currently NSW Department of Planning, Industry and Environment (DPIE)). The following matters, as detailed in the guidelines, are required to be considered when undertaking a plan of management:

- An estimate of population size;
- Identification of preferred feed tree species for the locality and the extent of resource available;
- An assessment of the regional distribution of koalas and the extent of alternative habitat available to compensate for that to be affected by the actions;
- Identifications of linkages of core koala habitat to other adjacent areas of habitat and movement of koalas between areas of habitat. Provision of strategies to enhance and manage these corridors;
- Identification of major threatening processes such as disease, clearance of habitat, road kill and dog attack which impact on the population. Provision of methods for reducing these impacts;
- Provision of detailed proposals for amelioration of impacts on koala populations from any anticipated development within zones of core koala habitat;
- Identification of any opportunities to increase size or improve condition of existing core koala habitat, this should include land adjacent to areas of identified core koala habitat;
- The plan should state clearly what it aims to achieve (for example maintaining or expanding the current population size or habitat area);
- The plan should state the criteria against which achievement of these objectives is to be measured (for example, a specified population size in a specific time frame or the abatement of threats to the population); and
- The plan should also have provisions for continuing monitoring, review and reporting. This should include an identification of who will undertake further work and how it will be funded."

Schedule 2 of SEPP 44 also provides a list of Koala Food Trees. These include:

- *Eucalyptus tereticornis* (Forest red gum);
- *Eucalyptus microcorys* (Tallowwood);
- *Eucalyptus punctata* (Grey Gum);
- *Eucalyptus viminalis* (Ribbon or manna gum);
- *Eucalyptus camaldulensis* (River red gum);
- *Eucalyptus haemastoma* (Broad leaved scribbly gum);
- *Eucalyptus signata* (Scribbly gum);
- *Eucalyptus albens* (White box);
- *Eucalyptus populnea* (Bimble box or poplar box); and
- *Eucalyptus robusta* (Swamp mahogany).

2.5.1. State Environmental Planning Policy (Koala Habitat Protection) 2019

SEPP 44 is to be replaced by *State Environmental Planning Policy (Koala Habitat Protection) 2019* on 1 March 2020 (Koala Habitat Protection SEPP). Although the Koala Habitat Protection SEPP is not legally in force at the time of preparation of this KMP, consideration has nonetheless been given to fact that the Koala Habitat Protection SEPP significantly expands the SEPP 44 list of koala trees from 10 to 123. These 123 species are categorised into nine distinct regions (Koala Management Areas), according to what trees koalas have been reported to use to varying degrees in various areas, ranging from nine in the Riverina region to 65 in the Central Coast region.

2.6. Koala Recovery Plan

In December 2008, a Koala Recovery Plan was approved by the NSW Government (DECC, 2008) within which Liverpool LGA was not identified as a priority area for the development of a CKPoM. Nonetheless, the objectives of the Koala Recovery Plan include the following:

- The integration of koala habitat conservation into local and state government planning processes;
- Development of appropriate road risk management in areas of koala habitat;
- Implementation of strategies which minimise the impacts of domestic dogs on free ranging koalas;
- Development and implementation of strategies to reduce the impact of fires on koala populations; and
- The rehabilitation and restoration of koala habitat and populations.

The Koala Recovery Plan identifies seven koala management areas (KMAs) across NSW based on landscape characteristics, particularly the geographic distribution of primary or secondary food tree species, and administrative boundaries for ease of natural resource management (see **Image 1**). The koala food trees differ between the seven management areas.

The Intermodal Precinct and broader Sydney Metropolitan Area lie within the Central Coast KMA (KMA 2) The main koala food trees in this KMA, as per the Recovery Plan are listed in **Table 1** below.

Image 1: KMAs as per Koala Recovery Plan

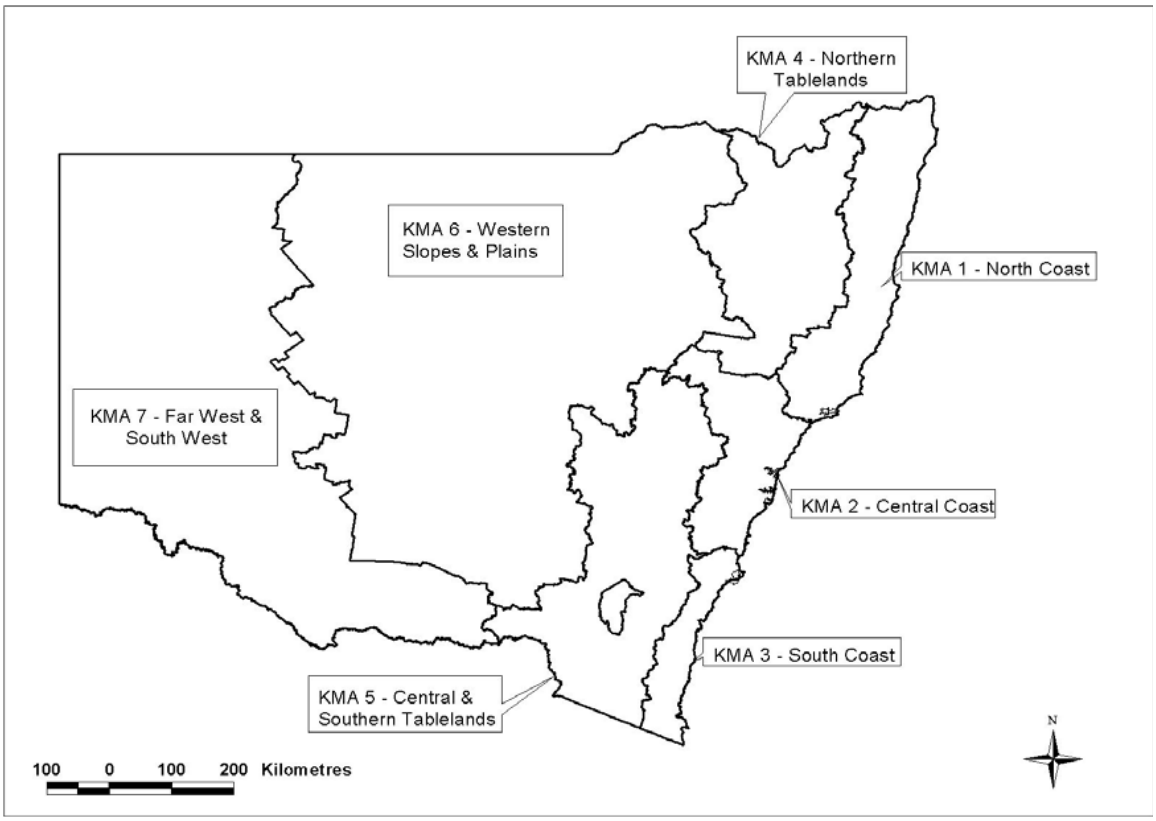


Table 1: Listed Koala Food Tree Species for Central Coast KMA (Source: Approved Koala Recovery Plan)

Primary food tree species	Secondary food tree species	Supplementary Species
Eucalyptus amplifolia	*Eucalyptus baueriana*	*Eucalyptus agglomerata*
Eucalyptus microcorys	*Eucalyptus bosistoana*	*Eucalyptus bensonii*
Eucalyptus parramattensis	*Eucalyptus camphora*	*Eucalyptus blaxlandii*
Eucalyptus robusta	*Eucalyptus conica*	*Eucalyptus camfieldii*
Eucalyptus tereticornis	*Eucalyptus consideniana*	*Eucalyptus cannonii*
Eucalyptus viminalis	*Eucalyptus cypellocarpa*	*Eucalyptus capitellata*
	Eucalyptus dwyeri	*Eucalyptus eugenioides*
	Eucalyptus glaucina	*Eucalyptus globoidea*
	Eucalyptus goniocalyx	*Eucalyptus imitans*
	Eucalyptus largeana	*Eucalyptus ligustrina*
	Eucalyptus longifolia	*Eucalyptus muelleriana*
	Eucalyptus maidenii	*Eucalyptus oblonga*
	Eucalyptus michaeliana	*Eucalyptus prominula*
	Eucalyptus microcarpa	*Eucalyptus ralla*
	Eucalyptus moluccana	*Eucalyptus sparsifolia*

Primary food tree species	Secondary food tree species	Supplementary Species
	Eucalyptus notabilis	*Eucalyptus tenella*
	Eucalyptus ovata	
	Eucalyptus praecox	
	Eucalyptus punctata	
	Eucalyptus quadrangulata	
	Eucalyptus resinifera	
	Eucalyptus rudderi	
	Eucalyptus scias	

Some tree species listed in the Koala Recovery plan are specifically listed as Koala Food Trees in Schedule 2 of SEPP44. These koala food trees are indicated in bold in **Table 1**. Additional species listed as Koala food trees (NSW Planning & Environment 2016) in Appendix 2 of "*A review of koala tree use across New South Wales (OEH 2018)*" (see **Section 2.7**) are underlined in **Table 1**.

Further details on preferred feed tree species for the locality and the extent of resource available are provided in **Section 5.2.1** and **Section 7.2** of this KMP.

2.7. A Review of Koala Tree Use Across New South Wales

The NSW Government has embarked upon a program of state-wide koala habitat suitability mapping in response to recommendations put forward by the NSW Chief Scientist & Engineer in addressing the decline of koala populations in key areas of New South Wales. The mapping is intended to complement koala habitat information at local scales as well as information at the state and regional scale about likely koala occurrence or occupancy.

As part of the development of a state-wide habitat suitability map, the Office of Environment and Heritage (OEH, now Environment, Energy and Science Group (EES)) implemented a review of koala tree use and published the document "*A review of Koala tree use across New South Wales*" (OEH, 2018) (the 'Review').

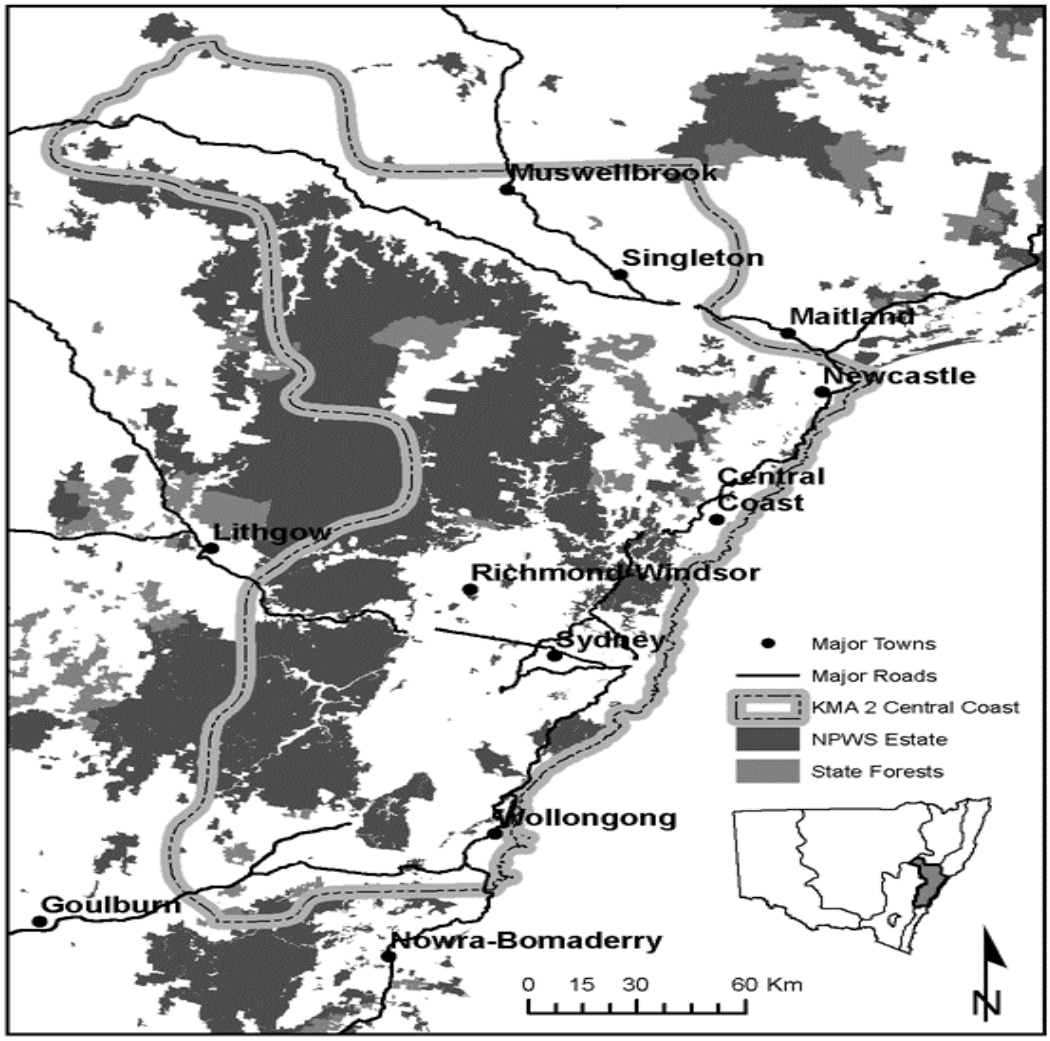
The Review concluded that while koalas generally make use of a variety of tree species, whether for food, shelter or other purposes, within any location they typically display a dietary preference for a subset of tree species that may be considered of primary importance, with others used either for secondary browsing or as resting and shelter sites. The subset of preferred food trees varies across New South Wales.

As part of the Review, NSW was regionalised into seven Koala Management Areas (KMAs) that were used to collate Koala tree use evidence. KMAs were originally formalised within the NSW Koala Recovery Plan (DECC, 2008) and koala food tree lists were developed for each KMA (see **Table 1** in **Section 2.6**). Based mostly on qualitative information, the Review identified evidence of koala use for 137 tree species across New South Wales.

Koala tree use (comprising food, shelter or other purposes) within the KMAs was standardised into four categorical use levels: high, significant, irregular and low. Appendix 2 of the Review provided an updated status on trees considered to comprise food trees across NSW.

The Intermodal Precinct and broader Sydney Metropolitan Area lie within the Central Coast KMA (KMA 2) as indicated in the extract from the document in **Image 2** below.

Image 2: Extent of Central Coast KMA as per the OEH Koala tree use review document



Amongst other things, the qualitative evidence gathered by the Review implied that koalas made use a greater diversity of eucalypt species (55 documented) in KMA 2 than any other. These numbers reflect the presence of considerable ecological variation in plant community types and koala habitat diversity within KMA 2 from the coastal lowlands to the Blue Mountains hinterland and the Southern Highlands. Two species, *Eucalyptus punctata* (Grey Gum) and *Eucalyptus globoidea* (White Stringybark) were identified as regional high use species by the Review.

The Review hypothesised that the concept of preferred tree species may be less well-defined within KMA 2 and in this context considered that it may be the case that, above a minimum habitat quality threshold, that koalas in these locations persist by occupying relatively large home ranges supporting a diverse range of tree species and topography and the opportunity to access a variety of leaf nutrient and moisture levels while off-setting leaf toxin loads to meet nutritional needs along with shelter and social needs.

Although koala tree use, as defined in the Review, has been considered for this KMP, on the advice of [redacted] the assessment of koala habitat has largely been based on the presence of a subset of dietary preference trees or Preferred Koala Food Trees (PKFTs) for the region as it is the presence of PKFTs that largely determine the carrying capacity of a specific area to support Koalas. The PKFTs utilised within this KMP are largely based on known food trees as defined in the Koala Recovery Plan, studies of the Campbelltown Koala Population (see **Section 7.1**) and advice from Dr. Phillips with consideration to the updated list of food trees listed in Appendix 2 of the Review.

2.8. Local Planning Instruments and Policies

The *Liverpool Local Environment Plan 2008* makes little mention of Koalas or their habitat within the LGA. The LEP states under Part 3.2 (3A) that "*to be complying development, the development must also be consistent with any plan of management approved under State Environment Planning Policy No 44 – Koala Habitat Protection that applies to the land.*" This KMP has been made consistent with the requirements of SEPP 44.

Parts of the Intermodal Precinct, primarily the Bootland, the Moorebank offset site and parts of the MPW development area are mapped as Regional Core and Regional Connected Vegetation in the Liverpool Biodiversity Management Plan 2012. Although Koalas are not specifically mentioned, the objectives of the Regional Core and Regional Connected Vegetation are to protect remaining high conservation value vegetation and linkages. The Intermodal Precinct development is largely consistent with these objectives as the best quality areas of vegetation are to be conserved as Biobank sites.

3. Description of the Environment

3.1. Location

The project boundary is located approximately 3 km south west of the local township of Moorebank and approximately 27 km from the Sydney Central Business District. The project boundary falls entirely within the Liverpool LGA and is bounded to the west by the Georges River, south by the East Hills Railway, east by the local township of Wattle Grove and north by the M5 Motorway. The Holsworthy Military Barracks are located immediately to the south of the East Hills Railway. At present, the land within the Intermodal Precinct is zoned under the Liverpool LEP as follows:

- MPW and MPE development area: IN1 – General Industrial;
- Moorebank and Casula Offset Areas: E3 – Environmental Management; and
- Wattle Grove Offset Area/Bootland: SP2 – Infrastructure (Defence).

3.2. Topography, Soils and Hydrology

The project boundary is located on the south eastern reaches of the Cumberland Plain with the topography generally flat and sloping towards the Georges River. Flat, open grasslands, scattered patches of vegetation and cleared areas dominate the MPW and MPE development areas while the Bootland and Moorebank Offset Area contain relatively dense bushland.

The Intermodal Precinct is located within the Georges River Alluvial Plain Mitchell landscape which generally consists of Quaternary and Tertiary alluvial sediments. Soils mostly consist of clayey sand and sand with limited gravel with a general elevation of 0 to 30m.

The Georges River flows north along the western edge of the MPW site where it is considered to be a 6th order stream. Anzac Creek originates from the MPW Site and is therefore considered to be a 1st order stream within the Intermodal Precinct. The creek flows north past the adjoining suburbs of Wattle Grove and Moorebank before draining into Lake Moore in Chipping Norton, which flows into the Georges River.

In addition to these named watercourses, there is a formalised drainage channel located in the north of the MPW site. The large open channel is concrete lined and conveys stormwater in a north-westerly direction across the MPW site, discharging into the Georges River. Other hydrological features are restricted to artificial wetlands that have naturally regenerated in previously excavated areas with retained soil material and detention basins in the MPW Site.

3.3. Land Use

The land within the Intermodal Precinct, particularly the MPW and MPE development areas, and general locality has been extensively modified by historic clearing and ongoing development.

The Intermodal Precinct has been associated with the military since the early 1900s, including use as a training camp, barracks or military storage facilities. Prior to development for the Intermodal Precinct, the MPE site largely comprised developed handstand areas including warehouses, offices and an internal road network. The MPW site largely contained military barracks including the Moorebank Barracks and Steele Barracks as well as the Royal Australian Engineers (RAE) Golf Club. While vegetation in the Bootland was

largely retained, this area was historically utilised for military training (including as a grenade range) and stockpiling and has required remediation for unexploded ordinance.

The Intermodal Precinct is located near a number of significant industrial areas, including Moorebank and Warwick Farm to the north, Chipping Norton to the north-east, Prestons to the west and Glenfield and Ingleburn to the south-west. Nearby residential areas include Wattle Grove, Moorebank, Holsworthy and Casula, which are located to the east and north east.

3.4. Vegetation Communities

Much of the vegetation of the Intermodal Precinct and broader locality has been extensively modified due to a history of clearance, and utilisation for residential, infrastructure, military and industry. This has arguably reduced the availability of habitat for the Koala in the locality with the majority of records occurring within the forested areas of Holsworthy Military Barracks and riparian corridors (**Figure 3**).

A suite of native woodland and forest communities have been identified as occurring within the Intermodal Precinct. Further details on these communities as they relate to the Intermodal Precinct and Koala habitats are provided in **Chapter 7**.

According to the Biodiversity Assessment Report (BAR) update conducted by Arcadis in March 2019 ('the BAR') (Arcadis, 2019a) the majority of the vegetation within MPW Stage 2 consists of remnant forest and woodland vegetation that has been moderately modified. There are however, some areas of moderate to good condition remnant vegetation that is connected to the larger areas of vegetation in the Moorebank Offset area.

The most extensive and highest quality native vegetation remnants within and adjacent to MPW Stage 2 occur in the Bootland and Moorebank offset areas. Both these areas have specifically been excluded from the Disturbance Area for the project and will be managed in accordance with the BioBanking assessment prepared for the sites (WSP Parsons Brinckerhoff, 2017).

The native flora assemblage of the project boundary is typical of the Cumberland Plain grassy woodlands and open forests. It is characterised by a high diversity of ground cover forbs and grasses and contains a sparse to locally dense shrub stratum that includes *Acacia*, *Melaleuca* and *Banksia* species. In areas of MPW that have experienced more intense infrastructure use, the understorey component is dominated by hardy native grasses (e.g. *Microlaena stipoides*) or is dominated by weedy grasses and forbs in more modified areas.

Native vegetation communities within MPW Stage 2 development area are in a moderate condition, albeit fragmented, and are largely restricted areas adjacent to the Georges River riparian corridor and the former RAE Golf Club. Remnant woodland patches contain healthy, mature trees and generally support a healthy and diverse understorey.

Parts of the MPW Stage 2 development contain planted vegetation within mown grassy verges. Planted trees comprise a mix of local endemics and non-endemic native eucalypts such as *Eucalyptus microcorys, Eucalyptus* saligna x botryoides and *Eucalyptus camaldulensis*.

The vegetation within the offset areas are also generally typical of undisturbed examples of these vegetation communities. Specifically, according to the BAR, vegetation in these areas consists of remnant and regrowth vegetation that has been subjected to minor weed invasion in small areas. Vegetation within the Bootland is generally in a better condition than the Moorebank and Casula offset areas which are subject to higher levels of weed invasion.

4. Literature Review

Desktop assessments were undertaken as an initial part of the preparation of this KMP. Mapping and Koala records for the surrounding locality were assessed in addition to a review of strategic planning documents, reports and literature relevant to the Koala and the Intermodal Precinct. Relevant available information on the occurrence and habitats of Koalas within the Intermodal Precinct and general locality were considered during the preparation of this document.

Specific information relied upon for Koala records for the surrounding locality included records held within the OEH Atlas of NSW Wildlife Database and maps from the Recovery Plan for the Koala (DECC, 2008). Additionally, information related to the presence of koala trees, in particular known PKFTs for the KMA, was obtained from the recent surveys undertaken as part of the BAR (Arcadis, 2019a) and the Biobanking assessment (WSP Parsons Brinckerhoff, 2017).

Information on the extent of tree species with the potential to be koala use trees, including known PKFTs within the locality was drawn from the desktop review and field surveys and vegetation community mapping of the MPW and MPE development areas and offset areas undertaken by Arcadis (Arcadis, 2019a) and the OEH mapping of native vegetation for the Sydney Metropolitan area (OEH, 2016).

4.1. Summary of Resources

Numerous resources were used during the preparation of this KMP in order to adhere to the requirements set by the conditions of consent for the MPW Stage 2 development. Resources included advice from ongoing communications with Dr. Phillips, peer-reviewed documents relating to Koala conservation and management for the Sydney region and site-specific documentation prepared in relation to the development of the Intermodal Precinct. The documents reviewed include, but are not limited to:

- Arcadis (2017). Sydney Intermodal Terminal Alliance (SIMTA): Moorebank Precinct East Stage 1 Biodiversity Assessment Report;
- Arcadis (2019a). Moorebank Precinct West (MPW) – Stage 2 Amended Proposal: Biodiversity Assessment Report;
- Arcadis (2019b). Moorebank Precinct West (SSD – 5066): EPBC Biodiversity Offset Strategy;
- Biolink (2016). Analysing the historical record: aspects of the distribution and abundance of koalas in the Campbelltown City Council Local Government Area 1900 – 2012 (Including an Appendix on Habitat Use and Classification): Report to Campbelltown City Council. Biolink Ecological Consultants, Uki, NSW;
- Biolink (2018). Review of koala Generational Persistence across Campbelltown City Council Local Government Area: 2012 - 2017. Biolink Ecological Consultants, Uki, NSW;
- DECC (2008) Recovery Plan for the koala (*Phascolarctos cinereus*): Approved Recovery Plan.
- Liverpool City Council (2012). Liverpool Biodiversity Management Plan;
- OEH (2016) The Native Vegetation of the Sydney Metropolitan Area: Version 3.0;
- OEH (2018) A review of Koala tree use across New South Wales;

- OEH (2019a). BioNet Atlas records for Koala (*Phascolarctos cinereus*);
- OEH (2019c). Moorebank Intermodal Terminal Biobank Site: Biobanking Agreement (ID number BA341);
- Parsons Brinckerhoff (2014). Moorebank Intermodal Terminal – Ecological Impact Assessment. Moorebank Intermodal Terminal Project Environmental Impact Statement Volume 4 – Technical Paper 3 Ecological Impact Assessment (with associated Biodiversity Offset Strategy).
- Phillips, S. and Callaghan, J. (2000). Tree species preferences of koalas (*Phascolarctos cinereus*) in the Campbelltown area south-west of Sydney, New South Wales. *Wildlife Research* **27**: 509-516.
- SIMTA (2018). Moorebank Precinct East Stage 1, Package 2: Construction Flora and Fauna Management Plan;
- Sluiter, A.F. Close, R.L. and Ward, S.J. (2002). Koala feeding and roosting trees in the Campbelltown area of New South Wales. *Australian Mammalogy* **23**: 173-175.
- State Environmental Planning Policy No 44 – Koala Habitat Protection;
- WSP Parsons Brinckerhoff (2017). Moorebank Intermodal Company Biodiversity Assessment Report: Biobanking Agreement Wattle Grove Offset Area, Casula Offset Area and Moorebank Offset Area.

5. Koala Survey

This chapter details the methodology used to investigate the extent of habitat use by koalas within MPW and associated offset areas. Methods undertaken included field surveys and survey data analysis. Specialist consultation was undertaken for the development of survey methods and this KMP.

5.1. Specialist Consultation

Prior to undertaking field surveys in November-December 2018, Dr. Phillips was consulted regarding the development of a suitable methodology to determine the extent of use of habitat within MPW and the associated offset areas. Cumberland Ecology continued to liaise with Dr. Phillips throughout the development of the KMP to further refine requisite management strategies based on findings of survey data and non-ecological constraints associated with the development. All data analyses were undertaken by Cumberland Ecology, with advice sought as required from Dr. Phillips. This KMP document was also reviewed by Dr. Phillips.

5.2. Field Survey Procedures

5.2.1. Rapid Spot Assessment Technique surveys

Koala surveys were undertaken on 30 November 2018 using a variant of the standard Spot Assessment Technique (SAT) methodology, otherwise known as Rapid–SAT. Rapid-SAT surveys are utilised as a precursor to detailed SAT surveys as this offers a time and very cost effective survey technique based on the knowledge that in areas being utilised by koalas, there is a 50% probability of faecal pellets occurring within 1 m of the base of any PKFT ≥ 300 mm diameter at breast height (DBH) (Phillips and Wallis, 2016). If evidence of Koalas is detected, Rapid-SATs can then be followed by full SATs until the entire area of koala activity is captured.

A 250 m sampling grid was established over the project boundary and offset sites, with a total of 31 Rapid-SAT survey sites established across the areas. As Rapid-SATs allow for some flexibility in site placement (± 25m) to optimise numbers of PKFTs being sampled, sites were adjusted as required in the field.

Based on vegetation mapping and trees (including planted natives) recorded within MPW and associated offset sites, as detailed in the ecological documentation for the MPW and MPE sites, the PKFTs (as listed in SEPP 44, KMA 2 of the Recovery Plan or as advised by [redacted]) within this area comprise:

- *Eucalyptus tereticornis* (Forest Red Gum), *Eucalyptus parramattensis* (Parramatta Red Gum), *Eucalyptus microcorys* (Tallowwood), *Eucalyptus robusta* (Swamp Mahogany) *Eucalyptus moluccana* (Grey Box), *Eucalyptus longifolia* (Woollybutt) and *Eucalyptus baueriana* (Blue Box).

An additional species, *Eucalyptus punctata* (Grey Gum) is also considered to be a PKFT for the area but has not been recorded within the Intermodal Precinct in any ecological assessments conducted to date.

At each Rapid-SAT survey site, a maximum of two-person minutes was spent searching for faecal pellets (scats) within a one metre radius of the base of each selected tree and continued until a minimum of five to a maximum of seven PKFTs were searched. Searching for scats involved an initial inspection of the ground surface followed by a robust disturbance, i.e. raking of the leaf litter if necessary, to search for scats. Searching ceased if a Koala scat was located before the two minutes expired.

The locations of Rapid-SAT searches are provided in **Figure 4**.

5.2.2. IR Cameras

A total of seven IR cameras were set up on 30 November 2018 in areas with high numbers of PKFTs or in areas deemed to be potential movement corridors for koalas. The IR cameras were placed in suitable trees facing PKFTs, at a height of approximately two metres and were programmed to take a set of three continuous photos when the motion trigger was activated. The locations of IR cameras within the MPW site and offset areas are shown in **Figure 4**

The IR cameras were collected on 19 December 2018 and all photographs taken were examined by an ecologist between 8 and 10 January 2019 for presence/absence of fauna.

5.2.3. Koala Detection Dog

Surveys using a koala detection dog were conducted from 3 – 7 December 2018 with ecologists from Cumberland Ecology accompanying the ReconEco handler/dog team.

The nominated detection dog, [redacted] is a working Springer Spaniel certified for Koala pellet detection with the Canine Detection Certification Council - Conservation Division (CDCC). The nominated handler, [redacted] is a professionally trained detection dog handler, certified by the CDCC.

The handler allowed the dog to work off leash and follow any scents as far as practical and safe. The surveys involved the handler giving the dog the general direction of the search and guiding/recalling the dog if it strayed too far or to keep the dog safe from risks. The detection dog was fitted with a real-time radio-tracking collar paired with the handler's handheld GPS unit to maintain a record of the areas surveyed and distance covered by the detector dog.

When the dog displayed particular interest in an area, by sitting beside a tree after following a scent, the handler recalled the dog and then rereleased him for a follow-up search. If the dog returned to the point of interest, the handler notified the accompanying Cumberland Ecology ecologists who then conducted searches for scats at the base of the tree of interest as well as any adjacent trees.

The location of any detected scats was recorded using hand-held GPS units and samples were collected for further laboratory confirmation analyses. In areas where high numbers of scats were recorded, PKFTs and adjacent sheltering trees were inspected for koalas.

The areas covered during the detection dog surveys are indicated in **Figure 4**.

5.2.4. Koala Scat Identification

A subset of scat samples located during the dog detection surveys, particularly those within the MPW site, were collected and sent to [redacted] at ScatsAbout for further identity verification.

5.2.5. Survey Limitations

Due to time limitations during the survey period, only 16 Rapid-SAT survey points were assessed on 30 November 2018. However, the sites that were not assessed using Rapid-SATs were either located in the

vicinity of the area where a koala was first detected or were subsequently surveyed during the detection dog surveys. As the purpose of Rapid-SATs is to detect evidence of koalas within an area, further Rapid-SAT surveys were deemed unnecessary in these areas.

Due to a device fault on the day, the distance covered by the detection dog was not properly recorded on 4 December 2018. Therefore, the shorter distance covered by the dog handler has been utilised for survey effort calculations for this day.

Due to time limitations during the survey period, scats found within the Bootland on 7 December 2018 were not included in the samples sent to ScatsAbout for laboratory analysis. Samples sent for identification were limited to the scats collected during the Rapid-SAT surveys on 30 November 2018 and during the detection dog surveys within the MPW site on 5 December 2018. Nonetheless, all scats detected during the 7 December surveys are considered to comprise koala scats as they were found by a detection dog that is attuned to koala detection and is not trained for detection of alternate native fauna with similar scats.

5.3. Specialist Site Visit

A site inspection to better inform the preparation of this KMP was conducted on 18 September 2019. The site inspection was conducted by [redacted] and Cumberland Ecology ecologists G[redacted] were accompanied by Qube representative [redacted] Environmental advisor [redacted] (Aspect Environmental), project manager [redacted] (Tactical Group) and site manager [redacted] (Tactical group).

The site inspection involved inspections of vegetation in parts of the MPW site, Moorebank offset area and the Bootland to determine suitability of vegetation as koala habitat and potential movement corridors identified during desktop assessments as well as determine measures required to prevent future koala access to areas approved for development.

In particular, the areas inspected included:

- Vegetation along the boundary of the MPW site and Moorebank offset areas in the vicinity of proposed onsite detention (OSD) basins;
- Vegetation along the eastern boundary of the MPW site in the vicinity of the existing Anzac Creek culvert under Moorebank Avenue;
- Access conditions in the southern parts of the MPW site near the newly constructed MPE Stage 1 rail link; and
- Vegetation along the southern boundary of the Bootland adjacent to the East Hills Railway corridor, in particular a section with existing culverts under the rail-line identified in desktop assessments.

5.4. Field Survey Results

5.4.1. Rapid-SAT surveys

Rapid-SAT surveys were conducted at 16 sites. Koala scats were detected at one survey site within the Bootland with additional scats incidentally located under a *Eucalyptus fibrosa* tree. The locations where the scats were found is shown in **Figure 5**. These scats located were identified as 'probable' Koala scats by [redacted] as they did not display all the diagnostic characteristics.

No scats were recorded within the MPW development area or Moorebank offset area during the Rapid-SAT surveys and no koalas were sighted during the Rapid SAT surveys.

5.4.2. Detection Dog surveys

Koala scats were found at the base of several trees across two 'patches' of vegetation during the detection dog surveys. The location of these scats is shown in **Figure 5**.

One detection 'patch' was located in the southern parts of the Bootland while one patch was located in the south-eastern parts of the MPW site. The vegetation communities where the scats were located are discussed further in Section 7.2.3.

The distance covered by the detection dog varied each day. The survey effort, expressed as a ratio of the number of locations of scat detection to distance surveyed, is summarised in **Table 2** below.

Table 2: Detection dog survey effort

Survey date	Location	Distance covered by detection dog (km)	Number of locations of detected scats	Detection/unit effort (# scats/km)
03-12-18	MPW development site	16.24	0	0.00
04-12-18	MPW development site	11.74*	0	0.00
05-12-18	MPW development site	18.98	5	0.26
06-12-18	Moorebank offset area	19.8	0	0.00
07-12-18	Bootland	14.62	13	0.89

** Distance covered by the dog handler used as a proxy due to a device fault on the day. Distance covered by the detector dog would be higher.*

Overall the detection rate for koala scats within the Bootland was approximately 3 times that within the MPW site. This suggests a higher density of koala scats and therefore higher level of koala usage of vegetation within the Bootland compared to the MPW site.

5.4.3. IR Camera

A single koala was detected on an IR camera (IR 24) located within the Bootland on 9 December 2018. The photograph quality does not allow for definitive gender identification.

The relevant IR camera is located between areas where koala scats were detected during the November-December 2018 surveys (**Figure 5**). The images captured by the IR camera are provided as Photographs 1 -3 below.

Photograph 1: Koala detected in Bootland (Image 1 of 3)

Photograph 2: Koala detected in Bootland (Image 2 of 3)

Photograph 3: Koala detected in Bootland (Image 3 of 3)

5.4.4. Scat Identification

Although some scats collected from the MPW development site were identified as 'probable' Koala scats as they did not display all the diagnostic characteristics, laboratory analysis of the scats by [redacted] confirmed that the majority of the samples collected from the MPW development to be Koala scats. Despite the 'probable' diagnosis, the scats are assumed to comprise koala scats as they were found by a detection dog that is attuned to koala detection and is not trained for detection of alternate native fauna with similar scats.

5.4.5. Koala Occurrence in the Intermodal Precinct

Although the scat data from the surveys implies that there is potential for more than one koala to be present within the Intermodal Precinct, it is also feasible that the single individual observed in the Bootland on 6 November 2018 (and potentially on the IR camera on 9 December 2018) is moving between the MPW site and the Bootland. Although Moorebank Avenue and the 1.8m high cyclone fence along existing work sites present barriers for movement, a culvert along Anzac Creek, running beneath Moorebank Avenue presents a possible fauna passage for koalas to move between the Bootland and the MPW site. All scats located within the MPW development area were restricted to a fragmented band of vegetation adjacent to the culvert opening. Although it is acknowledged that this observation is circumstantial and movement is further limited by existing cyclone fencing around the MPW site near the culvert, the potential for movement between the Bootland and the MPW development area through the culvert during dry periods cannot be fully discounted, especially as gaps at the base of the fencing were observed during the 18 September 2019 inspection (see **Photograph 4**).

Photograph 4: Fence conditions at MPW site near existing Anzac creek culvert (18 Sep 2019)

All available onsite survey data imply the presence of no more than 1-2 koalas within the Intermodal Precinct rather than a resident population. Based on recent koala studies in the Cumberland Plain area that indicate that shale-influenced koala habitat can support approximately 0.07 koalas/ha, it is possible that up to three koalas could potentially be sustained in the Bootland area.

The bushland areas within the Intermodal Precinct occur at the northern extent of a large area of bushland that is known to support Koala populations and includes the Holsworthy Military Reserve and areas within the Campbelltown LGA. Koala populations in the Campbelltown LGA are known to be recovering and currently expanding their Extent of Occurrence in the north and south-western areas of the LGA (Biolink 2016). Given this trend it is considered most likely that the koalas recorded on the Moorebank site are associated with this northerly expansion (**Figure 6**). Although the East Hills railway line forms a movement barrier between the Intermodal Precinct and the Holsworthy base, the presence of culverts beneath the railway line present potential fauna movement opportunities. During the December 2018 surveys conducted by Cumberland Ecology, gaps in the fence were observed at some locations around the Bootland which would further allow some movement into the Bootland.

Koalas have a complex social hierarchy based on a dominant male with a territory overlapping with that of several females with sub-ordinate males occurring on the periphery (OEH 2018a). The presence of culverts (fauna passages) and gaps in existing fencing would allow for some movement of koalas from adjacent bushland areas to the south to the south despite barriers from ongoing development in the locality. It is feasible that koala individuals were not recorded during surveys prior to 2018 due to either the absence of koalas at the time of survey or the presence of 1 - 2 individuals at low density of occurrence within the area.

6. Koala Habitat Requirements and Threatening Processes

This chapter presents general background information about the Koala. Information contained within this chapter includes key habitat requirements and threatening processes.

6.1. Key Habitat Requirements

Koala habitat requirements are broadly described in the SEPP 44 – Koala Habitat Protection (SEPP 44) under the definitions of Core and Potential Koala Habitat. Core Koala Habitat is an area that contain a resident population of Koalas evidenced by breeding females, current sightings and historical records. Potential Koala Habitat is described as areas of native vegetation that contain feed tree species covering 15% of the upper or lower strata. These definitions suggest that feed tree species (as listed in Schedule 2 of the legislation) occurrence and density is the most important driving factor of Koala habitat suitability. Draft amendments to the SEPP 44 by the Department of Planning and Environment does however, encourage changes to these definitions based on Koala occurrence that imply a larger tree species list is required.

Similar to the SEPP 44, the Koala Profile on the OEH webpage (OEH, 2019b) and the Koala Recovery Plan for NSW (DECC, 2008) are consistent in describing that the occurrence of feed tree species is one of the most important factors in determining Koala habitat suitability. They do however, outline both primary and secondary feed tree species.

Due to the understood importance of feed tree species to habitat suitability to the Koala, a qualitative review was conducted to determine tree use patterns in order to model habitat across NSW. The results of this review was published in "*A review of Koala tree use across New South Wales*" prepared by OEH (OEH, 2018). The Review describes the use of a range of tree species outside of the Eucalyptus genus and in some instances appears to move away from referencing feed tree species – rather preferring the term 'tree use' to describe tree species that are important in determining habitat suitability. This results in a much more extensive list of tree species that assist in determining habitat suitability.

The Review determined that while koalas generally make use of a variety of tree species, whether for food, shelter or other purposes, within any location they typically display a dietary preference for a subset of tree species that may be considered of primary importance, with others used either for secondary browsing or as resting and shelter sites. Koala tree use (comprising food, shelter or other purposes) was standardised into four qualitative use levels: high, significant, irregular and low. Appendix 2 of the Review provided an updated status on trees considered to comprise food trees across NSW.

Further to tree use, the suitability of forest and woodland communities as habitat for Koalas can also be influenced by:

- Tree foliar chemistry;
- Soil type and moisture;
- Forest structure and tree size;
- Disturbance history;
- Landscape configuration; and

- Changes in climate and variability in temperature extremes.

Specifically, the Intermodal Precinct falls within a KMA (KMA 2) where the concepts of preferred Koala tree species are less well defined as areas of vegetation on comparatively high nutrient soils within the locality have been selectively cleared for agriculture. The KMA associated with the Intermodal Precinct contains the highest diversity of tree use across NSW.

6.2. Threatening Processes

Section 9 of Koala Recovery Plan (DECC, 2008) lists the recognised current threats to the Koala as follows:

- Habitat loss and fragmentation;
- Habitat degradation;
- Road kills;
- Dog attacks;
- Fire;
- Logging:
- Disease;
- Severe weather conditions;
- Swimming pools; and
- Over-browsing.

Additionally, the following Key Threatening Processes listed under the BC Act are identified in the Koala Recovery Plan as potentially threatening to the survival of the Koala:

- Anthropogenic climate change;
- Clearing of native vegetation;
- Forest eucalypt dieback associated with over-abundant Psyllids and Bell Miners;
- High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation; and
- Predation by the European Red Fox (*Vulpes vulpes*).

The Koala Recovery Plan stipulates that any actions leading to the operation or intensification of impacts of a listed key threatening process need to be considered explicitly, in terms of the potential for significant impact on Koala populations (DECC, 2008). An assessment of impacts on MPW Stage 2 habitats, threatened communities and species, including the Koala, is provided in the BAR for the Project (Arcadis, 2019a). This KMP represents a supporting document to the BAR.

6.3. Conclusion

The KTPs mentioned above that impact upon Koalas have been taken into consideration when formulating the mitigation measures for the Project. Chapter 8 details the mitigation measures proposed. Many of these impacts will be ameliorated within the MPW site and offset Areas.

7. Distribution of Koala Population and Habitat

7.1. Regional Perspective

As mentioned previously, the Intermodal Precinct sits within KMA 2 (**Image 2**) as defined by '*A review of Koala tree use across New South Wales*.' KMA 2 has been the focus of Koala survey and research centred around the Blue Mountains - Wollemi areas, as well as the Campbelltown, Wollondilly and Wingecarribee LGAs. Additionally, available records for the Koala within the broader Sydney area (as available on BioNet), indicate that koalas appear to be centred around the large tracts of remnant vegetation of Dharawal, Royal, Blue Mountains and Ku-Ring-Gai Chase National Parks.

Large tracts of bushland within the Holsworthy Military Barracks to the south of the Intermodal Precinct extend into the adjacent areas of the Campbelltown LGA (**Figure 6**), which supports one of the largest remaining koala populations in the Sydney region. The koala population of the Campbelltown LGA (the Campbelltown population) has been the focus of several scientific studies with data indicating that the population appears to be on a recovery trajectory in recent years. This recovery trend is supported by statistically significant increases in the Extent of Occurrence and Area of Occupancy by the Campbelltown population over at least the last three koala generations (Biolink, 2016). Recent studies of the Campbelltown population (Biolink, 2018) have confirmed ongoing range expansion associated with the ongoing recovery, with evidence of population expansion north past Long Point and therefore potentially into proximate areas of the Liverpool LGA.

Studies on koala food tree preferences in the Campbelltown LGA found preferential use of two species, *Eucalyptus punctata* and *Eucalyptus agglomerata*, on substrates derived from shales compared to those from sandstone (Phillips and Callaghan, 2000, Sluiter et al., 2002). This suggests that PKFT use is also influenced by differences in nutrient status between substrates and results in a requirement for large ranging patterns in low-nutrient environments.

The recovery of the Campbelltown population combined with the requirement for large home ranges and northward expansion suggests that the one or more individuals recorded within the Intermodal Precinct may comprise dispersing and/or wide-ranging individuals from the Campbelltown population to the south.

7.2. Koala Habitat and Records

Several koala tree use species within KMA 2, as documented in '*A review of Koala tree use across New South Wales*' occur within the MPW site and associated offset sites. However, as acknowledged in the Review, while koalas generally make use of a variety of tree species for food, shelter or other purposes, they display a dietary preference for a subset of tree species that may be considered of primary importance.

Therefore, based on the advice of [redacted] the assessment of koala habitat for the purposes of this KMP has still largely been based on the presence of Preferred Koala Food Trees (PKFTs) for the region as it is the presence of PKFTs that largely determine the carrying capacity of a specific area to support Koalas. The PKFTs utilised within this KMP are based on a combination of food trees as defined in the Koala Recovery Plan, studies of the Campbelltown Koala Population and advice from [redacted] with consideration to the updated list of food trees listed in Appendix 2 of the Review.

7.2.1. MPW site

The native vegetation within MPW consists predominantly of remnant and regrowth vegetation that has been subject to weed invasion in some areas. Most of the vegetation is representative of endangered ecological communities listed under the BC Act.

Existing vegetation in the north-western, western and south-western parts of the MPW site has been mapped as ME018 Forest Red Gum – Rough-bark Apple grassy woodland on alluvial flats (**Figure 7**), with a canopy layer dominated by *Eucalyptus tereticornis, Eucalyptus amplifolia* and *Angophora floribunda*. The eastern to south-eastern parts the MPW site have largely been mapped as ME003 Hard-leaved Scribbly Gum – Parramatta Red Gum heathy woodland with some patches of ME005 Parramatta Red Gum woodland on moist alluvium near Anzac Creek (**Figure 7**). The canopy layer of ME003 is dominated by *Eucalyptus sclerophylla, Eucalyptus globoidea*, *Eucalyptus parramattensis subsp. parramattensis* and *Melaleuca decora* while the canopy of ME005 largely consists of *Melaleuca linariifolia* and *Casuarina glauca* with scattered occurrences of *Eucalyptus parramattensis subsp. parramattensis*.

In addition to the remnant native communities, planted trees are present in the road reserve adjoining Moorebank avenue.

The classification of trees recorded within the MPW site as PKFTs or other koala use trees is summarised in **Table 3**.

Table 3: PKFTs and other koala use trees recorded within MPW site

Species	Common Name	PKFT	KMA 2 use level	Food tree status#
Angophora floribunda	Rough-barked Apple		Irregular	No
Eucalyptus amplifolia	Cabbage Gum		High	Yes
Eucalyptus baueriana	Blue Box	+	Irregular	Yes
*Eucalyptus camaldulensis**	River Red Gum	*	-	Yes
Eucalyptus globoidea	White Stringybark		Significant	Yes
*Eucalyptus microcorys**	Tallowwood	*	Significant	Yes
Eucalyptus parramattensis subsp. parramattensis	Parramatta Red Gum	+	High	Yes
Eucalyptus saligna x botryoides	Hybrid		Irregular (*E.saligna*) to Significant (*E.botryoides*)	No
Eucalyptus sclerophylla	Hard-leaved Scribbly Gum		High	No
Eucalyptus tereticornis	Forest Red Gum	+	High	Yes

* indicates non-endemic planted species, is a PKFT in other KMA, not known as a PKFT in KMA2;

Food tree status as per NSW Planning and Environment 2016 column of Appendix 2 of the Review document

Koala scats were located in a patch in the south-eastern parts of the MPW development area. This vegetation comprises a narrow stretch of vegetation, occurring roughly parallel to Moorebank Avenue and has been mapped as a mix of ME003 Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland (equivalent to Castlereagh Scribbly Gum Woodland TEC) and ME005 Parramatta Red Gum woodland on moist alluvium (equivalent to Castlereagh Swamp Woodland TEC). Scats were generally found at the base of either *Eucalyptus parramattensis* or *Eucalyptus sclerophylla* trees. This vegetation will be cleared as part of the MPW Stage 2 development resulting in no potential for Koala habitat or dispersal within the MPW site.

As outlined in **Section 5.4.5** and **Section 7.1**, the recent evidence of Koala occurrence at the MPW site is considered to most likely comprise habitat use by one or more transient or dispersing individual(s) from the known Campbelltown population to the south, or from Koala movements from the Bootlands to the east via the Anzac Creek culvert under Moorebank Avenue.

Due to the nature of the approved MPW development, retention of PKFTs and other koala use trees within the MPW site is not being considered as koala usage of the MPW site is to be discouraged (See **Section 7.4**). However, all vegetation, including PKFTs and other koala use trees, within the offset (Biobank) areas will be retained with additional trees planted as required as part of the management actions under the approved Biobanking agreement BA 341 (OEH, 2019c).

7.2.2. Moorebank Offset Areas

The majority of the vegetation within the Moorebank Offset Area consists of remnant vegetation that has been reported in the Biobanking Site Application prepared by WSP Parsons Brinckerhoff (WSP Parsons Brinckerhoff, 2017) as good to moderate condition.

The vegetation within the Moorebank Offset Area varied from patches with native species dominant in all vegetation layers to patches with the understorey and ground layer dominated by introduced vines and shrubs (e.g. *Lantana camara*, *Privet spp*. and *Cardiospermum grandiflorum*). The sites also included areas with dirt/gravel vehicle paths, small patches of bare ground with minimal vegetation and concrete pads.

Existing vegetation in the Moorebank Offset area has been mapped as ME018 Forest Red Gum – Rough-bark Apple grassy woodland on alluvial flats (**Figure 7**), with a canopy layer dominated by *Eucalyptus tereticornis, Eucalyptus amplifolia*, *Eucalyptus baueriana*, *Eucalyptus saligna x botryoides*, *Angophora floribunda* and *Angophora subvelutina*.

In addition to the native vegetation communities outlined above, Moorebank offset site contains areas consisting predominantly of introduced species. This exotic vegetation occurs as two vegetation types; exotic woody vegetation and exotic grassland. The exotic grassland areas are associated with riparian areas along the Georges River within the Moorebank Offset Area.

All native vegetation, including PKFTs and other koala use trees, is to be retained within the Biobank sites with further revegetation of exotic areas following weed removal.

The classification of trees recorded within the Moorebank offset site as PKFTs or other koala use trees is summarised in **Table 4**.

Table 4. PKFTs and other koala use trees recorded within the Moorebank Offset Area

Species	Common Name	PKFT	KMA 2 use level	Food tree status#
Angophora floribunda	Rough-barked Apple		Irregular	No
Eucalyptus amplifolia	Cabbage Gum		High	Yes
Eucalyptus baueriana	Blue Box	+	Irregular	Yes
Eucalyptus crebra	Narrow-leaved Ironbark		High	No
Eucalyptus fibrosa	Broad-leaved Ironbark		High	No
Eucalyptus parramattensis subsp. *parramattensis*	Parramatta Red Gum	+	High	Yes
Eucalyptus robusta	Swamp Mahogany	+	High	Yes
Eucalyptus saligna x botryoides	Hybrid		Irregular (*E.saligna*) to Significant (*E.botryoides*)	No
Eucalyptus sclerophylla	Hard-leaved Scribbly Gum		High	No
Eucalyptus sideroxylon	Mugga Ironbark		Significant	No
Eucalyptus tereticornis	Forest Red Gum	+	High	Yes

Food tree status as per NSW Planning and Environment 2016 column of Appendix 2 of the Review document

No evidence of Koalas was recorded within the Moorebank Offset area during recent targeted surveys in December 2018. The vegetation, and by extension koala habitat, within the Moorebank offset area is to be managed and enhanced in accordance with the approved Management Action Plan for Biobanking Agreement BA341.

7.2.3. Bootland

The majority of the vegetation within the proposed biobank site consists of remnant forest vegetation that has been reported by the Biobanking Site Application prepared by Parsons Brinckerhoff (WSP Parsons Brinckerhoff, 2017) to be of good to moderate condition.

The vegetation within the Bootland consists predominantly of remnant and regrowth vegetation that has been subjected to minor weed invasion in small areas. Areas of more intense weed invasion, where introduced species are dominant in the ground layer, are limited to the periphery of the site and along the existing disused rail spur that intersects the lower portion of the site. There is also a linear patch of regrowth vegetation that occurs to the north-east of the site which has been subjected to vegetation maintenance as a bush fire break and access track.

Vegetation within the Bootland (**Figure 7**) consists of a mix of the following communities:

- ME002 Broad-leaved Ironbark - Melaleuca decora shrubby open forest on clay soils of the Cumberland Plain, Sydney Basin Bioregion (dominant canopy trees: *E.fibrosa, E.parramattensis, E.tereticornis*);

- ME003 Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin Bioregion (dominant canopy trees: *E.sclerophylla, A.bakeri, E.parramattensis*);
- ME004 Broad-leaved Ironbark – Grey Box – Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin Bioregion (dominant canopy trees: *E. fibrosa, E. tereticornis*);
- ME005 Parramatta Red Gum woodland on moist alluvium of the Cumberland Plain, Sydney Basin Bioregion (dominant canopy trees: *E.parramattensis, E.sclerophylla, A.bakeri, A.floribunda, M.decora*; and
- ME 007 - Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion.

All native vegetation, including PKFTs and other koala use trees, is to be retained within the Biobank sites with further revegetation of exotic areas following weed removal.

The classification of trees recorded within the Bootland as PKFTs or other koala use trees is summarised in **Table 5**.

Table 5. PKFTs and other koala use trees recorded within the Bootland

Species	Common Name	PKFT	KMA 2 use level	Food tree status#
Angophora floribunda	Rough-barked Apple		Irregular	No
Eucalyptus eugenioides	Thin-leaved Stringybark		Irregular	No
Eucalyptus fibrosa	Broad-leaved Ironbark		High	No
Eucalyptus longifolia	Woollybutt	+	High	Yes
Eucalyptus parramattensis subsp. *parramattensis*	Parramatta Red Gum	+	High	Yes
Eucalyptus resinifera	Red Mahogany		Significant	No
Eucalyptus robusta	Swamp Mahogany	+	High	Yes
Eucalyptus sclerophylla	Hard-leaved Scribbly Gum		High	No
Eucalyptus tereticornis	Forest Red Gum	+		

Food tree status as per NSW Planning and Environment 2016 column of Appendix 2 of the Review document

Koala scats were found at the base of several trees across a large patch of vegetation comprising a mix of ME002, ME003 and ME005, in the southern parts of the Bootland during the detection dog surveys in December 2018. Scats were found at the base of a variety of tree species during Detection dog surveys including *Eucalyptus parramattensis, Eucalyptus sclerophylla, Eucalyptus fibrosa, Angophora floribunda* and *Melaleuca decora*. Koala scats were also detected within areas mapped as ME004 under a *Eucalyptus eugenioides* tree and a *Eucalyptus fibrosa* tree during Rapid SAT surveys. The IR camera recording of a koala also occurred within an area mapped as ME004.

The vegetation, and by extension koala habitat, within the Bootland is to be managed and enhanced in accordance with the approved Management Action Plan for Biobanking Agreement BA341 (OEH, 2019c).

7.3. Koala Habitat Ranking

The carrying capacity of the vegetation communities to support koalas was ranked into the following categories based on the relative abundance of PKFTs within the community:

- Primary Habitat: Vegetation communities where Primary PKFTs (as per **Table 1, Tables 4-5**) comprise the dominant or co-dominant (i.e. ≥ 50%) overstorey tree species;
- Secondary Class A: Vegetation communities where Primary PKFTs (as per **Table 1, Tables 4-5**) are present but are not dominant or co-dominant (i.e ≤50% of overstorey tree species); and

Secondary Class B: Vegetation where Primary PKFTs are absent but secondary PKFTs (as per **Table 1, Tables 4-5**) are dominant/sub-dominant.

Based on the above ranking system the communities within the MPW site and offset areas are classified as:

i. Primary Habitat

- ***ME018*** Forest Red Gum – Rough-bark Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion (*E.tereticornis* dominant); and
- ***ME002*** Broad-leaved Ironbark - Melaleuca decora shrubby open forest on clay soils of the Cumberland Plain, Sydney Basin Bioregion (*E.parramattensis* and *E.tereticornis* ≥ 50% co-dominant).

ii. **Secondary Class A**

- ***ME003*** Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin Bioregion (*E.parramattensis* present but not ≥ 50% co-dominant);
- ***ME005*** Parramatta Red Gum woodland on moist alluvium of the Cumberland Plain, Sydney Basin Bioregion (*E.parramattensis* present but not ≥ 50% co-dominant);

iii. Secondary Class B

- ME004 Broad-leaved Ironbark – Grey Box – Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin Bioregion (E.moluccana present and co-dominant);

The distribution of koala habitat rankings by vegetation community is shown in **Figure 7**.

For koala management purposes, each of the preceding habitat categories differ in terms of their potential koala carrying capacity, from High (Primary) to Low (Secondary B). This knowledge has ecological application in terms of assisting an understanding of the likely numbers of koalas that can be supported across a given landscape, but otherwise collectively constitute areas of Koala Habitat.

It is noted that the dominant and/or diagnostic species of the communities within the Moorebank offset site and the Bootland largely comprise trees classified as 'High' koala use for KMA 2 (see **Table 4** and **Table 5**) with trees classified as 'Significant' or 'Irregular' for KMA2 comprising non-dominants or scattered occurrences.

High koala use trees within the Moorebank offset site and the Bootland that are also classified as 'Food trees' as per Appendix 2 of the Review are limited to *Eucalyptus parramattensis* and *Eucalyptus tereticornis*. These species dominate in ME018 and ME002 which corresponds to these two communities being mapped as 'Primary Habitat'

Dominant trees in ME003 and ME005 comprise a mix of high koala use & 'Food trees' such as *Eucalyptus parramattensis* and high koala use trees that are not consided 'Food trees' in Appendix 2 of the Review such as *Eucalyptus sclerophylla* and *Angophora floribunda* which corresponds to these two communities being mapped as Secondary Class A. ME004 is dominated by *Eucalyptus fibrosa* (high use but not 'Food trees') with scattered occurrences of *Eucalyptus tereticornis* (high use and 'Food tree') which corresponds to this communities being mapped as a lower value habitat of Secondary Class B.

7.4. Koala Movement Corridors

The M5 motorway, existing industrial development and lack of vegetation comprise a barrier to koala movement to the north of the Intermodal precinct while the Georges River presents a barrier to westward movement from the Intermodal Precinct. Areas east of the Intermodal Precinct comprise the residential area of Wattle Grove which largely lacks habitat for Koala movement.

The Georges River effectively separates the Casula offset area from other parts of the Intermodal Precinct for koalas. The Moorebank Offset Area and Bootland are currently separated by the MPW site, the MPE Site and Moorebank Avenue. The current barrier to east-west koala movement presented by Moorebank Avenue will be further expanded by the development of the MPE and MPW sites. The non-ecological requirements for the MPW and MPE site, in particular the security requirements to maintain a bonded site pose further barriers to fauna movement within the Intermodal Precinct.

While the existing Anzac Creek culvert currently presents a potential, albeit low quality, fauna movement corridor out of the Bootland under Moorebank Avenue, the future development of the MPW site, particularly in the area of the culvert outlet, will effectively close off this movement corridor.

Furthermore, the future realignment of Moorebank Avenue along the eastern boundary of the MPE site and along the easement to the south of Anzac Creek along with the proposed fencing for parts of the Bootland offset area on either side of the easement will effectively prevent/reduce fauna movement between areas of vegetation along Anzac Creek and the remainder of the Bootland. Therefore, the retention/enhancement of the existing Anzac Creek culvert under Moorebank Avenue as a koala movement corridor within the Intermodal Precinct is not considered to be viable.

Therefore, koala movement to/from other areas of koala habitat is limited to areas south of the Intermodal Precinct, i.e to/from vegetated areas of the Holsworthy Military Base. Although the East Hills Train line presents a barrier across the majority of the southern boundary of the Intermodal Precinct, potential movement corridors via existing culverts near the Bootland and under existing railway bridges are present at the southern boundaries of the Bootland and Moorebank Offset site respectively (**Figure 8**).

It is acknowledged that Condition B152(b) requires the provision of an adequate Koala habitat corridor to provide connectivity both within the Intermodal Precinct area and with other core koala habitat areas.

However, the current existing barriers and inherent requirements of the approved MPW and MPE development largely limit the extent of viable movement corridors to specific areas at the southern boundaries of the Moorebank offset area and the Bootland.

Condition B152 (d) requires elimination of barriers to movement (presented by fences, roads, drainage culverts or pits, rail lines and the like) for koalas and other native fauna likely to use the site or habitat corridor. Measures to enable fauna movement, including koala movement, through the proposed habitat corridor are outlined in **Chapter 8.**

As the MPE and MPW sites will comprise highly developed areas, fauna usage of the sites, once developed, is likely to be very low due to lack of habitat. Furthermore, the high volume of vehicular traffic, in particular rail traffic, within the approved MPE and MPW sites will pose a high strike risk for fauna, including koalas. Therefore, fauna use, including koalas, of the MPW and MPE development is to be discouraged via installation of barriers such as palisade fencing, to movement. The barriers are also consistent with the non-ecological security requirements for maintaining a bonded site.

Our conclusion regarding the lack of viable movement corridors to the north, west and east and within the Intermodal Precinct as well as placement of barriers to limit koala movement to the Moorebank offset area and Bootland is supported by [redacted]

8. Mitigation Measures

8.1. Purpose

The purpose of this chapter is to outline the mitigation and offset measures that are intended to ameliorate the impacts of the project on the Koala. The client has developed a number of offsetting measures to enhance Koala habitat.

As outlined in the BAR, the total MPW Stage 2 development area (referred to as the 'Amended Proposal Site' in the BAR) associated with the project is 167 ha. Of this area, approximately 28% (47 ha) will be located in areas mapped as comprising a native PCT. The BAR states that the vegetation to be impacted contains a relatively low site value score in comparison to the condition of the remnant vegetation within the offset sites.

Targeted surveys to date for the Koala have recorded limited activity in the south eastern portion of the MPW site. In contrast, recorded evidence of Koala activity is more extensive within the adjacent Bootlands site. Given the potential connectivity of the Bootlands site to known populations to the south, it is feasible that the Bootlands may be the northern limit of extant Koala territories.

However, as potential Koala habitat will be cleared from within the MPW site, mitigation measures are required as part of this KMP. The impact reduction measures for the Project relevant to the Koala are guided by the following hierarchy of principles:

- Avoid – to the extent possible, the project has been designed to avoid or minimise impacts to native vegetation (which comprises potential Koala habitat) by avoiding areas of high-quality habitat where feasible;
- Mitigate – where certain impacts are unavoidable through design changes, mitigation measures have been introduced to ameliorate the impacts to the Koala; and
- Compensate – the residual impacts of the MPW Stage 2 development, following the implementation of mitigation measures, have been compensated to offset what would otherwise be a net loss of Koala habitat. This includes the development of a Biodiversity Offsets Strategy (BOS) which includes land within and immediately adjacent to the MPW site, namely the Bootland and Moorebank Offset Sites.

Where possible, the MPW Stage 2 project will adopt and implement best practice measures to ameliorate and manage potential impacts on potential Koala individual(s) within the Intermodal Precinct.

8.2. Avoidance

The Framework for Biodiversity Assessment (FBA) requires consideration of the steps taken to avoid and minimise the direct and indirect impacts of a development proposal on biodiversity values. Section 8.3.2 of the FBA sets out guidelines for the avoidance and minimisation of impacts to biodiversity during all phases of the project life cycle. The BAR has addressed these avoidance measures throughout each of the following phases of the project:

- Site selection phase;
- Planning phase;

- Construction phase; and
- Operational phase.

Each of the preceding phases have included avoidance measures for native vegetation which forms the primary habitat for Koalas within the Intermodal Precinct.

8.3. Mitigation Measures

This section summarises the proposed mitigation measures relevant to the Koala.

8.3.1. General Mitigation

A suite of general environmental control measures will be implemented for the Project which will help to minimise impacts to the local population of the Koala. As part of the MPW Stage 2 development, the suite of management plans for construction and operational phases have been developed. Management plans of particular relevance to ecology and Koalas include:

- Construction Environmental Management Plan (CEMP);
- Operation Environmental Management Plan (OEMP); and
- Flora and Fauna Management Plan (FFMP) (which forms a sub-plan within the CEMP and OEMP).

This KMP forms a 'sub-set' of the FFMP and will largely be implemented in conjunction with the FFMP. Other management plans that will form part of the CEMP and OEMP that will have indirect benefits on ecology are summarised in **Table 6**.

Table 6. Summary of Proposed General Mitigation Measures

Mitigation Measures	General Ecological Benefits
Dust minimisation	Reduces the indirect impacts on vegetation condition and the habitat quality for all native species.
Noise minimisation	Benefits fauna by reducing the potential for disturbance of animals in habitat patches around the Project.
Management of surface water, erosion and sedimentation	Protects the integrity of the landscape.
Visual and lighting management	Benefits fauna by reducing the potential for disturbance of nocturnal animals via night light emissions around the Project.

8.3.2. Staged Clearing Process

The 2019 BAR for the MPW Stage 2 development outlines several mitigation measures for ecology that will be included within the FFMP and CEMP. In particular, the proposed mitigation measures included a staged clearing process, including pre-clearing surveys and ecological supervision of clearing works. The general clearing protocols for fauna to be included in the FFMP are valid for Koalas.

However, clearing of native vegetation within the MPW Site will need to occur in a south to south-westerly direction to ensure that the individual Koala (if still present) is progressively encouraged to move into adjacent habitat areas of the Moorebank offset area. Areas delineated for clearance will be surveyed for Koalas as part of pre-clearance surveys prior to any clearance works taking place and will follow a minimum period of 24 hours to enable natural dispersal.

As habitat is progressively cleared, the Supervising Ecologist(s) will conduct further pre-clearance surveys to ensure that all animals are dispersing from the site. The underlying aims of these protocols will be to:

- Ensure no individual Koalas are present in any areas immediately prior to the commencement of any clearing of preferred Koala habitat;
- Discourage movement of Koalas into development areas by establishment of suitable barriers; and
- Ensure that all appropriate steps will be undertaken to avoid harm to any animal and minimise stress.

8.3.3. Dispersal of Koalas

As previously outlined, available data provided evidence that suggested habitat use by no more than 1 - 2 koalas in the south-eastern corner of the MPW site; it is also more than likely that the presence of evidence of habitat use in this area is likely to be an extension of ranging activity from within the adjoining Bootland site. For this reason, the preferred method of dealing with a koala if sighted within the MPW site is one of assisted dispersal / relocation out of the development area (if required) rather than a formal translocation per se.

During the clearing process the following protocols should be followed:

- Should a koala be encountered within the development footprint during clearing activities, all work must cease within a radius of 50 m of the tree in which the koala is observed, with no further vegetation to the south to be removed until approved by the Supervising Ecologist; a minimum period that includes at least 1 night will be allowed to enable the koala to disperse naturally towards the Moorebank offset area; and
- If the koala is still present the following morning, it will be captured by individuals experienced in koala capture techniques, ideally either using a pole and flag technique or a koala trap and immediately relocated into the closest preferred food tree within either of the adjoining offset areas depending on location of capture.

8.3.4. Controlled Burns within Biobanks Sites

The primary koala habitat to be retained within the Intermodal Precinct is contained within the approved Biobank sites. Management of the Biobank sites requires implementation of ecological burns for conservation.

The proposed burns comprise low intensity cool burns at a minimum frequency of 5 years. While these controlled burns do not comprise a significant hazard to koalas, the following protocols to minimise potential harm to koalas should be followed:

- Pre-burn spotlighting surveys of areas proposed for burning as well as adjacent areas should be conducted a few days prior to implementation of the controlled burn to determine presence of koalas in the immediate vicinity of the proposed burns; and
- Groundcover and/or litter around the base of PKFTs listed in **Tables 3 - 5** and/or any tree in which a koala is sighted within the controlled burn site should be raked/removed to further reduce fire intensity.

It is noted that other threatened species dependent on leaf litter, such as the Cumberland Plain Land Snail, have been recorded in the Bootland. If individuals are found during removal of litter, they should be relocated to other suitable habitat trees within the Bootland, outside of the proposed controlled burn area.

8.3.5. Maintenance and Enhancement of Habitat Corridors

Large areas of Koala habitat in the vicinity of the Intermodal Precinct that will be retained include those within the Bootland and Moorebank Offset Area. It is important that existing known or likely movement corridors be maintained and enhanced within the offset areas associated with Intermodal Precinct to allow Koalas to be able to disperse to adjacent areas and between habitat patches.

The Independent Planning Commission, as the consent authority, provided a number of conditions to be included in this KMP. It is stated in Condition B152 (b) that the KMP must:

"*identify habitat corridors, of adequate dimensions to provide an adequate Koala habitat corridor as supported by a Koala specialist, to provide connectivity both within the Intermodal Precinct area and with other core koala habitat areas (i.e. to the south and to the west along Georges River)*."

Currently, potential for connectivity between the Intermodal Precinct and adjacent habitat is mainly limited areas south of the Intermodal Precinct (see **Section 7.4**).

The following measures are to be implemented to maintain and enhance existing connectivity to koala habitats of the south of the Intermodal Precinct.

8.3.5.1. Fencing

As part of the Biobanking Agreement, all offset sites (and resultant koala habitat) will be largely be bordered by Cyclone fencing to maintain the ongoing security of the sites. This method of fencing has been approved by Dr. Phillips for being suitable Koala exclusion fencing. This fencing will ensure that Koala individuals cannot access areas adjacent to the Biobank sites that may be too hazardous due to development activities within the MPW and MPE sites and potential vehicle strikes on public roads.

Parts of the Moorebank offset site adjacent to the OSD basin channel outlets and under the newly constructed MPE Stage 1 rail link are to be fenced using rural fencing to allow for north-south fauna passage through the various sections of the Moorebank offset area (**Figure 9**).

The channel outlets leading to the Georges River will comprise sandstone channels with scattered habitat features to enable general fauna movement. The outlets are aligned with the creek or riverbanks to minimise the potential for bank scour and include energy dissipators designed in accordance with "The Outlet Structure Guidelines" published by the Department of Water and Energy and the Landcom Blue Book. A diagrammatic representation of the proposed channel design is shown in **Image 3** below.

Image 3: Extract from the Stormwater Development Design Report SSD 7709, Draft 2 by Costin Roe, 23 October 2019

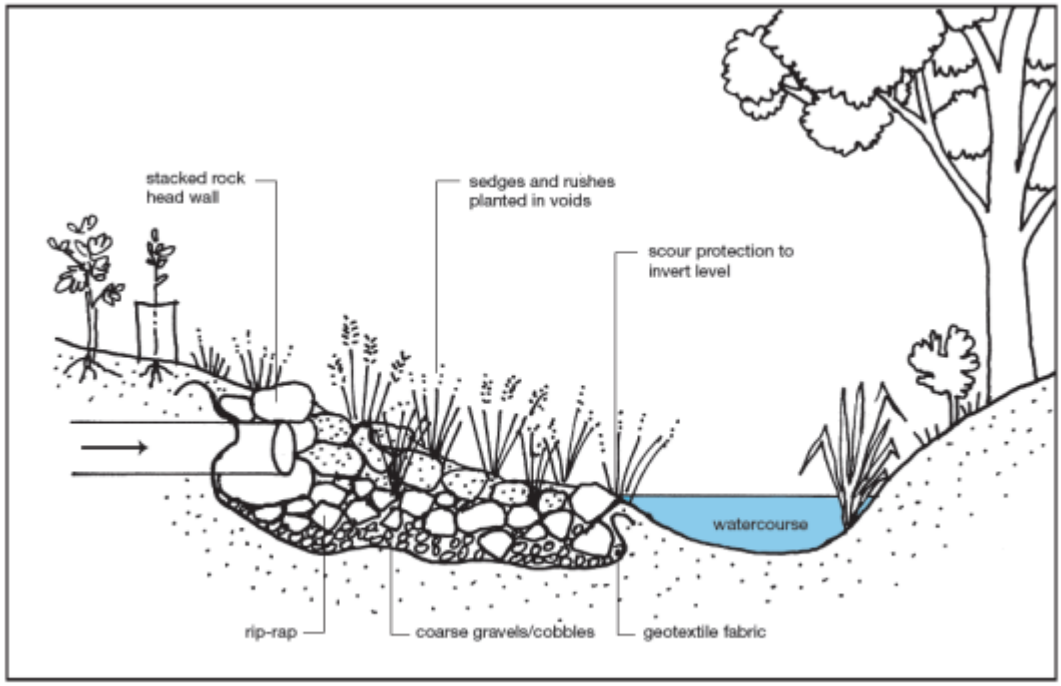


Figure 3.1. Outlet Structure – Typical Arrangement

The channel outlets have been designed to maximise the potential for habitat connectivity and wildlife movement. It should be noted that as part of the BA314, the fauna passages have been designed for general fauna passage and not specifically for koala movement. Based on the variable discharge volumes and potential for flooding from the Georges River, koala movement is likely to be restricted to periods of low flow/dry conditions.

Although the presence of rural fencing comprises potential 'gaps' that would enable fauna movement towards the MPW site via the OSD basins (mainly during dry/low flow periods), the boundary of the MPW development site is to be fenced, using palisade fencing in accordance with the security requirements for a bonded site. As the palisade fencing will prevent any potential koala movement into the MPW site via the OSD basins, no further cyclone fencing around the OSD basins is proposed.

However, to prevent any potential koala movement into the MPW site, temporary cyclone fencing should be installed along the boundary of the MPW site until the palisade fencing is erected. This temporary fencing should be progressively erected following clearing works to 'funnel' any potential koalas within the MPW site towards the connectivity corridor under the MPE Stage 1 rail link (**Figure 8**).

8.3.5.2. Existing Culverts

There is an existing group of five culverts that run in a north-south direction underneath the East Hills Railway to the south of the Bootland (**Figure 8**) that would enable north-south connectivity between the Bootland and koala habitat areas to the south of the Intermodal Precinct. Although no measurements of the culverts were obtained due to access and safety limitations, visual assessments estimated the individual culvert entrances to be approximately 2 m high and about 4-5 m wide while review of aerial imagery determined an under-rail-line traverse of approximately 16-18m. Based on these assessments, the culverts were deemed by [redacted] to exceed known minimum requirements for koala movement.

Advice from [redacted] has indicated that these culverts may require some retro-fitting to ensure that they are suitable for all-weather Koala passage and minimise potential risk of movement into adjacent parts of the rail corridor (**Photograph 5**). Additional fencing to prevent movement along the rail corridor and funnel koalas towards the culvert will also be required at the northern and southern extents of the culvert. It is recommended that the 'funnelling fences' are placed adjacent to the two outermost culverts to encourage koala movement into the culverts.

However, as the culverts are within Railcorp Land, the retrofitting of the culvert and placement of funnelling fencing will depend on approval from Transport for NSW. Approval may also be required from Department of Defence to extend the connectivity corridor to the south of the Rail corridor as placement of koala bridges (Section 8.3.5.3) will also be required to enable koala movement. Following access approval, if granted by Transport of NSW and Department of Defence, the culverts and adjacent lands are to be assessed in detail to determine the extent and specific retro-fitting requirements and suitablity for placement of koala bridges to enable koala movement.

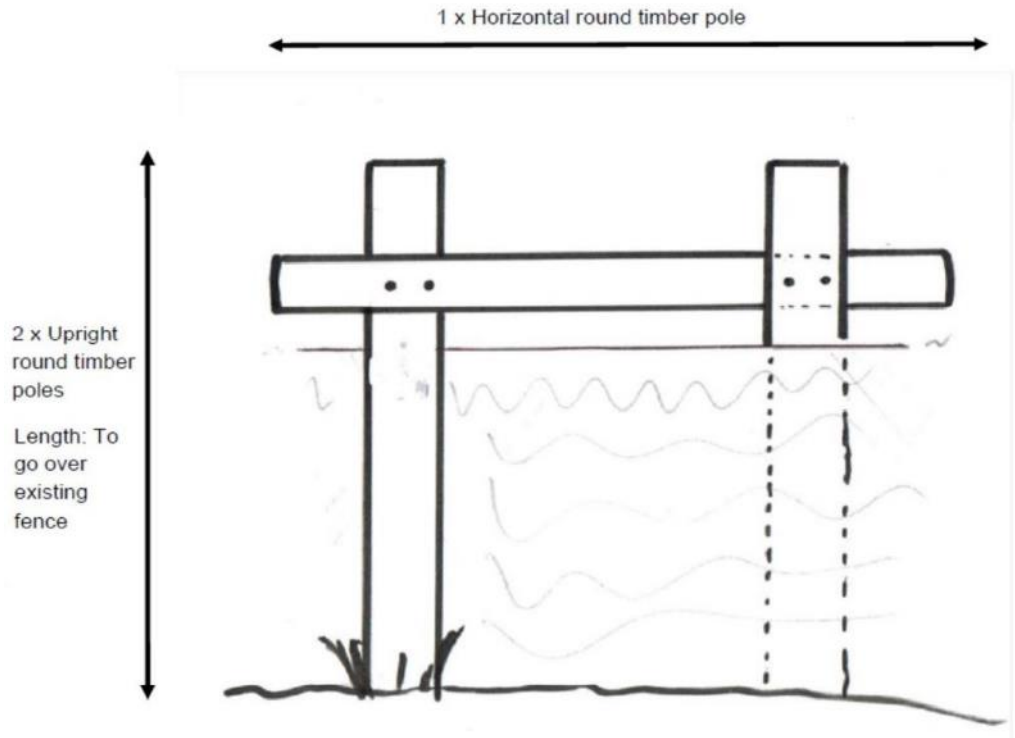
8.3.5.3. Koala Bridges

Two-way Koala bridges are to be used in conjunction with the Cyclone fencing for encouraging Koala passage in and out of the offset areas. Koala bridges are to be limited to the area of the culvert location to enable koala movement over the existing fencing (**Figure 9**). Koala bridges may also be required to enable koala movement under the section of the East Hills Rail bridge near the southern boundary of the Moorebank offset area if Railcorp and/or Defence land in this area is fenced off.

However, as construction of the koala bridges will require partial installation on RailCorp land and Defence lands, Transport for NSW and Department of Defence will need to be consulted prior to construction to gain necessary access/permits. Initial consultation with Transport for NSW (RailCorp) and Department of Defence to gain necessary access permission has been commenced. An indicative plan for the bridges is shown in **Photographs 5** and **6**.

Photograph 5: Westernmost of 5 culverts at the southern end of the Bootland

Photograph 6. Koala bridge design concept (side view)



Photograph 7. Koala bridge design concept (top view)

8.3.5.4. Koala Habitat Restoration

The Moorebank offset site and the Wattle Grove (Bootland) offset site are to be managed as Biobank sites under approved Biobank Agreement BA314. The following management actions for vegetation restoration are to be implemented under the Management Action Plan (MAP) associated with BA314:

- Weed control;
- Management of fire for conservation;
- Management of human disturbance;
- Retention of regrowth and remnant native vegetation;
- Replanting or supplementary planting (mix of direct seeding and tube stock) where natural regeneration is insufficient;
- Erosion control; and
- Control of feral animals and overabundant native herbivores

As the requisite management actions under BA314 will result in habitat restoration/rehabilitation of the identified habitat corridors within the boundaries of the Intermodal Precinct, no additional restoration actions beyond those required under BA314 are proposed as part of this KMP.

8.3.5.5. Limitations to Habitat Corridor Enhancement

The long-term functionality of the proposed koala habitat corridor on a landscape level will be dependent on obtaining access and permission to install the necessary enhancement structures on lands that are not owned by the client. In the event that permission is not granted by relevant landowners for installations of necessary structures to enable koala movement, there is high risk that the Bootland and Moorebank offset

area will effectively become isolated 'islands' of koala habitat, as fencing for the Biobank sites will prevent any future movement of koalas into the site from the culvert area. Under these circumstances, an alternative strategy for koala management to those proposed within this KMP will be required, a view that is supported by Dr. Phillips.

8.3.6. Koala-Grids

The Biobank sites will have multiple tracks and access points to enable regular access for management purposes. Although these access points will be gated, koala grids should be installed near the gates and at main junctions to vehicular access tracks to discourage koala movement near these access points.

Koala-grids should be based on 60mm tubular steel pipe at 200mm centres at the locations indicated in **Figure 9**. Examples of currently approved Koala grids are shown in **Photograph 7.**

Photograph 8. Examples of Koala-grids

8.4. Direct Offsets

The avoidance and mitigation measures described above would be insufficient on their own to ameliorate all anticipated impacts of the Project to the local Koala population. For this reason, offsetting is proposed to compensate for what would otherwise result in a net loss of habitat.

The approved Biobank sites largely address the offsetting requirements for vegetation removal from the MPW site and therefore Koala habitat. Nonetheless, as the Koala comprises a Species Credit Species under the FBA, a conservative approach was taken for the 2019 BAR and the Koala species polygon for the MPW

Stage 2 development encompassed all vegetation within the MPW site, resulting in a credit requirement of 1,110 koala credits.

As there are currently over 18,00 issued Koala credits on the biobanking public register, one or several of the current credit holders on the public register will be contacted to purchase the requisite number of koala credits for retirement against SSD-7709.

9. Monitoring and Reporting

Monitoring of the Koala population and habitat will be a critical component of ongoing Koala management for the Intermodal Precinct. The implementation of this KMP also has the potential to provide a significant contribution to the existing information on the Koala, in particular for any population or individual occurring locally. As such, it is considered essential that the implementation of the KMP is monitored and the findings reported.

This chapter sets out the proposed monitoring and reporting associated within the implementation of this KMP.

9.1. Monitoring

It is proposed that any Koala recorded within the Bootland and Moorebank Offset Area will be monitored in conjunction with other fauna monitoring commitments under the FFMP. Monitoring will be conducted annually in addition to the ongoing monitoring by the Environmental Officer or Supervising Ecologist.

Given the absence of Core Koala Habitat, small numbers of koalas based on survey data to date and uncertainly in the future extent of northern dispersal of the Campbelltown koala population, there is potential that use of habitat within offset areas by koalas will not be ongoing. Therefore, the primary intent of the monitoring program will be to inform changes in habitat utilisation by koalas within the Intermodal Precinct over the required time period. The objectives of the monitoring program will be to quantify any changes in baseline koala habitat use levels and monitor the effectiveness of the proposed mitigation and offset measures as outlined in **Chapter 8**.

Monitoring is proposed to occur at each of the field sampling points established for purposes of the Rapid-SAT assessment and will specifically be informed by the presence absence of koala scats at the base of PKFTs at these sites. Opportunistic observations of koalas will also be recorded. Mechanisms will also be put in place for adaptive management.

Prior to commencement of monitoring, an initial targeted assessment should be conducted across the biobank sites to better determine baseline Koala activity. Surveys should comprise a mix of spotlighting and Rapid-SAT surveys. If feasible, any scats present should undergo detailed genetic analysis to determine the number of Koalas that may be present within the biobank sites.

The finding of the initial targeted assessment will inform the refinement for a final field design for long-term monitoring. The final design is to be consistent with 95% - 99% Rapid-SAT assessment criteria requirements and will be reliant upon a 250 m survey grid. The final design will be submitted for approval prior to commencement of annual monitoring.

The Koala monitoring program will be implemented as soon as possible following the approval of this KMP and the final field design. The program will be funded by the client and will be managed as part of the Project. Data collected as part of the monitoring program will assist in determining the characteristics and changes in the occurrence of Koalas within the Intermodal Precinct and potential connectivity with the known Campbelltown Koala population to the south. The monitoring is initially to be conducted over a five-year period with requirements of on-going long-term monitoring to be determined at 5-yearly reviews of the monitoring program.

The data collected during the monitoring program will be made available to relevant authorities to incorporate into any existing monitoring programs or databases. The general record collection process for the offset areas will be updated on an annual basis and contact will be maintained with relevant local, specialists and government authorities. The data collected as part of this KMP will significantly contribute to the knowledge base of the Koala population locally. Information will also contribute to the available research on the process and success of Koala relocation, if any is to be undertaken.

9.1.1. Rapid-SAT Plot and Spotlighting Surveys

Population density and activity levels of Koalas will fluctuate over time. Following approval of a final design as mentioned above, all Rapid-SAT sites will be sampled within each offset area, with the following procedures undertaken at each plot:

- The centre of each Rapid-SAT site will be permanently identified by a suitably labelled star picket or other mechanism that enables the site to be located at each monitoring event.
- During each annual monitoring event, all details of any individual koalas observed will be documented, including health and tree species in which the individual is located;
- Descriptions of habitat, including recent disturbances and general vigour of vegetation and feed trees; and
- Recording of Koala scat presence/absence at the base of 7 nearest PKFTs as prescribed in the Rapid-SAT methodology.

The spotlighting transects will be based within the final SAT survey grid. Based on the final approved survey grid, spotlighting transects will be placed to enable sufficient replication to effectively survey ~ 25% of retained habitat at each survey event.

The monitoring grid will be focussed on the habitat within the offset areas contained within the Intermodal Precinct boundaries only. As parts of the proposed habitat connectivity corridor lie outside of lands owned by the proponent and comprise restricted access lands (i.e. RailCorp land, Holsworthy Military Base), monitoring of koala use of these areas is considered to be outside of the scope of this KMP.

The described sampling regime will be duplicated, initially on an annual basis, with the frequency of monitoring reassessed on the basis of the results after five years. The monitoring results and requirements will also be reviewed after each monitoring session. This method of monitoring has been found in other locations to be both very effective and an efficient means of reliable estimation of changes in the extent of habitat use by Koalas (S. Phillips, pers. comm.).

9.1.2. Reporting of Road Kills/Injuries

A system of reporting of any road kills/injuries will be implemented so that all on-site personnel will be aware of the necessary procedures and the significance of such information. This reporting system will also extend to the sightings of any individuals within the Project Boundary and offset areas. Information to be recorded will include:

- Location of sighting/animal (location subsequently to be mapped);
- Status of animal (live in tree, injured etc);
- If injured/dead, cause of injury or death; and
- Identification of any relevant factors contributing to the status of the animal.

This information will then be used to incorporate appropriate measures into management strategies and other components of the monitoring program as required.

9.1.3. Habitat Monitoring

Monitoring of Koala habitat and particularly of offset areas in conjunction with the Biobanking Agreement will also be undertaken. Given the time lag between the planting of seedlings and their suitability for use as habitat for the Koala, monitoring of the effectiveness of plantings is required. As plantings are to be conducted as part of management actions for the approved Biobanking Agreement (BA314), monitoring of the effectiveness of planting is to be conducted in accordance with the requirements of the Management Action Plan for BA314, in particular Sections 6.3 – 6.4 of Annexure C and Annexure D of the Management Action Plan.

The main criteria assessed for the habitat monitoring will comprise the following;

- Tree species composition (including juvenile specimens);
- Relative abundance of each species in tallest mid and lower (ground) stratum;
- General vigour of regenerating vegetation and vigour of plant stock (according to standardised vigour categories currently used for the threatened species monitoring program);
- Extent of new growth (according to standardised new growth categories currently used for the threatened species monitoring program);
- Age structure of vegetation; and
- Presence and degree of infestation of introduced weed species.

Sample plots will comprise permanent vegetation monitoring plots (20m x 20m) and will need to be located around the Rapid-SAT monitoring sites.

Habitat monitoring procedures will enable any problems associated with the development of the biobanking sites or with Koala habitat development as a whole to be detected at an early stage and appropriate ameliorative measures implemented. Such measures may include watering of plant stock during dry conditions, weed control and fire hazard reduction procedures. Management of such measures will be the responsibility of the Environmental Officer.

9.2. Reporting

Monitoring will be conducted and reported upon annually for a 5-year period. The report will provide details of the methodology used and any variations for any sessions, the results and analysis of results and practical management recommendations. All responsibility for monitoring implementation, management procedures, reporting and associated costs will be held by the client. The monitoring report will be included in the Annual Review and made available to relevant authorities such as EES/DPIE and DoEE and will be published on the client's website.

9.3. Implementation Roles and Responsibilities

As stated in **Section 8.3**, this KMP forms a sub-plan within the wider FFMPs prepared for the Construction and Operational phases of SSD 7709. Therefore, the roles and responsibilities for the implementation of the KMP will largely be consistent with those of the FFMP. Broadly, the roles and responsibilities for the implementation of this KMP include:

Table 7: Roles and Responsibilities

Personnel	Key Responsibilities
Principal's Representative or Environmental Officer	Manage contractors for implementation of KMP, in particular Project Ecologist Review contractor reports and compliance documentation to confirm that the KMP is being implemented and remains adequate Oversee the implementation of management measures to enable the protection of native flora and fauna Take action to resolve KMP non-conformances, non-compliances and incidents as reported
Site Manager	Direct works to be undertaken in an environmentally responsible manner that reduces impacts to flora and fauna Maintain exclusion zones and clearing limits Provide for adequate resources to enable the implementation of this KMP Deliver relevant training/inductions/toolbox talks to implement the requirements of this KMP
Project Ecologist	Undertake preclearance surveys Be present during clearing works as required Provide specialist guidance as required Conduct surveys to establish ongoing monitoring design Consult with Koala specialist as required Undertake monitoring surveys
Koala Specialist	Provide specialist advice/input as required
Contractors	Implement management actions required under the KMP/CFFMP/OFFMP as directed by Environmental Officer or Project Ecologist. Works include, but are not limited to, bush regeneration, weed control, vegetation/tree removal, installation of signage, fencing and bush protection measures.

9.4. Review and Improvement

As this KMP forms a sub-plan within the wider FFMP, which in turn forms a subsection of the CEMP and OEMP, review and improvement of this plan will be undertaken in accordance with the relevant sections of the CEMP and OEMP. Continuous improvement will be achieved by the ongoing evaluation of wider environmental management performance and effectiveness of this plan against environmental policies, objectives and targets.

9.5. Incidents, non-Compliance and Complaints

In the event of any environmental incident or unpredicted impacts that could affect koalas or koala habitat, it is the responsibility of all personnel to report to the Site Manager/Site Supervisor. All environmental incidents will be managed and reported in accordance with the relevant sections of the CEMP and/or OEMP.

All site personnel are responsible for reporting any non-compliances to the Site Manager/Site Supervisor and/or Environmental Officer. All non-compliances are to be managed with the relevant sections of the CEMP and/or OEMP.

Complaints handling will be undertaken in accordance with relevant sections of the CEMP and/or OEMP as well as the Community Communication Strategy.

10. References

ARCADIS 2017. Sydney Intermodal Terminal Alliance (SIMTA) Moorebank Project East Stage 1: Biodiversity Assessment Report, dated October 2017.

ARCADIS 2019a. Moorebank Project West (MPW) Stage 2 Amended Proposal: Biodiversity Assessment Report.

ARCADIS 2019b. Moorebank Project West (SSD-5066): EPBC Biodiversity Offset Strategy, dated May 2019.

BIOLINK 2016. Analysing the historical record: aspects of the distribution and abundance of koalas in the Campbelltown City Council Local Government Area 1900 – 2012 (Including an Appendix on Habitat Use and Classification): Report to Campbelltown City Council. Uki, NSW: Biolink Ecological Consultants,.

BIOLINK 2018. Review of koala Generational Persistence across Campbelltown City Council Local Government Area: 2012 - 2017. Uki, NSW: Biolink Ecological Consultants,.

DECC 2008. Approved Recovery Plan for the Koala (*Phascolartos cinereus*). Hurstville, NSW: Department of Environment and Climate Change.

OEH 2014a. Framework for Biodiversity Assessment. *For assessing and offsetting state significant development and state significant infrastructure.* Sydney: Office of Environment and Heritage for the NSW Government.

OEH 2014b. NSW Biodiversity Offsets Policy for Major Projects. Sydney: Office of Environment and Heritage for the NSW Government.

OEH 2016. *The Native Vegetation of the Sydney Metropolitan Area - VIS_ID 4489,* Sydney, Office of Environment and Heritage.

OEH 2018. A review of koala tree use across New South Wales. Sydney, NSW: Office of Environment and Heritage.

OEH. 2019a. *BioNet Atlas* [Online]. Office of Environment and Heritage. Available: http://www.environment.nsw.gov.au/atlaspublicapp/UI_Modules/ATLAS_/AtlasSearch.aspx [Accessed 2019].

OEH. 2019b. *Koala - profile* [Online]. Available: https://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10616 [Accessed].

OEH 2019c. Moorebank Intermodal Terminal Biobank Site: Biobanking Agreement (ID number BA341).

PARSONS BRINCKERHOFF 2014. Moorebank Intermodal Terminal Project Environmental Impact Statement Volume 4: Technical Paper 3 Ecological Impact Assessment (with associated Biodiversity Offset Strategy).

PHILLIPS, S. & CALLAGHAN, J. 2000. *Tree species preferences of koalas (Phascolarctos cinereus) in the Campbelltown area south-west of Sydney, New South Wales*.

PHILLIPS, S. & CALLAGHAN, J. 2011. The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas Phascolarctos cinereus. *Australian Zoologist,* 35**,** 774-780.

PHILLIPS, S. & WALLIS, K. 2016. Koala Likelihood Mapping - Baseline Koala Survey Analysis and Reporting. Final Report to NSW Environment Protection Agency.

SIMTA 2018. Moorebank Precinct East Stage 1, Package 2: Construction Flora and Fauna Management Plan.

SLUITER, A. F., CLOSE, R. & WARD, S. J. 2002. *Koala feeding and roosting trees in the Campbelltown area of New South Wales*.

WSP PARSONS BRINCKERHOFF 2017. Biodiversity Assessment Report: Biobanking Agreement – Wattle Grove Offset Area (Part Lot 4 DP 1197707), Casula Offset Area (Part Lot 4 DP 1130937) and Moorebank Conservation Area (Part Lot 100 DP 1049508 and Part Lot 1 DP 1197707). Prepared for Moorebank Intermodal Company, dated February 2017.

APPENDIX A :
Compliance with Conditions of Consent

Table 8: Independent Planning Commission – Ecological Conditions of Consent

IPC Condition consent	Section of KMP where addressed
Condition B152. Prior to clearing of native vegetation, a Koala Management Plan (KMP) must be prepared by a suitably qualified person in consultation with the Office of Environment and Heritage (OEH) and be submitted to the Planning Secretary for approval. The KMP must:	Cumberland Ecology staff involved in the preparation of this KMP are fully trained and qualified ecological consultants. This KMP was prepared with expert input from Koala Specialist Dr. Steve Phillips
(a) make reference to 'A review of koala tree use across New South Wales (OEH 2018)';	Section 2.7, Section 4.1, Section 7.1, Section 7.2, Section 7.3
(b) identify habitat corridors, of adequate dimensions to provide an adequate Koala habitat corridor as supported by a Koala specialist, to provide connectivity both within the Intermodal Precinct area and with other core koala habitat areas (i.e. to the south and to the west along Georges River);	Section 7.4
(c) include commitment to retain Koala use trees on site in line with phased earthworks (see e.g. Condition B40);	Section 7.2.1
(d) include details of structures to eliminate barriers to movement (presented by fences, roads, drainage culverts or pits, rail lines and the like) for koalas and other native fauna likely to use the site or habitat corridor;	Section 7.4, Section 8.3.5
(e) include details on koala habitat rehabilitation/ restoration within the identified habitat corridors; and	Section 7.2.1, Section 7.2.2, Section 7.2.3. Section 8.3.5
(f) include other measures to minimise the risk of harm to koalas".	Section 8.3.1 - Section 8.3.6
Condition B2 (i) identify habitat corridor/s, of adequate dimensions to provide an adequate Koala habitat corridor as supported by a Koala specialist, to provide connectivity both within the Intermodal Precinct area and with other core koala habitat areas, as required under Condition B152. The drawings are to show any required connectivity structures and fencing	Section 7.4, Figure 8, Figure 9
Condition B70 Boundary fencing design must allow for fauna movement where required under Condition B152(b).	Section 7.4, Section 8.3.5
Condition 155 The CFFMP must form part of the CEMP required by Condition C2	Section 8.3.1
Condition 160 Prior to commencement of operation an Operational Flora and Fauna Management Plan (OFFMP) must be prepared by a suitably qualified person in consultation with OEH and be submitted to the Planning Secretary for approval.	Section 8.3.1

IPC Condition consent	Section of KMP where addressed
Condition C1: Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:	
(a) detailed baseline data;	Chapter 3, Section 5.4, Chapter 7
(b) details of:	
(i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);	Chapter 2
(ii) any relevant limits or performance measures and criteria; and	Section 1.6, Appendix B
(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	Section 8.2 - 8.4, Appendix B
(c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Chapter 8
(d) a program to monitor and report on the: (i) impacts and environmental performance of the development; (ii) effectiveness of the management measures set out pursuant to paragraph (c) above;	Chapter 9
(e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	Section 8.3.3, Section 8.3.5.3
(f) a program to investigate and implement ways to improve the environmental performance of the development over time;	Section 9.4
(g) a protocol for managing and reporting any: (i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria); (ii) complaint; (iii) failure to comply with statutory requirements;	Section 9.5
(h) roles and responsibilities for implementing the plan; and	Section 9.3
(i) a protocol for periodic review of the plan	Section 9.4

Table 9: Commonwealth – Ecological Conditions of Consent

Commonwealth Condition	Section of KMP where addressed
2. For the protection of the environment, including listed threatened species and communities, the person taking the action must prepare a construction environmental management plan (CEMP) addressing at least the elements outlined in Conditions 5 to 13. Apart from early works as described in Condition 3, construction must not commence until all specified CEMP approvals have been obtained in writing, and once approved, the CEMP must be implemented.	As outlined in Section 8.3.1, this KMP forms a specialised 'sub-set' of the Construction Flora and Fauna Management Plan, which in turn forms a sub-plan within the larger CEMP
4. For the protection of the environment, including listed threatened species and communities, the person taking the action must prepare an operational environmental management plan (OEMP) addressing at least the elements outlined in Conditions 5 to 13. Operations must not commence until all specified OEMP approvals have been obtained in writing, and once approved, the OEMP must be implemented.	As outlined in Section 8.3.1, this KMP forms a specialised 'sub-set' of the Operational Flora and Fauna Management Plan, which in turn forms a sub-plan within the larger OEMP
7. Sections of the CEMP and OEMP relating to biodiversity must be prepared by a suitably qualified expert and must: a) be consistent with the Biodiversity Provisional Environmental Management Framework (3 July 2014), provided at Appendix O to the finalised EIS b) incorporate all measures 6A to 6R, 6T, 6V and 6X from Table 7.1 of the finalised EIS that are described as 'mandatory' c) explain how all measures 6A to 6R, 6T, 6V and 6X from Table 7.1 of the finalised EIS that are described as 'subject to review' have been addressed d) include detailed biosecurity protocols, prepared in consultation with relevant New South Wales and Commonwealth biosecurity agencies, in relation to international and interstate container movement e) be approved by the Minister.	Section 2.1. Furthermore, as outlined in Section 8.3.1, this KMP forms a specialised 'sub-set' of the Construction/Operational Flora and Fauna Management Plan, which in turn form sub-plans within the larger CEMP/OEMP. As the discovery of koala occurrence within the site occurred after the issue of Commonwealth approval, Table 7.1 does not specifically address any requirements for koalas. Nonetheless, this KMP has been prepared as a specialised management plan in accordance with requirements for the NSW state approvals under the bilateral agreement for the FBA

Commonwealth Condition	Section of KMP where addressed
Biodiversity offsets14. To address residual impacts on protected biodiversity values, including listed threatened species and communities, the person taking the action must finalise a biodiversity offsetstrategy (BOS). The BOS must be approved in writing within twelve (12) months of commencement of early works, by a relevant New South Wales regulator, and once approved must be implemented. The BOS must be prepared by a suitably qualified expert and must:a) be consistent with the biodiversity offsets strategy provided at Appendix E to the finalised EISb) incorporate all measures 6S, 6U, 6W and 6Y to 6AA from Table 7.1 of the finalised EIS that are described as 'mandatory'c) incorporate all measures 6S, 6U, 6W and 6Y to 6AA from Table 7.1 of the finalised EIS that are described as 'subject to review' or justify any alternative protocolsd) offset impacts on protected biodiversity values including listed threatened species and communities in accordance with the FBA e) include map(s) and shapefiles that identify the location and boundaries of all offset sitesf) be approved by a relevant New South Wales regulator, and also by the Minister if the BOS does not involve the protection and management in perpetuity of the 'Casula','Moorebank' and 'Wattle Grove' Offset Areas identified at Annexure 2.	Section 2.1, Section 8.3, Section 8.4

APPENDIX B :

KMP Management Actions

Table 10: KMP Management Actions and Responsibilities

Aim/Objective	Relevant Phase	Management requirement/ Performance Criteria	Responsible party
Assist in the dispersal of koalas potentially within approved development areas into adjoining offset areas	Pre-Construction/ Construction	Delineation of clearing limits	Site Manager or nominated contractor
	Pre-Construction/ Construction	Alignment of clearing pathway	Site Manager or nominated contractor
	Pre-Construction/ Construction	Pre-clearing surveys	Project Ecologist
Undertake clearing activities in approved development areas in a manner that enables passive dispersal of koalas to occur (i.e. from north to south and south-west)	Construction	Staged clearing	Nominated clearing contractor
	Construction	Construction of temporary exclusion fencing of cleared areas to prevent fauna access	Nominated clearing contractor
	Construction	Clearing supervision	Project Ecologist

Aim/Objective	Relevant Phase	Management requirement/ Performance Criteria	Responsible party
	Construction	Stop works in event of Koala encounter	Nominated clearing contractor, Project Ecologist
	Construction	Koala capture in event of individual not self-relocating	Project Ecologist, Koala specialist (advisory role)
	Construction	Establishment of Koala grids to limit koala movement outside of habitat corridors	Site Manager or nominated contractor
Facilitate maintenance of connectivity between the Intermodal Precinct and areas of koala habitat to the south of the Intermodal Precinct	Pre-Construction	Access permits for areas outside of Intermodal Precinct	Principal/Environmental Manager
	Construction/ Operational	Habitat Enhancement/ Maintenance - Fencing	Site Manager or nominated contractor
	Construction/ Operational	Habitat Enhancement/ Maintenance - Culvert retrofitting	Site Manager or nominated contractor; Environmental Manager (liason with relevant landholders)

Aim/Objective	Relevant Phase	Management requirement/ Performance Criteria	Responsible party
	Construction/ Operational	Habitat Enhancement/ Maintenance - Koala bridges	Site Manager or nominated contractor; Environmental Manager (liason with relevant landholders)
	Operational	Habitat Enhancement/ Maintenance - Vegetation Restoration	Environment Manager, Site Manager and nominated Bush Regeneration Contractor
Biobank Site - Controlled Burns	Operational	Pre-burn koala surveys	Project Ecologist
	Operational	Fuel load reduction around PKFTs or other nominated habitat	Site Manager or nominated contractor
Monitoring	Pre-construction	Initial surveys to establish monitoring grids	Environment Manager, Project Ecologist
	Operational	Annual monitoring in approved monitoring grids	Environment Manager, Project Ecologist

APPENDIX C :
Consultation with Regulators

Table 11: Responses to Environment, Energy and Science (EES) Group

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
Condition B152(a): The KMP must make reference to A review of koala tree use across New South Wales (OEH 2018)						
EES (OEH)	14/11/19	While reference is made to the OEH 2018 document, the KMP states that the assessment of koala habitat (or the determination of the potential carrying capacity of specified areas to support koalas) in the Precinct was based on the presence of preferred koala feed trees (PKFTs) as advised by the koala specialist, [redacted]. EES Group is concerned that koala habitat in the precinct is not based on the longer list of trees included for the Central Coast Koala Management Area (KMA) in the OEH 2018 document (as stated in Table 1). EES Group notes that species considered in the KMP as PKFTs include: Eucalyptus tereticornis Eucalyptus parramattensis Eucalyptus microcorys Eucalyptus robusta	The Koala Specialist, [redacted] s advised that, "The report by OEH (2018) reflects a commendable effort to review tree use by koalas but remains fundamentally flawed by an over reliance upon anecdotal and qualitative assessments to assign importance rankings. Within the Central Coast KMA this assertion can be most readily evidenced by Silvertop Ash E. sieberi. Promoted as a 'high use' species by the OEH (2018) report (despite substantive field-based SAT data to the contrary), more recent work by Au et al. (2019) – A nutritional mechanism underpinning folivore occurrence reported that koala density and the presence of E. sieberi were inversely correlated (i.e. the more E. sieberi there were,	20/11/2019	*EES Comments received 29/01/2020* EES Group does not agree with the example cited by [redacted] as proof that the OEH report is 'fundamentally flawed'. While it is acknowledged that *E. sieberi* is not a high-use tree, data from recent radio-tracked koalas confirms this tree is used by koalas. It is noted the statistical criteria referenced in the draft report cited by [redacted] for determining PKFTs is not a published or peer-reviewed and should therefore not be relied upon to justify feed or high-use koala trees. EES Group also notes the comment [redacted] that	*Response to EES Comments received 29/01/2020* [redacted] notes that the criteria by which PKFTs can be identified have been published, Phillips et al (2000) while Phillips and Callaghan (2000) describe the levels of utilisation for Secondary PKFTs. It is noted that both these documents are referenced in the OEH 2018 Review document. Of relevance is that the work identifying both the most preferred food trees

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
		Eucalyptus moluccana Eucalyptus longifolia Eucalyptus baueriana *Eucalyptus punctata* (although this species was noted as not occurring in the site)	the less koalas there were). Given uncertainties created by the OEH (2018) report, statistical criteria required to be satisfied in order for a given Eucalyptus spp. to qualify as a Preferred Koala Feed Tree species (PKFTs) have recently been prescribed in an unrelated report for OEH (Draft NSW Survey Guide for the 'Species Credit' koala (Phascolarctos cinereus) – Appendices 2& 3 refer). It should be noted that the KMP has already taken a precautionary approach to the matter of PKFTs on the site. Specifically, E. microcorys is acknowledged as a PKFT but its presence on the site is not a natural occurrence but as a result of plantings. Despite its importance as a PKFT in KMA 1, and that it is widely planted in the Sydney basin, there is no evidence that koalas in the Central Coast KMA recognise this species as a		the KMP takes a precautionary approach for *E. microcorys* as a PKFT (despite the view that koalas in this area do not use *E. microcorys)*. However, this precautionary approach is not applied to other trees present which are highlighted as high-use, significant-use, or locally important in plans/reports/ papers. EES Group considers a precautionary approach to PKFT should be consistently applied to all species known to be used by koalas.	and the nature of their use by koalas was undertaken in the Campbelltown area and is thus of direct relevance to the KMP. It is not disputed that koalas utilise trees other than PKFTs, only that they are not preferentially utilised. Nonetheless, the KMP has been updated to expand 'koala tree use' to include the classifications of koala tree useage as per the OEH 2018 Review document. This is largely addressed in Sections 7.2 and 7.3 with minor additions in sections 2.7 and 6.1.

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
			food tree".		*EES Comments received 28/02/2020* EES Group is aware of these papers, however, it is the citing provided by [redacted] to justify the identification of a PKFT that is questioned i.e. '… an unrelated report for OEH (Draft NSW Survey Guide for the 'Species Credit' koala (Phascolarctos cinereus) – Appendices 2& 3 refer)'. While noting the KMP has been updated to include 'koala tree use' trees, the PKFT list has not been amended. Given the assessment of koala habitat is still based on the original PKFT list, the habitat rankings remain unchanged. EES Group does not agree with these rankings and reiterates the view that all vegetation	*Response to EES Comments received 28/02/2020* The list of PKFTs within the KMP was based on a combination of known food tree species (as listed in the Koala recovery plan) recorded within the Intermodal Terminal site, studies of the Campbelltown koala population and expert input from [redacted]. Although *Eucalyptus punctata* and *Eucalyptus agglomerata* were not recorded within the Intermodal Terminal, *Eucalyptus punctata*

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
					types are high quality (or are 'primary habitat' if using the KMP's classifications)	was nonetheless included as a PKFT as it can occur as a secondary canopy species within the vegetatation communities recorded within the Intermodal Terminal site. It is noted that initial comments from EES group listed the following species for consideration as PKFTs *Eucalptus amplifolia;* *Eucalyptus globoidea;* *Eucalyptus eugenoides;* *Eucalyptus fibrosa*; and *Eucalyptus sclerophylla*. *Eucalyptus amplifolia*

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
						was not included as a PKFT despite listing as a primary feed tree for the Central Coast KMA in the Koala recovery plan and as a feed tree in the OEH Review document on advice from [redacted] Nonetheless, this species has only been recorded within ME018 which has been classified as Primary habitat within the KMP. *Eucalyptus globoidea* is listed as a supplementary species for the Central Coast KMA in the Koala recovery plan and was not included as a PKFT despite listing as a

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
						feed tree in the OEH Review document on advice from [redacted] *Eucalyptus eugenoides, Eucalyptus fibrosa* and Eucalyptus sclerophylla are not considered feed trees in the OEH Review document and only *Eucalyptus eugenoides* is considered to be a supplementary species for the Central Coast KMA in the Koala recovery plan. Therefore, these species were not considered as PKFTs. Based on the above consideration of species recommended by EES

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
						group, the original PKFT list and corresponding habitat classifications/ rankings have not been amended. It is noted that at the closing out of consultation, a difference of opinon remained between [redacted] and EES on what constitutes a PKFT. This KMP has retained the advice of [redacted] with regard to the definition of a PKFT based on his experience and expertise on koalas, including recognition as a koala expert by the Environment Agency Head under

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
						Section 6.5.4.2 of the Biodiversity Assessment Method
EES (OEH)	14/11/19	While the KMP states that the koala specialist based his determination of PKFTs on listed trees in the Koala Recovery Plan (Central Coast KMA), SEPP44, and local studies of Campbelltown koalas (as noted in Sluiter et al. 2002; Phillips and Callaghan 2000), **EES Group's review of listed trees in the Koala Recovery Plan and local studies found there were a number of species omitted as PKFTs in the KMP. This selectivity was not justified in the KMP**: species specifically noted as being present in the Intermodal Precinct that are in the Koala Recovery Plan list and not included as PKFTs are *E. amplifolia*, *E. eugenoides* and *E. globoidea*. The Koala Recovery Plan for the Central Coast KMA identifies *E. amplifolia* as a primary food tree	[redacted] advised that, "The intent of specialist input was to ensure that the most up-to-date knowledge of habitat use / tree selection by koalas was taken into account. Available data collected since the KRP was approved has unequivocally established that E. amplifolia is <u>not</u> amongst the suite of PKFTs, while the stringybarks E. eugeniodes and E. globoidea are listed by the KRP as 'supplementary' food tree species only (as opposed to Primary and Secondary food tree species which otherwise comprise the suite of PKFTs most important for management purposes). Like E. sieberi, available field data confirms that E. fibrosa (in common with <u>all</u> 'Ironbarks') is	20/11/2019	*<u>EES Comments received 29/01/2020</u>* EES Group is not aware of the data [redacted] references regarding tree habitat use/tree selection. EES Group data collected from local koala radio tracking over the last year confirms *E. globoidea* (as well as other stringybarks) are used by koalas at high frequency. This data also indicates that *E. fibrosa* is used less often, but one radio-tracked koala was recorded using this species close to 10% of the time. EES Group does not concur with the assertion of [redacted]ps that 'ironbarks' are not used by koalas.	*<u>Response to EES Comments received 29/01/2020</u>* As per preceding response

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
		species, and *E. eugenoides* and *E. globoidea* as supplementary species. species specifically noted as being present in the Intermodal Precinct that are important from local studies that are not included as PKFTs are *E. fibrosa, E. eugenoides,* and *E. globoidea*. The species *E. agglomerata* is also important from local studies, but it is not clear whether this species is present on the site.	NOT a PKFT because its use by koalas is demonstrably opportunistic and/or associated with proximity to PKFTs.			
EES (OEH)	14/11/19	The KMP does not clearly justify why trees such as *E. fibrosa*, *E. sclerophylla* and *E. eugenoides* in particular are not considered in the KMP as PKFTs. It is noted Koala scats were found beneath these species within the Bootland offset site and MPW Stage 2 area during koala surveys. All three species are identified in the OEH 2018 document: *E. sclerophylla* as a high-use tree, *E. fibrosa* as a significant-use tree, and *E. eugenoides* as an irregular-use tree.	[redacted] advised that, "Preceding comments refer. There is no evidence from available survey data that neither E. sclerophylla (or any scribbly gum for that matter) nor E. fibrosa or E. eugenoides are PKFTs by definition. Relevant Central Coast KMA field survey results published in the peer-reviewed literature (Phillips and Callaghan 2000 Tree species preferences of koalas in the Campbelltown area … and	20/11/2019	*EES Comments received 29/01/2020* EES Group accepts that koala scats under a tree does not automatically confer PKFT status. It does, however, indicate tree use (and possible feeding). EES Group notes that despite acknowledgement in the KMP that local studies found a preference for Eucalypt species '*on substrates derived*	*Response to EES Comments received 29/01/2020* As per previous response Furthermore the KMP has been updated to largely remove references to soil types as these have not specifically been utilised to rank koala habitat.

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
			Sluiter et al. 2002 – Koala feeding and roosting trees in the Campbelltown area…) have also not found Scribbly Gums and Ironbarks to be the subject of significant levels of utilisation by koalas. The presence of koala scats beneath a tree does not automatically confer PKFT status (please refer to Phillips et al. 2000 – Tree species preferences of koalas inhabiting forest and woodland communities on Quaternary deposits in the Port Stephens area…) for a more detailed discussion of this issue in terms of how PKFTs influence the use of other (non-PKFTs) in immediate area".		*from shales compared to those from sandstone*', soil type is not applied at any stage to rank habitat. EES Group's view, based on available published data and recent studies, is that all vegetation types on enriched soils that contain trees koalas have demonstrated to use should be considered equally important habitat.	
Condition B152(b): The KMP must identify habitat corridors, of adequate dimensions to provide an adequate Koala habitat corridor as supported by a Koala specialist, to provide connectivity both within the Intermodal Precinct area and with other core koala habitat areas (i.e. to the south and to the west along Georges River)						
EES (OEH)	14/11/19	The KMP does not provide connectivity via habitat corridors	Confirmed and Noted	20/11/2019		n/a

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
		within the Intermodal Precinct area (i.e. between and within MPW and MPE development areas). The KMP states that current existing barriers and inherent requirements of the approved MPW and MPE development prevent connectivity within the Intermodal Precinct area - **EES Group concurs with this assessment.**				
EES (OEH)	14/11/19	The KMP provides connectivity within the Moorebank (Georges River) offset site and within the Wattle Grove (Bootland) offset site.	Confirmed and Noted	20/11/2019		n/a
EES (OEH)	14/11/19	The KMP provides connectivity between the southern boundary of the Moorebank (Georges River) offset site and Holsworthy Military Barracks. According to the KMP, koalas will be able to move between these areas under the East Hills rail line and under the MPE Stage 1 rail link. **The KMP notes that should Railcorp or Defence install any fences, a bridge will need to be installed and**	Noted	20/11/2019	*EES Comments received 29/01/2020* Noted	*Response to EES Comments received 29/01/2020* n/a

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
		permits/access will need to be obtained from Railcorp or Defence.				
EES (OEH)	14/11/19	The KMP provides connectivity between the southern boundary of the Wattle Grove (Bootland) offset site and Holsworthy Military Barracks. According to the KMP, koalas will be able to move between these areas via culverts that lie under the East Hills rail line, and bridges built over fences (the boundary fences of the Wattle Grove offset site and Holsworthy Military Barracks). EES Group notes that only bridges across the boundary fence of the Wattle Grove offset site is shown in Figure 9 (bridges across the boundary fence of Holsworthy Military Barracks is not shown). **The KMP states that koala bridges will require permits/access from Railcorp and/or Defence – these have not been obtained.**	Noted	20/11/2019	*EES Comments received 29/01/2020* Noted	*Response to EES Comments received 29/01/2020* n/a
EES (OEH)	14/11/19	The KMP does not specifically state that koalas could access both the	Noted. We also agree that this is possible but it was considered	20/11/2019	*EES Comments received 29/01/2020*	*Response to EES Comments received*

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
		Moorebank (Georges River) offset site and the Wattle Grove (Bootland) offset site via Holsworthy Military Barracks, but EES Group notes this is possible.	beyond the scope and focal area of the KMP.		EES Group recommends the KMP be amended to acknowledge the potential for koala access to the offset sites via Holsworthy Military Barracks.	*29/01/2020* Section 7.4 (pg 38) acknowledges potential for movement to/from Holsworth Military Barracks.
EES (OEH)	14/11/19	The KMP does not provide any information on the dimensions of habitat corridors between the southern boundaries of the two offset sites and Holsworthy Military Barracks. It appears from Figure 8 that the connection between the Moorebank (Georges River) offset site and Holsworthy Military Barracks may be adequate (approximately 20m wide). Also, that the five culverts between the Wattle Grove (Bootland) offset site and Holsworthy Military Barracks are wide enough for koalas to move through, though **characteristics of the culverts are not provided.**	Noted. [redacted] advised that: "The five culverts were observed from the most proximal advantage point along the southern boundary of the Bootland offset site. No measurements were obtained on safety grounds but given the short under-rail-line traverse that was required (< 20m), coupled with estimated dimensions of the individual culverts (4 – 5 m wide, 2 m high), they were deemed to exceed known minimum requirements for koalas".	20/11/2019	*EES Comments received 29/01/2020* EES Group recommends the KMP be amended to incorporate advice from [redacted]	*Response to EES Comments received 29/01/2020* Section 8.3.5.2 has been updated to provide culvert dimension estimates and advice from [redacted]

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
EES (OEH)	14/11/19	The KMP notes that a koala specialist, Steve Phillips, supports the areas of allowed connectivity, though he suggested culverts linking the Wattle Grove (Bootland) offset site and Holsworthy Military Barracks may require some retrofitting.	Acknowledged. Retro-fitting of the culverts with elevated ledges or walkways on the landward side of the last culvert at both ends of the series of 5 should be considered in order to enable year-round utility in the event they become inundated.	20/11/2019	*EES Comments received 29/01/2020* EES Group recommends the KMP be amended to clearly state culverts will be investigated to determine their need for retrofitting, with approval sought from Transport for NSW and Department of Defence. EES Group notes the KMP states initial consultation has commenced with Transport for NSW and Department of Defence regarding koala bridges.	*Response to EES Comments received 29/01/2020* Section 8.3.5.2 has been updated to specify further investigation of culverts following receipt of relevant landholder permits
EES (OEH)	14/11/19	The KMP does not specifically provide connectivity between the Moorebank (Georges River) offset site and the Casula (Hourglass) offset site. These two offset sites are naturally separated by the Georges River.	Noted	20/11/2019	*EES Comments received 29/01/2020* Noted.	*Response to EES Comments received 29/01/2020* n/a
EES (OEH)	14/11/19	The KMP commits to clearing koala habitat in the MPW development area in a staged process, from north to	[redacted] advised that: "This is an important management measure intended to assist a	20/11/2019	*EES Comments received 29/01/2020* Noted	*Response to EES Comments received 29/01/2020*

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
		south and south-west to ensure that any koalas present are progressively encouraged to move into adjacent habitat areas of the Moorebank (Georges River) offset area.	passive dispersal of any koalas that may be present in the site at the time of clearing, into the adjoining offset area".			n/a
EES (OEH)	14/11/19	The KMP commits to retain all koala use trees within the offset areas. The KMP does not define koala use trees at any point. **The KMP only defines PKFTs**.	[redacted] advised that: *It is the presence of PKFTs that enables koala use of the site to persist.* The KMP has been updated and use of the term 'koala use trees' is limited to Sections where the wording of the Consent Conditions is quoted verbatim.	20/11/2019	*EES Comments received 29/01/2020* It is not apparent the KMP has been updated to address this issue.	*Response to EES Comments received 29/01/2020* Sections 7.2.1 – 7.2.3 have been updated to specifically state that no vegetation (including PKFTs and other koala use trees) will be retained in the MPW site but all vegetation (including PKFTs and other koala use trees) will be retained within Biobank sites.
Condition B152(d): The KMP must include details of structures to eliminate barriers to movement (presented by fences, roads, drainage culverts or pits, rail lines and the like) for koalas and other native fauna likely to use the site or habitat corridor						
EES (OEH)	14/11/19	The KMP includes information on rural fences (5-strand plain wire	The channel outlets have been designed to maximise the potential	20/11/2019	*EES Comments received 29/01/2020*	*Response to EES Comments received*

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
		fences) that will be placed at channel outlets from the MPW development area to the Georges River, adjacent to the Moorebank offset site. Information states that the rural fences will have enough gaps to allow koalas passage to move across the channel outlets that cut across the Moorebank offset site, and these appear suitable in allowing koala movement. Little information is provided on the channel outlets themselves (other than they are comprised of sandstone channels with scattered habitat features) and whether koalas can traverse these.	for habitat connectivity and wildlife movement. It should be noted that as part of the BA314, the fauna passages have been designed for general fauna passage and not specifically for koala movement. Based on the variable discharge volumes and potential for flooding from the Georges River, the KMP acknowledges that koala movement is likely only in low flow/dry conditions. The outlets are aligned with the creek or riverbanks to minimise the potential for bank scour and include energy dissipators designed in accordance with *"The Outlet Structure Guidelines" published by the Department of Water and Energy and the Landcom Blue Book.*		EES Group recommends the KMP be amended to include the additional information in the proponent response.	*29/01/2020* Section 8.3.5.1 has been updated to include the additional information in the proponent response.

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response

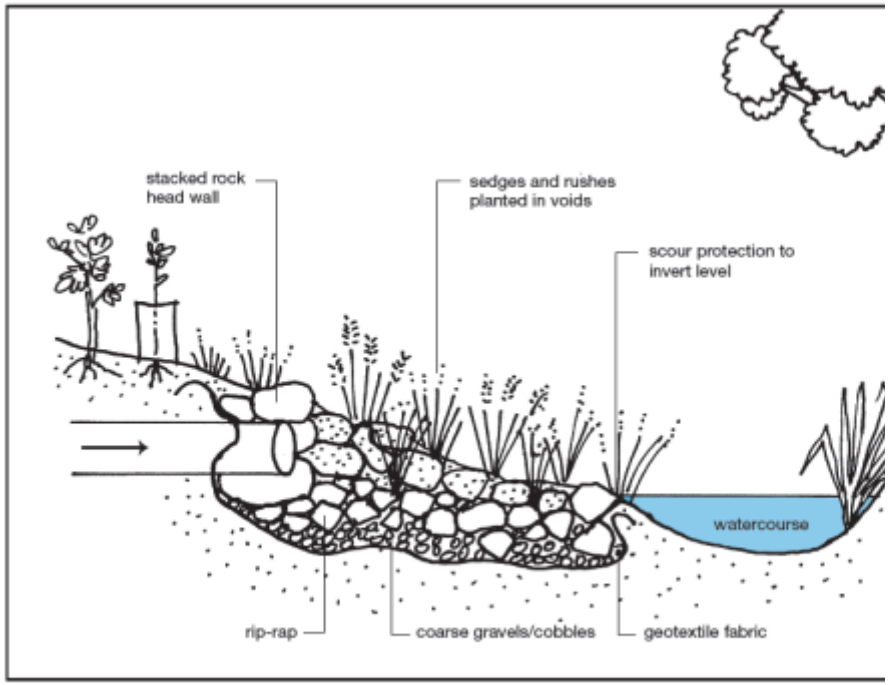


Figure 3.1. Outlet Structure – Typical Arrangement

Extract from the Stormwater Development Design Report SSD 7709, Draft 2 by Costin Roe, 23 October 2019.

EES	14/11/	The KMP states that culverts are	See comments in response to	20/11/2019	*EES Comments received*	*Response to EES*

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
(OEH)	19	present beneath the East Hills rail line allowing koala movement between the Wattle Grove offset site and Holsworthy Military Barracks. Little information is provided on the culvert characteristics. The KMP notes its koala expert's comment that culverts may require some retrofitting to make these more favourable for use by koalas.	Condition B152 b above		*29/01/2020* As above.	*Comments received 29/01/2020* As above
EES (OEH)	14/11/19	The KMP provides information on koala bridges that would be used by koalas to cross fences - these appear suitable.	Noted	20/11/2019	-	n/a
Condition B152(e): The KMP must include details on koala habitat rehabilitation/ restoration within the identified habitat corridors						
EES (OEH)	14/11/19	The KMP refers to management actions to manage and enhance koala habitat within the offset areas under the approved Biobanking agreement, BA 341.	Noted	20/11/2019	-	n/a

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
EES (OEH)	14/11/19	The KMP does not specifically refer to habitat restoration/rehabilitation in the identified habitat corridors between: the Moorebank (Georges River) offset site and habitat to the south in Holsworthy Military Barracks the Wattle Grove (Bootland) offset site and habitat to the south in Holsworthy Military Barracks	Habitat restoration and weed management are already required to be implemented as part of the approved Biobank agreement (BA314) and includes planting of PKFTs (E.tereticornis and E.parramattensis) in restoration areas. Section 7.2.2 and 7.2.3 of the KMP states that vegetation in the offset areas (and by extension koala habitat) was to be managed as part of BA314. New Section 8.3.5.4 mentions this again. Given that BA314 is approved and EES have the agreement on record further details on habitat restoration/rehabilitation are not provided within the KMP.	26/11/2019	*Response to EES Comments received 29/01/2020* Noted	*Response to EES Comments received 29/01/2020* n/a
Condition B152(f): The KMP must include other measures to minimise the risk of harm to koalas						

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
EES (OEH)	14/11/19	The KMP includes measures to m**inimise the risk of harm to koalas from controlled burns** in the Moorebank (Georges River) and Wattle Grove (Bootland) offset sites, though there is no direction on actions to take if pre-burn surveys reveal the presence of a koala.	Noted. Section 8.3.4 of the KMP has been amended accordingly.	20/11/2019	*EES Comments received 29/01/2020* Noted	*Response to EES Comments received 29/01/2020* n/a
EES (OEH)	14/11/19	Other measures provided by the KMP to minimise the risk of harm to koalas are those already required as part of the development i.e. dust and noise minimisation, management of surface water, erosion and sedimentation, and light management.	Noted	20/11/2019	-	n/a
EES (OEH)	14/11/19	In Chapter 2, the KMP outlines matters that are required to be considered when preparing individual KMPs in accordance with SEPP44 Circular B35. Amongst other matter, this includes: an estimate of population size, identification of preferred feed tree	The following text has been included in Section 1.3 and Section 5.4.5 of the KMP. Section 1. 3 and Section 5.4.5 have been amended to address population size. Note that Table 2 of SEPP44 lists	26/11/2019	*EES Comments received 29/01/2020* EES Group estimates from recent survey data that shale-influenced koala habitat in the local area supports approximately 0.07 koalas/ha. As such, it is estimated that up to three koalas could be	*Response to EES Comments received 29/01/2020* Section 1.3 and Section 5.4.5 have been updated to mention potential carrying capacity based on the

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
		species for the locality and the extent of resource available, aims of the plan, criteria against which achievement of aims are to be measured. The KMP does not adequately address the above regarding the extent of resource available.	food tree species listed. Legally, these are the only tree species that have standing for purposes of the KMP (i.e. EES tree review DOES NOT have standing for purposes of SEPP). Section 1. 6 addresses Purpose and Aims of the plan		sustained in the Bootland area. It is recommended that the additional text in sections 1.3 and 5.4.5 regarding population size be amended to reflect this. In relation to the note regarding koala food tree species listed in table 2 of SEPP44, EES Group notes SEPP44 will be replaced by State Environmental Planning Policy (Koala Habitat Protection) 2019 on 1 March 2020 (https://www.planning.nsw.gov.au/Policy-and-Legislation/Environment-and-Heritage/Koala-Habitat-Protection-SEPP). The list of koala feed tree species in the Koala Habitat Protection SEPP (schedule 2) significantly expands the very limited list in SEPP44 and largely mirrors the ranked	provided information. A new Section 2.5.1 has been added to acknowledged that SEPP44 is soon to be replaced and that the new Koala Habitat Protection SEPP significantly expands the list of koala tree species from 10 to 123. As the Koala Habitat Protection SEPP is currently not in force and Condition B152 (a) specifies that the KMP is to reference the 2018 OEH review document, the KMP has been updated to incorporate the koala tree use rankings (Table 3) and updated Koala food tree list

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
					canopy trees in *A review of koala tree use across New South Wales (OEH 2018)* which the KMP must reference in accordance with consent condition B152(a).	(Appendix 2) of the review document. Relevent updates to the KMP are in Sections 2.7, 6.1, 7.2 and 7.3 + Tables 1, 4 and 5.
EES (OEH)	14/11/19	Despite the KMP stating that the assessment of koala habitat is based on PKFTs, Chapter 7.2 appears to rank koala habitat (or areas with higher potential carrying capacity to support koalas) based on vegetation types. EES Group does not have a problem with ranking koala habitat on vegetation types in general, but **it brings into question why PKFTs are identified at all given** the assessment/ranking of koala habitat: does not appear to relate to the number of PKFT species in vegetation types. does not appear to relate to the amount of PKTFs in vegetation types. In line with SEPP44, potential habitat	[redacted] commented that PKFTs form the basis of how habitat is ranked. Ranking is not about numbers *per se* but about relative abundance. The 15% rule has no basis in science and results in the undervaluing of koala habitat throughout the species range Habitat quality is independent of the presence/absence of koalas. A new section , Section 7.3 has been included in the KMP.	20/11/2019	*EES Comments received 29/01/2020* Section 7.3 appears to apply a mixture of two habitat classification options that are suggested in the 2008 NSW Koala Recovery Plan for classifying koala habitat. Based on the information provided in the KMP for the dominance of canopy species (where only the dominance of species noted as PKFTs is provided), EES Group cannot assess the classification of koala habitat using a longer list of koala use trees in order to concur with the KMP's	*Response to EES Comments received 29/01/2020* The proposed classification has been retained based on the advice from [redacted] as it is based on the relative proportion or dominance of PKFTs within the vegetation community Nonetheless, Section 7.3 has been updated to specify that all areas are considered to comprise

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
		is defined as areas where PKFTs constitute at least 15% pf the total number of trees in the upper or lower strata of the tree component does not account for where koalas were recorded during surveys. Koalas were recorded in vegetation types that were then considered to have lower potential carrying capacity than vegetation types where they were not recorded.			koala habitat rankings. EES Group reiterates its recommendation that all vegetation types on enriched soils that contain trees koalas have been demonstrated to use should be considered equally important habitat. *EES Comments received 28/02/2020* The list of PKFTs does not include a number of known feed trees (as previously advised) and is therefore not considered comprehensive. This is not reflected in section 7.3 – all rankings have been collectively grouped as 'Preferred Koala Habitat'. It is noted, however, that the PKFTs and classification	important koala habitat. Section 7.3 has also been updated to further expand how the proposed classification relates to classifications of Koala tree use outlined in the OEH Review document. *Response to EES Comments received 28/02/2020* As previoulsy stated, the list of PKFTs is based on a combination of known food tree species (as listed in the Koala recovery plan) recorded within the Intermodal Terminal site, studies

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
					system remain unchanged.	of the Campbelltown koala population and expert input from [redacted] and is considered to be comprehensive for the Intermodal Terminal Site. Justification for the exclusion of species (as previously advised by EES group) is addressed in prior responses. As the PKFT list has been unchanged the corresponding habitat classification also remains unchanged. However, Section 7.3 has been amended to remove the term 'Preferred' and group all rankings as 'Koala

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
						Habitat'.
EES (OEH)	14/11/19	The KMP does not include a clear map of koala habitat – either core or potential habitat, or ranked for high/low potential carrying capacity. **KMPs should include maps for koala habitat.**	Figure 7 has been updated to reflect the koala habitat rankings described in Section 7.3 There is no evidence of Core Koala Habitat on the site. Occupancy / utilisation is a relatively recent event and KMP is evidence of application of the precautionary principle.	20/11/2019	*EES Comments received 29/01/2020* It is noted the revised figure 7 and section 7.3 are prepared in accordance with the soon to be replaced SEPP44 tree list plus trees considered by [redacted] as important PKFTs using the categories of koala habitat suggested in the 2008 NSW Koala Recovery Plan. EES Group reiterates its recommendation that all vegetation types on enriched soils that contain trees koalas have been demonstrated to use should be considered equally important habitat.	*Response to EES Comments received 29/01/2020* The responses to the previous comments re: updates to Section 7.3 apply. Based on this response Figure 7 has been retained. Furthermore new Section 2.5.1 has been added to acknowledge the upcoming replacement of SEP44.
EES (OEH)	14/11/19	The KMP states on numerous occasions that the Intermodal Precinct is likely to support transient koalas moving through the area, dispersing koalas, or koalas with large	Sentence in Section 7. 1 has been amended to address this issue the last paragraph reads, "Much of the more nutrient rich areas of the Cumberland plain	26/11/2019	*EES Comments received 29/01/2020* The amended text does not	*Response to EES Comments received 29/01/2020* Section 1.3 and Section 5.4.5 have

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
		home ranges. While this could be the case, habitat in the Intermodal Precinct could potentially support resident koalas over time as the koala population expands to parts of the former range. **EESG Group does not agree that habitat in the study area represents 'low carrying-capacity habitat on nutrient poor soils'.**	(including areas within both the Liverpool and Campbelltown LGAs) have been historically cleared for agricultural and residential land uses. Nonetheless, despite no evidence of occupancy or presence of Core Koala Habitat, some areas within the Intermodal Precinct are capable of supporting medium – high koala population densities".		address the issue raised and makes the KMP more confusing given continued reference to the precinct supporting transient rather than potentially resident koalas (now or in the future).	been updated to mention potential carrying capacity based on information provided within the most recent EES responses. Sections 7.1, 7.2 and 7.3 have also been updated to further clarify that koala habitat quality/ carrying capacity is largely based on relative proportion of PKFTs. [redacted] notes that the habitat must be managed with a view to its maintenance within a larger matrix, which is why the connectivity measures proposed have been suggested.

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
EES (OEH)	14/11/19	The KMP states that if a koala observed in the MPW development area does not disperse on its own accord after 24h, it would be captured and released into a PKFT in either the Moorebank (Georges River) or Wattle Grove (Bootland) offset sites at a location shown in Figure 9. **These locations are not displayed on Figure 9.**	Section 8.3.3 on assisted dispersal of koalas has been amended. The reference to Figure 9 as been removed removed from Section 8.3.3.	26/11/2019	*EES Comments received 29/01/2020* Noted	*Response to EES Comments received 29/01/2020* n/a
EES (OEH)	14/11/19	The monitoring chapter mentions that koalas should be surveyed via spotlighting and Rapid-SAT but no further information is provided for spotlighting surveys. There is also no information on the number of rapid-SAT sites across the offset sites and the size of the monitoring grid. The monitoring chapter states that data from monitoring will contribute to understanding of the process and success of koala relocation, but no further information is provided about this and how success would be measured.	Section 9.1 has been updated and states that, "The finding of the initial targeted assessment will inform the refinement for a final field design for long-term monitoring. The final design is to be consistent with 95% - 99% Rapid-SAT assessment criteria requirements and will be reliant upon a 250 m survey grid. The final design will be submitted for approval prior to commencement of annual monitoring". Section 9.1.1 has been updated to	26/11/2019	*EES Comments received 29/01/2020* Noted	*Response to EES Comments received 29/01/2020* n/a

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
			include; "The spotlighting transects will be based within the final RG-bSAT survey grid. Based on the final approved survey grid, spotlighting transects will be placed to enable sufficient replication to effectively survey ~ 25% of retained habitat at each survey event. The monitoring grid will be focussed on the habitat within the offset areas contained within the Intermodal Precinct boundaries only. As parts of the proposed habitat connectivity corridor lie outside of lands owned by the proponent and comprise restricted access lands (i.e. RailCorp land, Holsworthy Military Base), monitoring of koala use of these areas is considered to be outside of the scope of this KMP".			

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
EES (OEH)	14/11/19	The monitoring chapter states that the objective of the monitoring program includes determining the effectiveness of proposed mitigation and offset measures, but **there is no specific information provided for monitoring whether koalas are using habitat corridors provided from the offset areas to Holsworthy Military Barracks and koala bridge structures across fences.**	Section 9.1 has been amended and states that; "Given the absence of Core Koala Habitat, small numbers of koalas based on survey data to date and uncertainly in the future extent of northern dispersal of the Campbelltown koala population, there is potential that use of habitat within offset areas by koalas will not be ongoing. Therefore, the primary intent of the monitoring program will be to inform changes in habitat utilisation by koalas within the Intermodal Precinct over required time period. The objectives of the monitoring program will be to quantify any changes in baseline koala habitat use levels and monitor the effectiveness of the proposed mitigation and offset measures as outlined in Chapter 8".	26/11/2019	*EES Comments received 29/01/2020* Noted	*Response to EES Comments received 29/01/2020* n/a

Stake-holder	Initial Date	Screenshot of typo and/or other issues	Proponent Response	Initial Response Date	Reviewer Comment on Response	Proponent further response
EES (OEH)	14/11/19	The monitoring chapter states that monitoring the effectiveness of plantings in offset sites is required, but there is no requirement included to monitor the survivorship of plantings and any targets that should be met.	This issue is addressed in the BA314 Biobanking Agreement	26/11/2019	*EES Comments received 29/01/2020* The issue raised has not been adequately addressed. EES Group recommends the KMP be amended to include the Biobanking Agreement requirements to monitor the survivorship of plantings.	*Response to EES Comments received 29/01/2020* Section 9.1.3 of the KMP has been updated to reference the relevant sections of the Biobanking Agreement MAP that require monitoring of plantings

Table 12: Response to Environmental Representative comments

Stakeholder	Initial Comment Date	Screenshot of typo and/or other issues	Response	Initial Response Date	Reviewer Response	Comment on	Date Comment Closed
ER	18/10/19	Generally, requires additional work to meet Condition of consent C 1 e.g. review protocol and defined roles and responsibilities table.	Table 8 in Appendix A has been updated to address requirements of condition C1	1/12/2019			
ER	18/10/19	Section 1.1 Background "Draft Development Consent Conditions have been provided by the Independent Planning Commission (IPC) for the proposed development of MPW Stage 2, located within Lots 1, 2, 3 (partial) DP 1197707, and Lots 100 and 101 DP 1049508 (Figure 2). The MPW Stage 2 development is expected to involve the removal of approximately 42.89 ha of native vegetation, which also comprises habitat for various native flora and fauna, including threatened species. Draft Consent Condition B152 requires preparation of a Koala Management Plan" *Term 'Draft'* not appropriate in final document. Condition number needs to be changed for final document once consent granted	The term 'draft' in relation to the consent conditions has been removed from the document	1/12/2019			
ER	18/10/19	Section 1.2 The Project	Statement has been deleted	1/12/2019			

Stakeholder	Initial Comment Date	Screenshot of typo and/or other issues	Response	Initial Response Date	Reviewer Response	Comment on	Date Comment Closed
		"The client is seeking SSD Consent under Division 4.1 of Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) for the MPW Stage 2 development (**Figure 2**)." Statement Not appropriate in final document	from Section 1.2 of the KMP				
ER	18/10/19	Section 1.2 The Project Construction works and temporary ancillary facilities, including: installation and use of a concrete batching plant; and Confirm that this is still proposed	Cumberland Ecology has been informed by Tactical that this is still proposed	1/12/2019			
ER	18/10/19	Section 1.4.1 Cumberland Ecology "BAM Assessor" Define acronym	Definition for acronym provided in Section1.4 and Glossary	1/12/2019			
ER	18/10/19	Section 1.5 Document Structure Note that there are additional requirements under CoC C1	Additional requirements under CoC C1 have been added and are referenced accordingly in text	1/12/2019			
ER	18/10/19	Section 2.2.1 Division 4.1 of Part 4 of the EP&A Act To be modified for final document	Legislative description regarding SSD has largely been retained. However, text has been amended to state	1/12/2019			

Stakeholder	Initial Comment Date	Screenshot of typo and/or other issues	Response	Initial Response Date	Reviewer Response	Comment on	Date Comment Closed
			that MPW Stage 2 has been approved as a SSD				
ER	18/10/19	Section 2.4 NSW BOP for Major Projects and the BOS "The Biodiversity Offsets Policy for Major Projects has recently been replaced by the Biodiversity Offsets Scheme, which was established by the Biodiversity Conservation Regulation 2017 commencing on 25 August 2017. As the SEARs for the SSD 16-7709 were issued prior to 25 August 2017, the MPW Stage 2 development comprised a 'pending or interim application' under the Biodiversity Conservation (Savings and Transitional) Regulation 2017. Therefore, the MPW Stage 2 development continues to be assessed under the planning provisions of the TSC Act, FBA and Biodiversity Offsets Policy for Major Projects, as required by the SEARs." final document to reflect determination and consent	Section 2.4 has been updated to reflect that the MPW Stage 2 project was approved as a SSD based on assessments using the FBA.	1/12/2019			
ER	18/10/19	Section 2.6 Koala Recovery Plan "The koala food trees differ between in the	Sentence amended	1/12/2019			

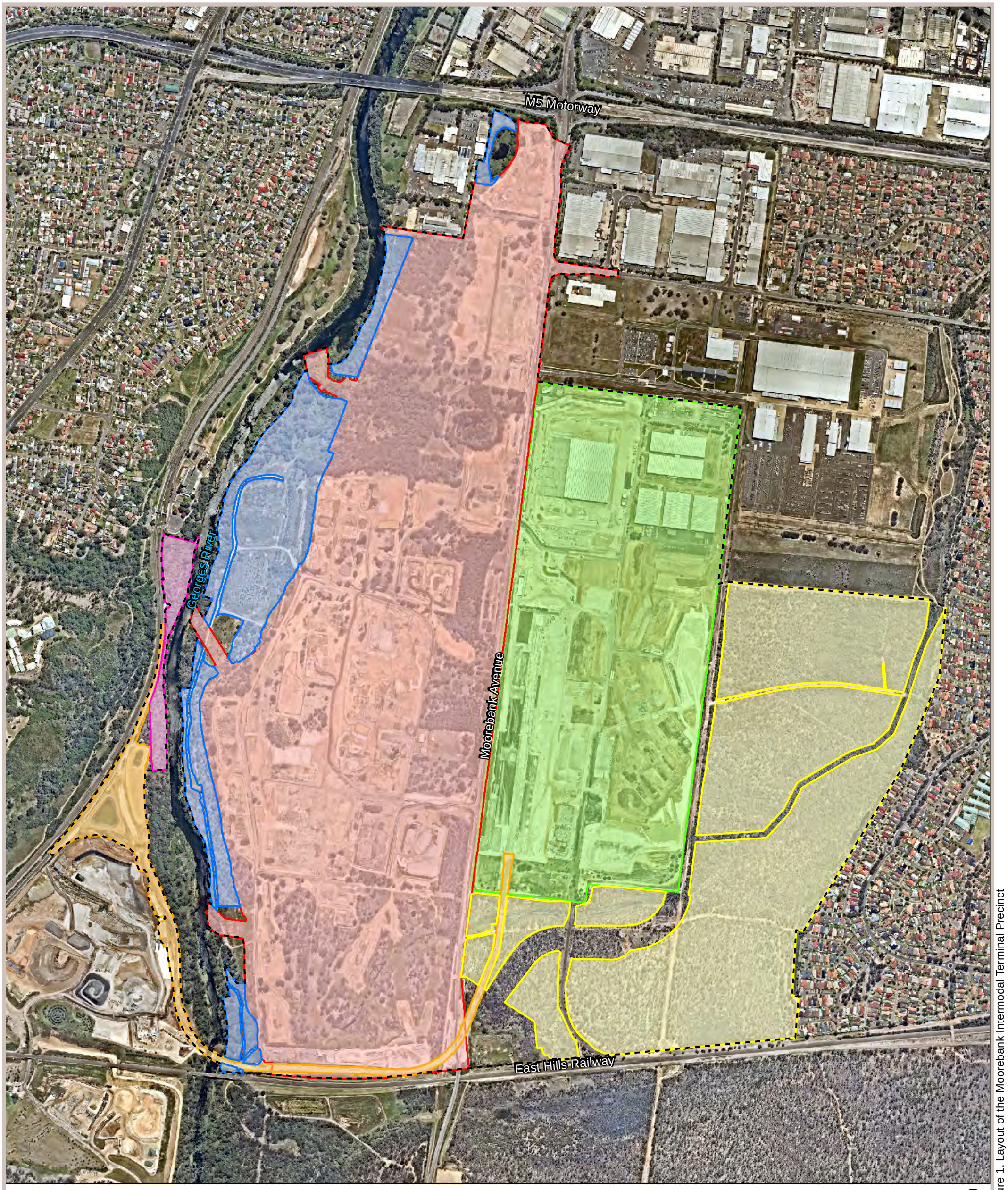
Stakeholder	Initial Comment Date	Screenshot of typo and/or other issues	Response	Initial Response Date	Reviewer Response	Comment on	Date Comment Closed
		seven management areas". Check grammar					
ER	18/10/19	Section 5.2.5 Survey Limitations Due to time limitations during the survey period, scats found within the Bootland on 7 December 2018 were not included in the samples sent to ScatsAbout for laboratory analysis. Samples sent for identification were limited to the scats collected during the Rapid-SAT surveys on 30 November 2018 and during the detection dog surveys within the MPW site on 5 December 2018. Comment on the impact of this on the reliability of the results	Additional information on reliability of the results provided.	1/12/2019			
ER	18/10/19	Section 8.3 Mitigation Measures For clarity and to assist in meeting the requirements of the plan the mitigation measures described within the text below should be distilled into a table of mitigation measures provided in this document of the CFFMP	Table of mitigation measures provided in new Appendix B	1/12/2019			
ER	18/10/19	Section 8.3.5.1 Fencing However, it is understood that these areas	Statement removed as it has been confirmed that that	1/12/2019			

Stakeholder	Initial Comment Date	Screenshot of typo and/or other issues	Response	Initial Response Date	Reviewer Response	Comment on	Date Comment Closed
		are to be included as part of the offset area and that BA 341 will be amended accordingly (R. Johnson, pers. comm.) Needs to be a clear mitigation measure	BA341 is no longer proposed to be amended.				
ER	18/10/19	Section 8.3.5.4 Limitations to Habitat Corridor Enhancement an alternative strategy for koala management to those proposed within this KMP will be required, a view that is supported by Dr Phillips. this needs to be a clear mitigation measure	An alternative strategy, if required due to consent for land access not being granted by RailCorp and Department of Defence, will require a completely separate Koala Plan of Management to be prepared for management of Koalas on the site in place of the current KMP. As the requirement of this alternate Koala Management Plan is yet to be confirmed, this alternate strategy has not been detailed within this KMP as it requires a completely different scope and objectives. In lieu of preparing an alternate KMP, this potential requirement is limited to an	1/12/2019			

Stakeholder	Initial Comment Date	Screenshot of typo and/or other issues	Response	Initial Response Date	Reviewer Response	Comment on	Date Comment Closed
			acknowledgement within the current KMP that a different Plan of Management may be required if consent is not granted by the relevant landowners				
ER	18/10/19	Section 8.4 Direct Offset Therefore, no species credits have been created within the Biobank site for this species. However, based on the presence of Koalas in the Bootland, it is anticipated that species credits for Koala could be generated within the Biobank site. This is proposed to be done as a variation to the biobanking agreement with any deficit of koala credits being purchased as required. There needs to be a commitment made as a mitigation measure	Text has been amended to a commitment to purchase and retire the appropriate number of koala credits	1/12/2019			
ER	18/10/19	Section 9.1 Monitoring It is proposed that any Koala population or individual within the Bootland and Moorebank Offset Area will be monitored in conjunction with other fauna monitoring commitments under the FFMP. Monitoring	Table for inclusion in the CEMP an OEMP are provided in Appendix B	1/12/2019			

Stakeholder	Initial Comment Date	Screenshot of typo and/or other issues	Response	Initial Response Date	Reviewer Response	Comment on	Date Comment Closed
		will be Al monitoring requirements outlined here must be tabulated and included in the CFFMP and OEMP					
ER	18/10/19	Section 9.1.2 Reporting of Road Kills/Injuries This information will then be used to incorporate appropriate measures into management strategies and other components of the monitoring program as required. Needs to be included as part of a periodic review protocol as per CoC C1	Requirement for periodic review and incidents/non-compliance added as Section 9.4 and Section 9.5 respectively	1/12/2019			
ER	18/10/19	Appendix A: Table 13: Independent Planning Commission – Ecological Conditions of Consent IPC Condition consent C1 is also applicable Revise to refer to consent number for final document	Condition C1 added to Table in Appendix A.	1/12/2019			

FIGURES



Legend

- Moorebank Precinct West (MPW) Development Site
- Moorebank Precinct East (MPE) Development Site
- MPE Stage 1 Construction Area Rail Link
- Intermodal Precinct
- Wattle Grove Offset Site (Bootland)
- Moorebank Offset Site (Georges River)
- Casula Offset Site (Hourglass)

Coordinate System: MGA Zone 56 (GDA 94)

Image Source:
Image © NearMap 2018
Dated: 2/11/2018

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I:\...\18194\Figures\RP1\20190823\Figure 1. Layout of the Moorebank Intermodal Terminal Precinct

Figure 1. Layout of the Moorebank Intermodal Terminal Precinct

0 100 200 300 400 m

Legend

- Moorebank Precinct West (MPW) Development Site
- Moorebank Precinct East (MPE) Development Site
- MPE Stage 1 Construction Area Rail Link
- Intermodal Precinct

Coordinate System: MGA Zone 56 (GDA 94)

Image Source:
Image © NearMap 2018
Dated: 2/11/2018

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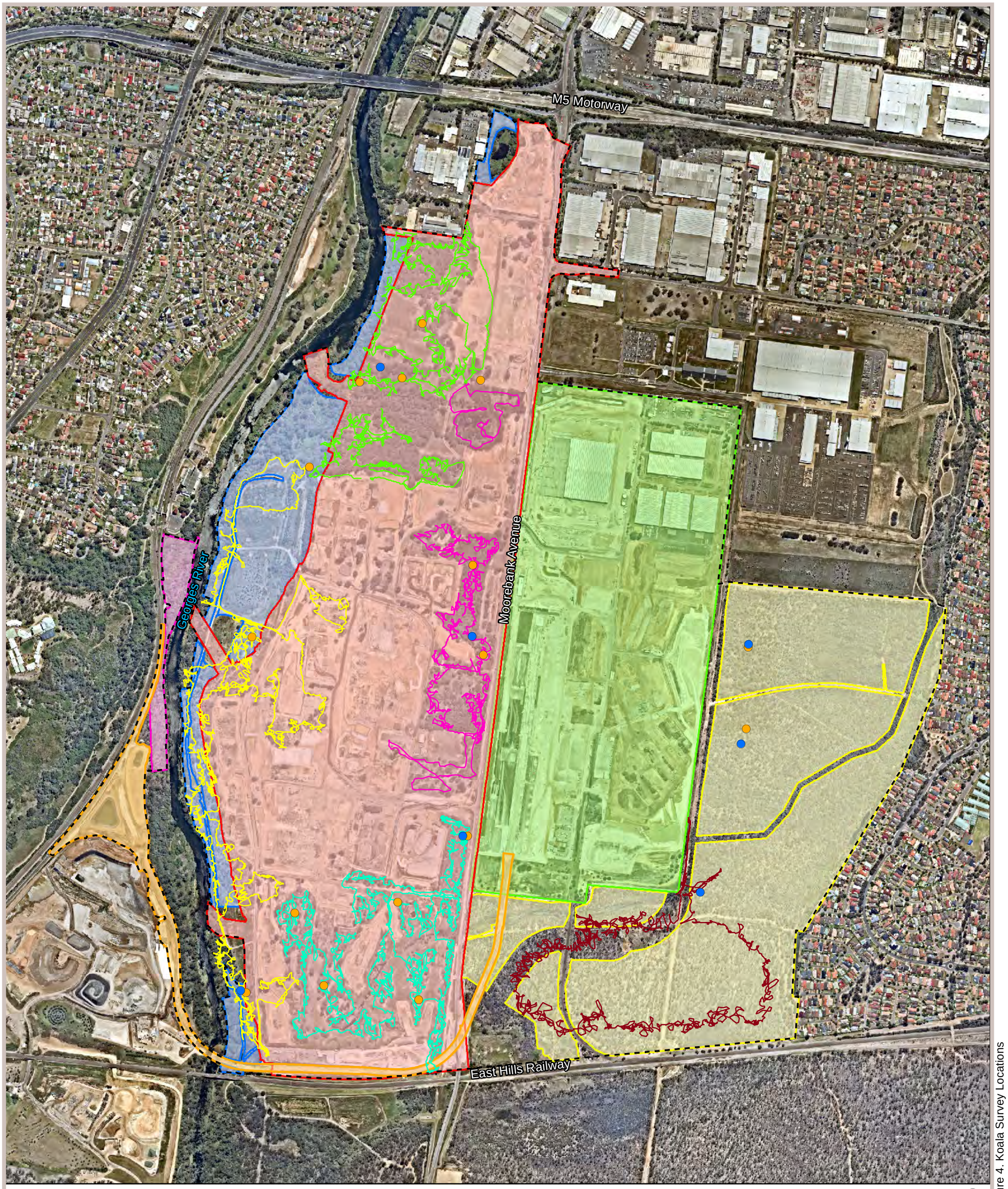
I:\...\18194\Figures\RP1\20190823\Figure 2. Location of MPW Stage 2 development

Figure 2. Location of MPW Stage 2 development

0 100 200 300 400 m

Figure 3. Historic Koala records in the locality



Legend

- Moorebank Precinct West (MPW) Development Site
- Moorebank Precinct East (MPE) Development Site
- MPE Stage 1 Construction Area Rail Link
- Intermodal Precinct
- Wattle Grove Offset Site (Bootland)
- Moorebank Offset Site (Georges River)
- Casula Offset Site (Hourglass)

Koala Detection Dog Tracks

- Monday (3/12)
- Tuesday (4/12)
- Wednesday (5/12)
- Thursday (6/12)
- Friday (7/12)

Additional Koala Surveys

- Rapid-SAT Survey Locations
- IR Camera Locations

Coordinate System: MGA Zone 56 (GDA 94)

Image Source:
Image © NearMap 2018
Dated: 2/11/2018

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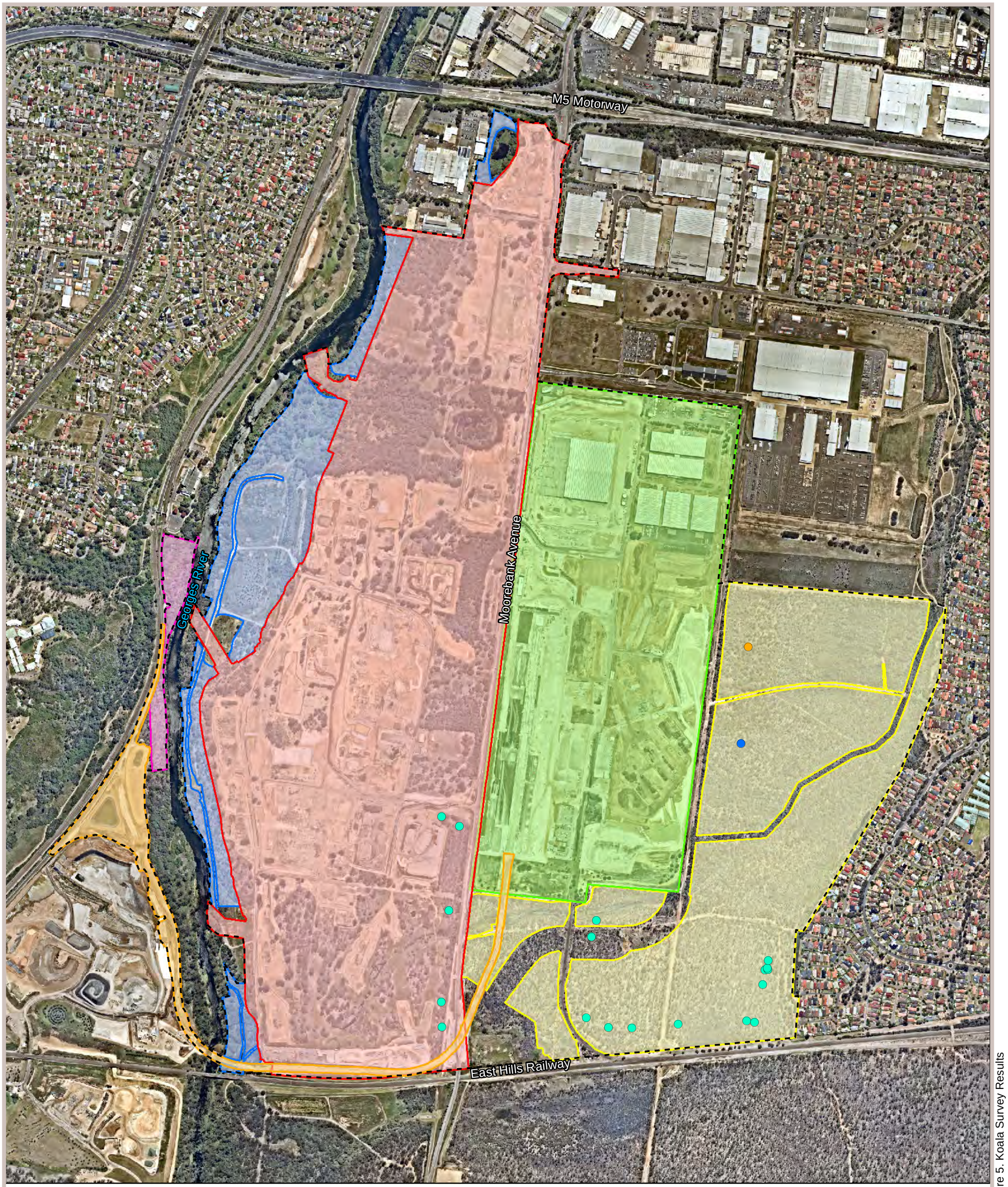
I:\...\18194\Figures\RP1\20190823\Figure 4. Koala Survey Locations

Figure 4. Koala Survey Locations

0 100 200 300 400 m



Legend

- Moorebank Precinct West (MPW) Development Site
- Moorebank Precinct East (MPE) Development Site
- MPE Stage 1 Construction Area Rail Link
- Intermodal Precinct
- Wattle Grove Offset Site (Bootland)
- Moorebank Offset Site (Georges River)
- Casula Offset Site (Hourglass)

Koala Indicators

- Koala Detection Dog - Scats
- Rapid-SATs - Scats
- IR Camera Recording

Coordinate System: MGA Zone 56 (GDA 94)

Image Source:
Image © NearMap 2018
Dated: 2/11/2018

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I:\...\18194\Figures\RP1\20190823\Figure 5. Koala Survey Results

Figure 5. Koala Survey Results

0 100 200 300 400 m

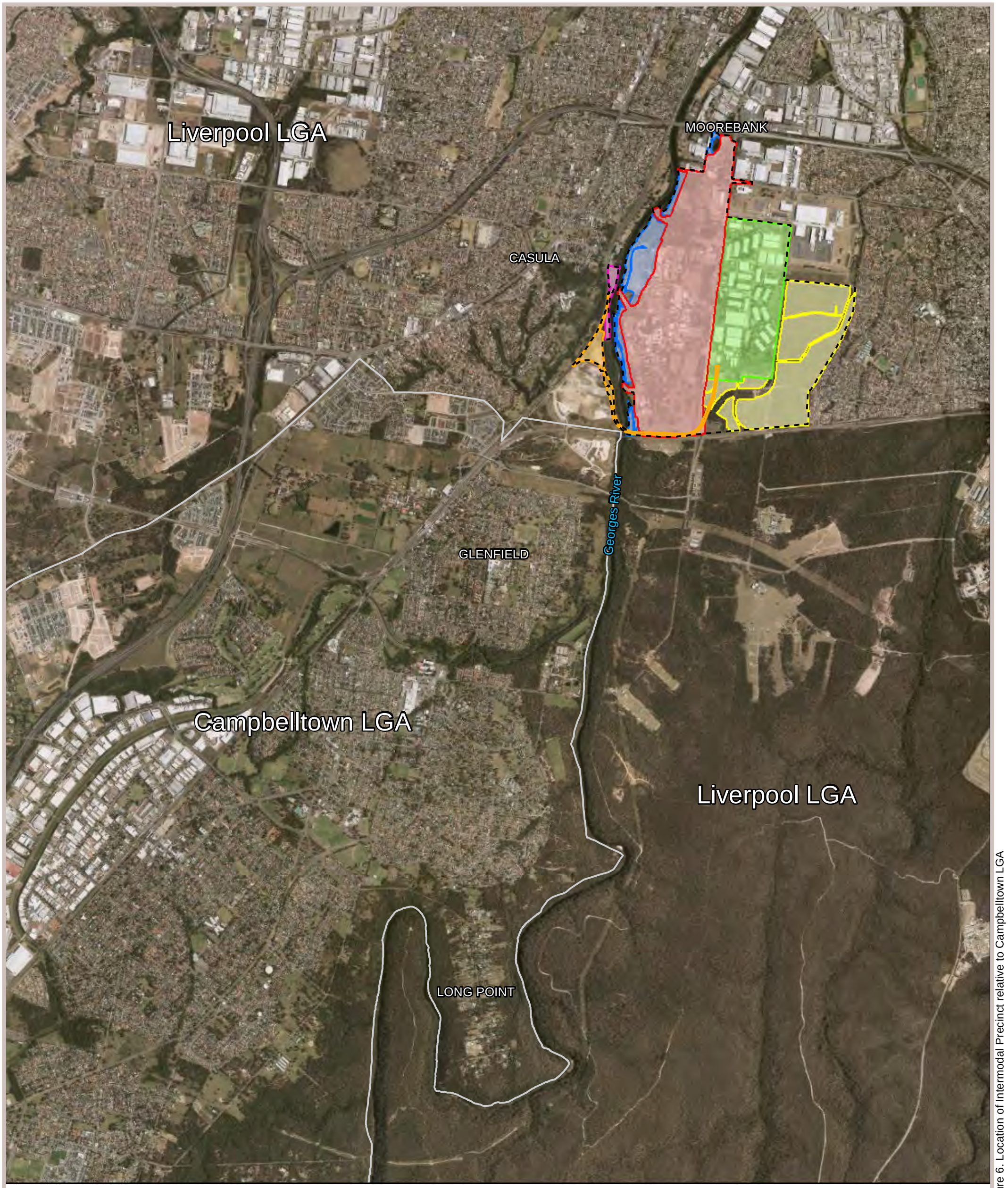
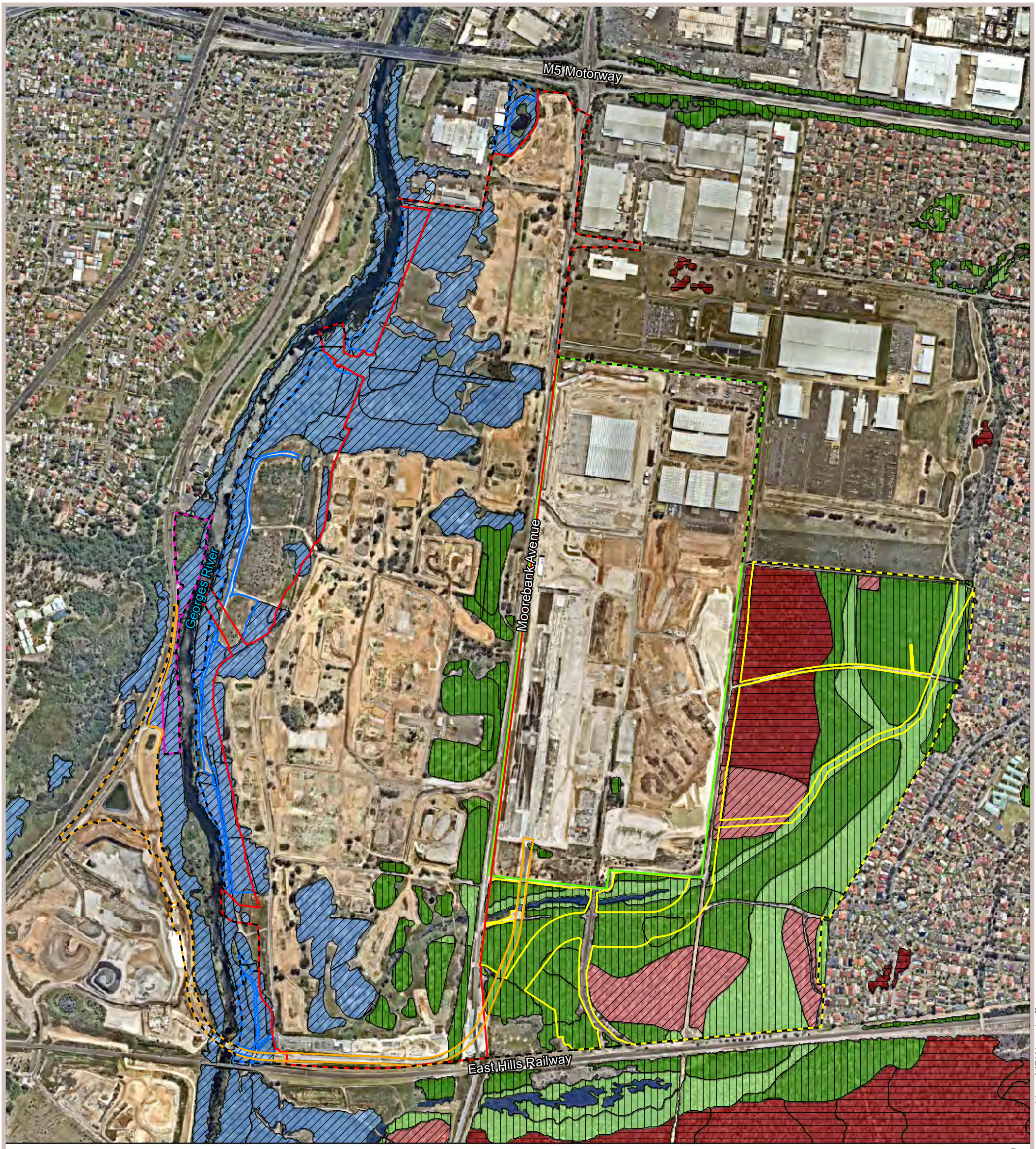


Figure 6. Location of Intermodal Precinct relative to Campbelltown LGA



Legend

- Moorebank Precinct West (MPW) Development Site
- Moorebank Precinct East (MPE) Development Site
- MPE Stage 1 Construction Area Rail Link
- Intermodal Precinct
- Wattle Grove Offset Site (Bootland)
- Moorebank Offset Site (Georges River)
- Casula Offset Site (Hourglass)

Vegetation Community

- ME002 Broad-leaved Ironbark - Melaleuca decora shrubby open forest on clay soils of the Cumberland Plain, Sydney Basin Bioregion
- ME003 Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin Bioregion
- ME004 Broad-leaved Ironbark – Grey Box – Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin Bioregion
- ME005 Parramatta Red Gum woodland on moist alluvium of the Cumberland Plain, Sydney Basin Bioregion
- ME007 - Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion
- ME018 Forest Red Gum – Rough-bark Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion

Koala Habitat

- Primary Koala Habitat: ME018, ME002
- Secondary Class A: ME003, ME005
- Secondary Class B: ME004

Coordinate System: MGA Zone 56 (GDA 94)

Image Source:
Image © NearMap 2018
Dated: 2/11/2018

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I:\...\18194\Figures\RP1\20191205\Figure 7. Vegetation communities_MPW and offsets

Figure 7. Vegetation communities of the MPW site and offset areas

0 100 200 300 400 m

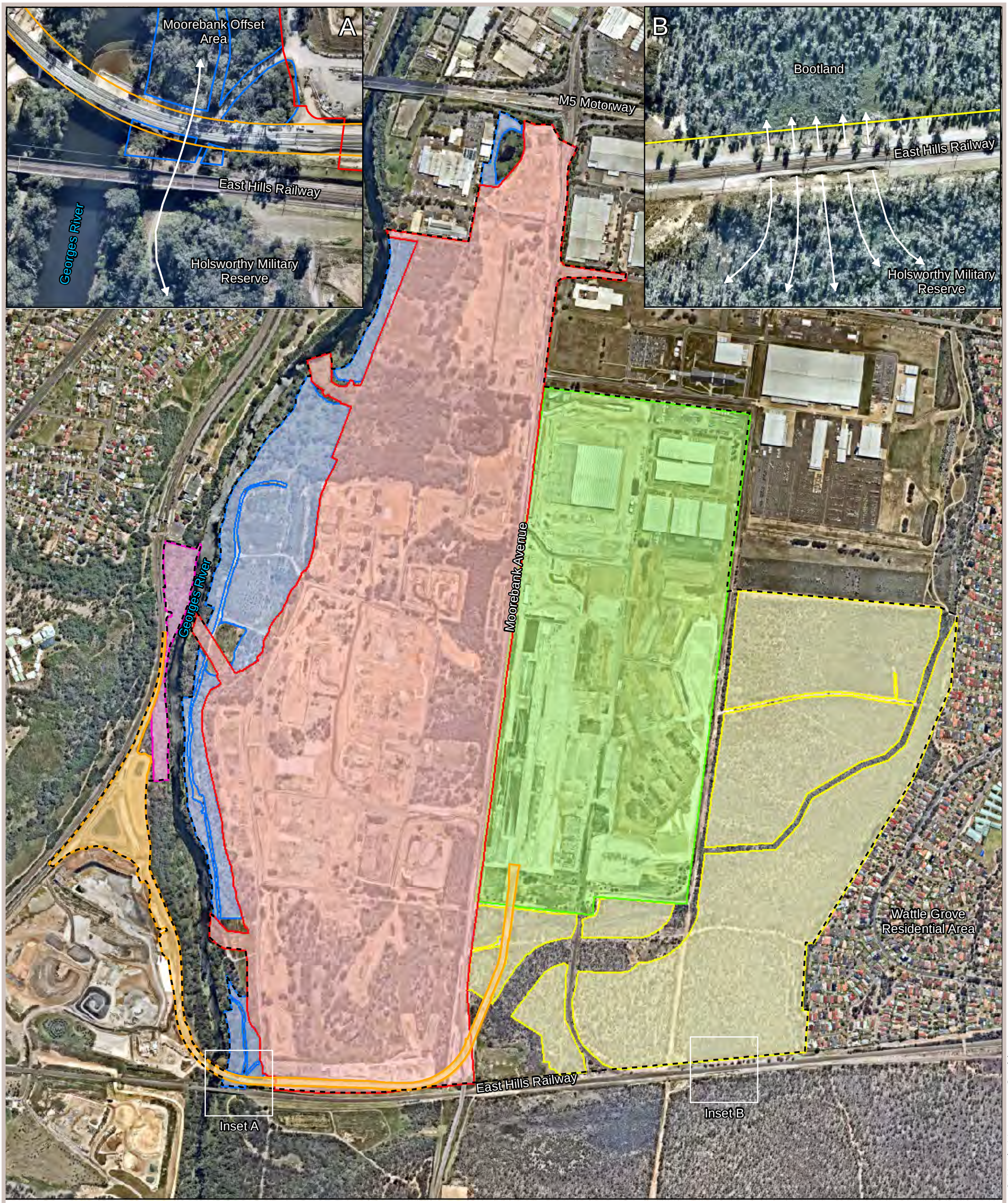

Figure 8. Koala Movement Corridors

I:\...\18194\Figures\RP1\20190923\Figure 8. Koala Movement Corridors

Legend

- Wattle Grove Offset Site (Bootland)
- Moorebank Offset Site (Georges River)

Proposed Fencing

- Existing Cyclone fence
- Existing fence
- New Cyclone fence
- New fence
- New rural fence (5 strand plain wire)

- Bridge
- Gate/Koala Grid
- Koala Grid

Coordinate System: MGA Zone 56 (GDA 94)

Image Source:
Image © NearMap 2018
Dated: 2/11/2018

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I:\...\18194\Figures\RP1\20190824\Figure 9. Location of Koala Grids and Bridges

Figure 9. Location of Koala Grids and Bridges

0 100 200 300 400 m

Appendix D MPW Stage 2 Weed, Pest and Vermin Management Protocol

1. Purpose

This Weed, Pest and Vermin Management Protocol explains the actions and measures to be implemented if any weeds, pest species and/or vermin are found at the Development site. To date, 12 weeds listed as priority weeds for the Greater Sydney Region under the Biosecurity Act 2015, of which nine are also listed as Weeds of National Significance (WoNS) (Australian Weeds Committee 2010) have been identified the Development site.

This Weed, Pest and Vermin Management Protocol prescribes measures to manage weeds, pests and vermin that may be identified at the Development site, in accordance with the *Biosecurity Act 2015* and the *Pesticides Act 1999* and *Pesticides Regulation 2017*. The *Biosecurity Act 2015* repeals the *Noxious Weed Act 1993* as of 1 July 2017.

2. Training

All personnel undertaking operational activities at the Development site will be inducted on the identification of priority weed species/WoNS, pest species and vermin that may occur at the Development site and will be trained in this protocol through a site induction.

3. Protocol

3.1. Prevent introduction of noxious weeds, pest species and/or vermin

The following management measures must be implemented to prevent the introduction of weeds to the Development site:

- Vehicles, equipment, materials and footwear are to be clean on entry (free of soil, mud and/or seeds) to minimise the introduction or spread of weeds.
- Undertake weekly inspections of landscaped, to identify the presence of establishing weeds.

3.2. Identification of weeds, pest species and/or vermin

The movement of people, plant and equipment during construction activities has the potential to introduce weed propagules to the construction footprint. Disturbed areas (i.e. where the soil profile has been disturbed by vegetation clearing and/or earthworks) are most susceptible to the establishment of weeds. Known weed species are listed in the table below.

Table D-1 Known weed species

Weed	Status
Alligator Weed; *Alternanthera philoxeroides*	WoNS, priority weed
Ground Asparagus; *Asparagus aethiopicus*	WoNS, priority weed

Weed	Status
Bridal Creeper; *Asparagus asparagoides*	WoNS, priority weed
Boneseed; *Chrysanthemoides monilifera* subsp. *monilifera*	WoNS, priority weed
Bitou Bush; *Chrysanthemoides monilifera* subsp. *rotundata*	WoNS, priority weed
Lantana; *Lantana camara*	WoNS, priority weed
Blackberry; *Rubus fruticosus*	WoNS, priority weed
Sagittaria; *Sagittaria platyphylla*	WoNS, priority weed
Salvinia; *Salvinia molesta*	WoNS, priority weed
Fireweed; *Senecio madagascariensis*	WoNS, priority weed
Giant Reed; *Arundo donax*	Priority weed
Peruvian Primrose; *Ludwigia peruviana*	Priority weed
African Olive; *Olea europaea* subsp. *cuspidata*	Priority weed

4. Management of weeds, pest species and/or vermin

If weeds, pests and/or vermin are identified in the Project site, the following steps must be implemented.

1. IDENTIFY WEED, PEST SPECIES AND/OR VERMIN

The HSEQ Manager/Advisor is to contact a suitably qualified Ecologist, who will identify the weed, pest or vermin to species level.

2. REMOVE WEED, PEST SPECIES AND/OR VERMIN

The Ecologist will recommend management measures specific to the species identified in the Project site. Management measures may include:

- Physical removal of weed species.
- Application of herbicides for chemical removal of a weed species in accordance with requirements of the *Pesticides Act 1999* and *Pesticides Regulation 2017*.
- Record details of any pesticide or herbicide used in accordance with the *Pesticides Regulation 2017*
- Disposal of weed and non-native vegetation.
- Capture or deterrent of a fauna pest species.

- Capture fauna vermin species or removal of flora vermin species.

3. CONTINUE MONITORING FOR WEED, PEST SPECIES AND/OR VERMIN

The HSEQ Manager/Advisor must ensure that the weed, pest species or vermin is included in subsequent inductions. Subsequent inspections must include inspections of areas from which weeds, pest species or vermin have been removed.

Inspect the Development site on a regular basis, no less than every three months, to ensure that the measures in this protocol are working effectively, and that pests, vermin or noxious weeds are not present on the Development site in sufficient numbers to pose an environmental hazard, or cause the loss of amenity in the surrounding area.

Appendix E Biosecurity Protocol

1. Purpose

This Biosecurity Protocol outlines the actions and measures to be implemented if any biosecurity matter or incident arises during the operation of Moorebank Intermodal Precinct (MIP) – Precinct West, under the MPW Stage 2 (SSD 7709) development consent (the Development). The EPBC 2011/6086 Approval for the Moorebank Intermodal Terminal Project was granted by the DotEE (now DCCEEW) in September 2016.

Condition 7(d) of the EPBC 2011/6086 Approval for the Moorebank Intermodal Terminal Project, granted by the DotEE (now DCCEEW) in September 2016, requires detailed biosecurity protocols in relation to international and interstate container movements. This Biosecurity Protocol prescribes measures to manage biosecurity threats that may be identified during operations at the Development, in accordance with the NSW *Biosecurity Act 2015* and the *Biosecurity Regulation 2017*.

2. Training

All personnel undertaking operational activities at the Development will be inducted on the identification of biosecurity threats and carriers and will be trained in this protocol through Toolbox Talks or site induction. In addition, any officers authorised under the *Biosecurity Act* 2015 must complete the Biosecurity Legislation Training available on the NSW DPHI website (https://www.nsw.gov.au/departments-and-agencies/department-of-planning-housing-and-infrastructure).

3. Protocol

General Biosecurity Duty

The following protocol has been developed in accordance with the *Biosecurity Act* 2015 Section 8 & 9 and is implemented to prevent the biosecurity threat at the Development site:

- Biosecurity directions are given consistent with any relevant policy and procedure for the management of biosecurity risk. In absence of policy or procedure authorised personnel should consult with relevant technical and compliance staff;
- When entering property or a premises to confirm or otherwise that a person has complied with a biosecurity direction the authorised officer should do so in accordance with the requirements of Part 8, Division 3, Entry of Premises, of the Act;
- If transporting freight interstate documentation required under the *Biosecurity Act 2015* (e.g. Biosecurity Certificates, Plant Health Certificates and Plant Health Assurance Certificates);
- The responsible authority and the authorised officer must maintain records of all biosecurity directions for a minimum of 7 years;
- Container handling equipment and transport vehicles must be free of soil or pest when leaving the site;
- In case of a biosecurity incident occurring at the Project Site, issue must be immediately notified to the relevant personnel, isolated, and contained to best of the ability. Local Land Services and NSW DPHI must be contacted for treatment

purposes and person, or persons affected must not leave the site until cleared by the biosecurity officer.

Identification of Biosecurity Threat

The Development includes operation of an Intermodal Terminal (IMT) to support a container freight. The IMT facility would support the transport of freight by rail between Victoria, Queensland, and regional NSW. They would be unloaded, with freight distributed through a container flow. The empty trains would then be re-loaded with freight containers from the determined locations. Full trains would then be sent interstate, intrastate or via port shuttle to a Sydney based port (e.g., Port Botany) by means of the Rail link and the Southern Sydney Freight Line (SSFL).

12 weeds listed as priority weeds for Greater Sydney have been identified. A Weed, Pest, and Vermin Management Protocol, included as Appendix D MPW Stage 2 Weed, Pest and Vermin Management Protocol of the OFFMP, outlines the actions and measures to be implemented if any weeds, pest species and/or vermin are found at MIP – Precinct West, in accordance with the *Biosecurity Act 2015* and the *Pesticides Act 1999* and *Pesticides Regulation 2017*. The *Biosecurity Act 2015* repeals the *Noxious Weed Act 1993* as of 1 July *2017*.

Management of Biosecurity threat

Strategies to deal with biosecurity issues such as pests and diseases encompasses three broad categories. These categories have been mentioned below:

1. Prevention

Prevention activities are focused on keeping pests and diseases offshore and reducing the chance of them entering Australia. Activities include offshore inspections and verification; surveillance and intelligence gathering; verification that imports meet conditions and interceptions of weeds and pests may be present in cargo, vessels. The Australian Government generally undertake these activities. For the terminal managers and warehouse tenants will provide required documentation outlining the inspections and verification attained.

2. Eradication

These activities may be undertaken when a high impact pests or disease is detected in Australia to prevent it from becoming established. These activities aim to destroy known or suspected infections or infestations, limit the spread of the pests or diseases, and prevent it from becoming established. They may include activating a national response under longstanding emergency response deeds for animal plant or environmental pests or diseases. For the IMT, a container wash down facility will be charge of excluding wash area waste from the stormwater system. The facility will be designed and operated to avoid overspray from foams, detergents, mud, or fugitive emissions outside wash down bays. It will also include oily water separation, water treatment and recycling and, lastly, the precinct will comply with Sydney Water trade waste requirements for discharge to the sewer.

3. Containment

These activities aim to restrict a pest or disease to a defined area and to limit its spread. Containment can occur as part of an eradication response (emergency containment) or where the pest or disease Is not eradicable but can be confined to a limited area. Where a pest or disease is contained to a defined area the emergency response deeds make provision for eradication should they occur in a new area or in a different, more virulent, form.

Appendix F Unexpected Finds Protocol – Biodiversity

1. Purpose

This Unexpected Finds Protocol explains the actions and measures to be implemented if any threatened flora and/or fauna species or threatened ecological communities that have not been previously recorded within the Development are identified during operation.

2. Training

All personnel undertaking activities within the Development will be included on the identification of known and potential threatened species and ecological communities occurring onsite, and will be trained in this protocol through Toolbox talks or a site induction.

3. Protocol

Upon detection of threatened species or ecological community during operation, the following steps must be followed.

1. **STOP ALL WORK** in the vicinity of the find. Immediately notify the HSEQ Manager/ Area Manager who will notify the Development Ecologist and Operational Manager. The Project Ecologist must confirm the presence f the threatened species.
2. **EXCLUSION ZONE.** In consultation with the Development Ecologist, create a buffer zone/ exclusion zone around the find.
3. **EXTERNAL NOTIFICATION.** Operational Manager to notify OEH of previously unidentified species.
4. **ASSESS IMPACT.** An assessment is to be undertaken by the Area Manager, Operational Manager and Development Ecologist in consultation with OEH to identify the flora and/or fauna species level, the likely impact to them and appropriate management options, such as re-location measure.
5. **OBTAIN APPROVALS.** Obtain any relevant licences, permits or approvals required if the threatened species/ ecological community is likely to be significantly impacted. Consultation with OEH must be completed for any proposed amendment to location or reclassification of threatened species, populations and ecological communities as identified in the updated BAR.
6. **RECOMMENCE WORKS.** Any works may recommence once the HSEQ Manager has:
   - Obtained approvals as required
   - Confirmed that all corrective actions and additional mitigation measures have been implemented.
7. **UPDATE PLANS AND PROCEDURES.** The HSEQ Manager must ensure that the threatened species/ ecological community is included in subsequent site plans and/or sensitive area drawings, inductions and Toolbox Talks. The HSEQ Manager must provide information to enable an update of ecological monitoring and/or biodiversity offset requirements.