

MOOREBANK PRECINCT WEST (SSD-5066)

EPBC Biodiversity Offset Strategy and Management Plan

18 NOVEMBER 2019

Incorporating



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EPBC Biodiversity Offset Strategy

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GLOSSARY AND KEY TERMS

Table A-1 provides a summary of the key acronyms and terms that are included within this Plan.

Table A-1: Glossary and key terms

Term	Meaning
Acronyms	
BAR	Biodiversity Assessment Report
BC Act	<i>Biodiversity Conservation Act 2016</i>
BCF	Biodiversity Conservation Fund
BMP	Biodiversity Management Implementation Plan
BOP	Biodiversity Offset Package (this document)
BOSaMP	Biodiversity Offset Strategy and Management Plan
CoA	Condition of Approval
DotEE	Commonwealth Department of Environment and Energy
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
FBA	Framework for Biodiversity Assessment
GPS	Global Positioning System
IMEX	Import Export Terminal
MNES	Matters of National Environmental Significance
MPE	Moorebank Precinct East
MPW	Moorebank Precinct West
OEH	NSW Office of Environment and Heritage
PAC	Planning Assessment Commission
PCT	Plant Community Type
RtS	Response to Submissions [report]
SIMTA	Sydney Intermodal Terminal Alliance
SSFL	Southern Sydney Freight Line
TEC	Threatened Ecological Community
TFOMP	Threatened Flora Offset Management Plan
TSC Act	<i>Threatened Species Conservation Act 1995</i>
Key Terms	
Biobanking agreement	An agreement entered into between the owner of the land and the NSW Minister for the Environment for the purpose of establishing a biobank site. Once registered, the Biobanking Agreement runs with the land.
Biobanking credit	Credits generated through securing and improving the condition of vegetation by entering into a Biobanking Agreement under the NSW Biobanking Scheme. Credits are bought and sold in an open

Term	Meaning
	market before being retired for the purpose of fulfilling a biodiversity offset requirement.
Biobanking credit calculator	An online tool that determines the number of biobanking credits that would be created by improving the site value and landscape value of a given patch of vegetation.
Biobank site	Land that is designated by a Biobanking Agreement to be a Biobank Site under the NSW Biobanking Scheme. The BA341 biobank site referenced in this document includes three identified offset areas: Wattle Grove Offset Area, Moorebank Offset Area, and Casula Offset Area (shown in Figure 12 of this strategy).
Boot land	The area of native vegetation located to the east of Moorebank Avenue, north of the East Hills rail line and south and east of the MPE site. Owned by the Commonwealth of Australia. Lot 4 DP 1197707.
Moorebank Precinct West (MPW) Concept Approval (Concept approval and Early Works)	MPW Concept and Stage 1 Approval (SSD 5066) granted on 3 June 2016 for the development of the MPW Intermodal terminal facility at Moorebank and the undertaking of the Early Works. Granted under Part 4, Division 4.1 of the <i>Environmental Planning and Assessment Act 1979</i> . This reference also includes associated Conditions of Approval and Revised Environmental Management Measures, which form part of the documentation for the approval. N.B. Previously the MIC Concept Approval
Moorebank Precinct West (MPW) Concept Development Site	Area of impact assessed in the FBA assessment (PB 2015b) prepared for the MPW Concept RfS.
Moorebank Precinct West (MPW) Concept EIS	The Environmental Impact Statement prepared to support the application for approval of the MPW Concept and Early Works (Stage 1) under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> and the <i>Environmental Planning and Assessment Act 1979</i> . N.B. Previously the MIC Concept Plan EIS
Moorebank Precinct West (MPW) EPBC Approval	Commonwealth Approval (No. 2011/6086), granted in mid-2016 under the <i>Environmental Biodiversity Protection Conservation Act 1999</i> , for the impact of the MPW Project on listed threatened species and communities and impacts on the environment by a Commonwealth agency.
Moorebank Precinct West (MPW) Project	The MPW Intermodal Terminal Facility as approved under the MPW Concept Approval (5066) and the MPW EPBC Approval (2011/6086). N.B. Previously the MIC Project
Moorebank Precinct West (MPW) site	The site which is the subject of the MPW Concept Approval, MPW EPBC Approval and MPW Planning Proposal (comprising Lot 1 DP1197707 and Lots 100, 101 DP1049508 and Lot 2 DP 1197707). The MPW site does not include the rail link as referenced in the MPW Concept Approval or MPE Concept Approval. N.B. Previously the MIC site.

1 INTRODUCTION

This Biodiversity Offset Strategy and Management Plan (MPW EPBC BOSaMP) has been prepared to address Condition 14 of the EPBC Concept approval of the Moorebank Precinct West project. The Moorebank Precinct West project includes the construction and operation of an intermodal terminal facility, Rail link connection and warehousing facilities at Moorebank, NSW.

1.1 Background

The Sydney Intermodal Terminal Alliance (SIMTA) have received Commonwealth and State Concept approval for the Moorebank Precinct West (MPW) Project. The MPW Project involves the development of an intermodal terminal, including rail link connection to the Southern Sydney Freight Line (SSFL), warehouse and distribution facilities with ancillary offices, a freight village (ancillary site and operational services) and a road entry and exit point from Moorebank Avenue. The MPW Project (on the MPW site) is located about 27 kilometres south-west of the Sydney Central Business District (CBD) and about 26 km west of Port Botany. Alongside MPW, to the east of Moorebank Avenue, is Moorebank Project East (MPE). This project is not the focus of the BOS since the offsets associated with this project have been documented elsewhere.

The key approvals for the MPW Project relevant to this report are identified in Table 1.

Table 1: Planning approvals overview (as relevant)

Approval name/Ref.	Approval date/status	Relevance
Commonwealth approvals		
MPW EPBC Approval (2011/6086)	27 September 2016. Variation approved on 17 September 2019.	These Conditions of Approval are the subject of this MPW EPBC BOSaMP. The MPW EPBC Approval allows for the construction of an intermodal terminal including rail freight connections, warehousing and ancillary facilities. For the purpose of seeking approval under the NSW planning system, the project has been split into three stages. The EPBC application and subsequent approval (2011/6086) covers all stages under the NSW SSD approvals.
NSW State approvals		
MPW Concept Approval (inc. Early Works) (SSD 14-5066)	3 June 2016	Requirement for the preparation of a biodiversity offset package. That offset package considers State and Commonwealth listed communities and species, whereas this MPW EPBC BOSaMP focusses on Commonwealth listed communities and species.

Approval name/Ref.	Approval date/status	Relevance
MPW Stage 2 Proposal (SSD 16-7709)	11 November 2019	The clearing of vegetation that would require the offsets presented in this report are associated with MPW Stage 2.
MPW Stage 3 (Reference TBC)	Yet to be submitted for assessment.	It is not anticipated that this stage of the project would have any further biodiversity impacts. Therefore, further offsets (at a Commonwealth or State level) are unlikely to be required.

Upgrade works would be required along Moorebank Avenue as part of the MPW and MPE Projects and the impacts associated with these upgrade works are contained within the Moorebank Avenue site. The biodiversity impacts to this site have been delineated and assessed in both the MPE Stage 2 BAR and the MPW Stage 2 BAR. The reason for this was due to uncertainty in approval timeframes for both MPW Stage 2 and MPE Stage 2. Now that the MPE Stage 2 Project has been approved (SSD 7628, on the 1 February 2018) it is likely that works within the Moorebank Avenue site would be undertaken as part of the MPE Stage 2 approval. The impacts and offsets associated with the Moorebank Avenue site have been delineated where relevant in this Biodiversity Offset Strategy.

1.2 Purpose

On 26 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 2014a) and the Framework for Biodiversity Assessment (FBA) (OEH 2014b) are Accredited Processes. Offsets that are calculated and sourced in accordance with this Policy and assessment framework are taken to satisfy the requirements under the EPBC Act.

The purpose of this MPW EPBC BOSaMP is to establish a commitment to offsetting the impacts of the MPW Project on threatened species, populations and communities protected under the EPBC Act, in accordance with the terms of the bilateral agreement. More specifically, the purpose of this BOSaMP is to satisfy Condition 14 of the MPW EPBC Approval, as outlined in Table 2. Since Condition 14 is a Commonwealth condition, and relates specifically to protected biodiversity values listed under the EPBC Act, this BOSaMP has been focussed on considering impacts to Matters of National Environmental Significance (MNES). Other documentation has been prepared to consider the requirements for biodiversity offsets associated with the impacts of MPW Early Works on State listed TECs and threatened species.

The requirement for biodiversity offsets is most likely to result from impacts of the Stage 2 proposal of the MPW Project (as Early Works are not anticipated to result in impacts to MNES). MPW Stage 2 was approved on 11 November 2019 by the NSW State Government. Separate offset documentation will be provided to satisfy the CoA for that approval. This BOSaMP will be updated and reissued to DotEE if changes to the proposed offset strategy eventuate during the MPW Stage 2 offsetting process.

Table 2: Relevant conditions of approval and how they have been addressed in this BOSaMP

Reference	Condition	Where addressed
MPW EPBC Approval (2011/6086)		

Reference	Condition	Where addressed
14	To address residual impacts on protected biodiversity values, including <i>listed threatened species and communities</i> , the person taking the action must submit to the Minister for approval a Biodiversity Offset Strategy and Management Plan (BOSaMP). The BOSaMP must be prepared by a <i>suitably qualified expert</i> and must:	This BOSaMP has been prepared to satisfy the requirements of Condition 14 (a-f), specifically to address the residual impacts on Commonwealth protected biodiversity values. This BOSaMP has been prepared by Suitably Qualified Expert.
14 (a)	be consistent with the biodiversity offsets strategy provided at Appendix E to the finalised EIS	Section 3.2
14 (b)	incorporate all measures 6S, 6U, 6W and 6Y to 6AA from Table 7.1 of the finalised EIS that are described as 'mandatory'	Table 2
14 (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 protocols	Table 2
14 (d)	offset impacts on protected biodiversity values including listed threatened species and communities in accordance with the FBA	Section 3.5 demonstrates how the proposed strategy is consistent with the FBA.
14 (e)	include map(s) and shapefiles that identify the location and boundaries of all offset sites and	Figure 3 (shapefiles will be provided separately)
14 (f)	involve the protection and management in perpetuity of the 'Casula', 'Moorebank' and 'Wattle Grove' Offset Areas identified at Annexure 2 (now known as the BA341 biobank site).	Section 3.1
14 (continued)	The approval holder must not commence construction other than directly required for the upgrade of Moorebank Avenue until the BOSaMP has been approved by the Minister in writing. The approved BOSaMP must be implemented.	Construction (as defined under EPBC Approval 2011/6086) has not yet commenced within the MPW site. Approval of this BOSaMP is sought so that construction may commence.

Conditions 14(b) and 14(c) refer to elements of the Revised Environmental Mitigation Measures, listed in Table 7.1 of the Supplementary Response to Submissions (RtS) report (Parsons Brinckerhoff 2015). The specific mitigation measures referred to in condition 14 have been extracted and are detailed in Table 3 below to demonstrate that they have been adequately addressed. These mitigation measures relate to Stage 2 of the MPW project (rather than the Stage 1 Early Works). MPW Stage 2 is subject to ongoing planning and assessment and the preparation of specific plans listed in Table 3 will be completed prior to commencement of construction.

Several of the mitigation measures in Table 3 relate to the Management Plan for Restoration of the Riparian Zone of the Georges River (Appendix E of Technical Paper 3 – Ecological Impact Assessment in Volume 4 of the EIS) (Parsons Brinckerhoff). Much of the area that was covered by this management plan now forms the BA341 Biobank site (see Section 3.1). Through design development, some of the areas that were identified in that management plan are now located within the MPW Stage 2 boundary. Management of these areas would be in accordance with the MPW Stage 2 Construction Flora and Fauna Management Plan (CFFMP). Since

these areas are outside of the biobank site and are not being used as an offset, their management is not relevant to this BOSaMP.

Table 3: Details of condition 14(b) and 14(c) and how they are addressed

No.	Mitigation Measure	Timing	How addressed
6S	The Project would include a long-term program for the duration of the Project operation of weed removal and riparian vegetation restoration within parts of the Georges River corridor, which would include monitoring landscaped areas for the presence of noxious and environmental weeds. A preliminary weed management strategy is provided in Appendix E of Technical Paper 3 – Ecological Impact Assessment in Volume 4 of the EIS, setting out the principles for the management of the riparian zone.	Pre-construction, construction and operation	The management of land within the BA341 biobank site that adjoins the Georges River is documented in the Biobanking Management Action Plan (WSP 2018). Management of areas adjoining the Georges River that do not occur within the BA341 biobank site (i.e. within the MPW Stage 2 site) would be documented in the Construction Flora and Fauna management Plan (CFFMP) to be prepared prior to the commencement of construction of MPW Stage 2.
6U	The management of the conservation area along the Georges River would include management of fire regimes to promote biodiversity conservation.	Pre-construction, construction and operation	The BA 341 biobank site along the Georges River (Moorebank and Casula offset area) will be managed in accordance with a Biobanking management action plan that will ensure that an appropriate 'fire for conservation' program is implemented. Management of areas adjoining the Georges River that do not occur within the BA341 biobank site (i.e. within the MPW Stage 2 site) would be documented in the Construction Flora and Fauna management Plan (CFFMP) to be prepared prior to the commencement of construction of MPW Stage 2.
6W	The management plan for the Georges River riparian corridor (refer to Appendix E of Technical Paper 3 – Ecological Impact Assessment in Volume 4 of the EIS) would be implemented and would include a monitoring program designed to detect operational impacts.	Operation	A large proportion of the Georges River riparian corridor occurs within the biobank site. The BA341 biobank site will be managed in accordance with the Management Action Plan prepared as a part of the Biobanking Agreement (WSP 2018). This management will commence following the execution of the agreement and the sale of a requisite number of credits. Management of areas adjoining the Georges River that do not occur within the

No.	Mitigation Measure	Timing	How addressed
			BA341 biobank site (i.e. within the MPW Stage 2 site) would be documented in the Construction Flora and Fauna management Plan (CFFMP) to be prepared prior to the commencement of construction of MPW Stage 2.
6Y	The Biodiversity Offsets Strategy detailed in Appendix C of the Response to Submissions report will be implemented.	Detailed design, construction and operation	This BOSaMP is consistent with the EIS BOS (Parsons Brinckerhoff 2015) and this BOSaMP will inform any future biodiversity offsets that will be implemented in accordance with the MPW Stage 2 CoA.
6Z	<p>A riparian restoration plan (or equivalent) for the Georges River riparian zone and Casula offset area would be implemented. This plan includes areas outside the Conservation Area, including areas along the western bank of the Georges River. The objectives of the plan include:</p> <ul style="list-style-type: none"> • Restoration and revegetation of the riparian zone of the site to be consistent with, and complementary to, areas of remnant indigenous vegetation within the Georges River corridor (approximately 16.7 hectares (ha) of land to be revegetated); • Long-term eradication and suppression of the most detrimental weed species on the site including vine and woody weeds (approximately 20.0 ha of land to undergo a weed control program); • Consolidation and widening of the existing vegetation corridor of Georges River where feasible; improved habitat values for native animals and plants, particularly threatened species; and • Management of undesirable fauna species including introduced animal species and some Australian native animals which may be detrimental to the biodiversity of the Project site. 	Detailed design, construction and operation	<p>The majority of the riparian zone is located within the BA341 biobank site and would be managed in accordance with the Management Action Plan prepared as a part of the Biobanking Agreement (WSP 2018).</p> <p>Management of areas adjoining the Georges River that do not occur within the BA341 biobank site (i.e. within the MPW Stage 2 site) would be documented in the Construction Flora and Fauna management Plan (CFFMP) to be prepared prior to the commencement of construction of MPW Stage 2. This plan will make note of the management plan in Appendix E of Technical Paper 3 – Ecological Impact Assessment in Volume 4 of the EIS.</p>

No.	Mitigation Measure	Timing	How addressed
6AA	<p>Measures to manage undesirable animal species include:</p> <ul style="list-style-type: none"> Monitoring of the site for the presence of introduced and undesirable animal species as part of fauna monitoring; Cooperating with government bodies, interest groups and adjacent landowners in regional pest management programs including the NSW Department of Primary Industries (DPI), the NS Office of Environment and Heritage (OEH), and the Invasive Animal Cooperative Research Centre interest groups (e.g. Australasian Pest Bird Network and local landowners) Managing the use of nest boxes by undesirable species by removing the eggs and/or young of introduced animals (e.g. Black Rat and Common Myna) under appropriate permit conditions; Removing any insect colonies (bees, wasps, termites, ants found in nest boxes); and Modifying or moving nest boxes to discourage use by undesirable species. 	Construction and operation	Measures to monitor and manage pest animal species within the Moorebank offset areas have been prescribed in the biobanking Management Action Plan (WSP 2018). A Nest Box Plan was prepared as a part of the MPW Early Works Package. This plan outlined the number and location of boxes to be installed. These boxes are subject to ongoing monitoring and adaptive management including the management of undesirable species usage.

1.3 Objectives

The overarching objective for this BOSaMP is to demonstrate that adequate, suitable offsets have been sourced and provide guidance for the delivery of future biodiversity offsets that achieves a long-term conservation gain for the EPBC Act listed threatened species and communities impacted by the MPW Project.

The measures used to gauge success of this objective will be:

- Identify the remaining impacts of the project (following avoidance, minimisation and mitigation) that trigger the need for offsets
- Identify the quantum of available credits generated by the Moorebank, Wattle Grove and Casula offset sites
- Identify the shortfall in credits generated by these offset sites
- Identify mechanisms to meet the offset obligation (including options where relevant).

1.4 Alignment to other documents

Documents that have previously been prepared, that have been considered when preparing this BOSaMP include:

- Moorebank Intermodal Company: BioBanking Assessment Report (WSP 2018)

Moorebank Precinct West (SSD-5066)

- Biobanking Agreement for biobank site BA341
- MPW Concept Plan and Early Works Supplementary RtS Biodiversity Offset Strategy (Parsons Brinckerhoff 2015)
- MPE Stage 1 Biodiversity Offset Strategy (Arcadis 2017a)
- MPE Stage 1 Threatened Flora Species Management Plan (Arcadis 2017b)

2 MPW PROJECT IMPACTS

2.1 Avoid, minimise and mitigate

This section describes how the potential impacts to threatened species and ecological communities from the MPW project have been avoided and minimised.

2.1.1 Stage 1 Early Works

The scope of the MPW Stage 1 Early Works Package was originally designed to avoid all impacts to threatened species and ecological communities, aside from what is required for early works. Adequate protection of these values (such as temporary fencing and no-go zones) was implemented prior to the commencement of Early Works. To date, no impacts to threatened species or ecological communities have been required for Early Works.

2.1.2 MPW Stage 2

Section 8.1 of the MPW Stage 2 Response to Submissions BAR (MPW Stage 2 BAR) (Arcadis 2019) details the measures that have been undertaken to avoid and minimise impacts to biodiversity during site selection and planning. In summary, early identification of ecological constraints (including threatened species and ecological communities) enabled the avoidance and minimisation of impacts to biodiversity values through adjustments to the operational site layout.

2.2 MPW Residual Impacts

This section describes the unavoidable impacts to threatened ecological communities (TECs) and threatened species associated with the MPW Project.

2.2.1 Stage 1 Early Works

Although permitted for the purpose of Early Works, no threatened species or communities (listed under the EPBC Act or otherwise) have been cleared to date for Early Works. An exclusion zone was established around the threatened species and communities on site. The pre-construction and construction works for the Early Works package are still on-going but have not resulted in impacts to threatened species or TECs to date. In accordance with the FBA (OEH 2014b) offset thresholds, biodiversity offsets are not currently required for the MPW Early Works Package.

If impacts to EPBC-listed TECs or species become likely as a result of Early Works, they will be offset prior to the impact taking place and in accordance with Section 3.

Accordingly, this stage of MPW is not considered further within this BOSaMP.

2.2.2 MPW Stage 2 – Commencement of construction

MPW Stage 2 received NSW Development Consent on 11 November 2019. The impacts presented below are based on the current design, as presented in the MPW Stage 2 updated RtS BAR (Arcadis 2019). Minor savings or encroachments may eventuate through detailed design or following pre-clearing surveys. This MPW EPBC BOSaMP has been prepared in a way that would allow for these minor alterations to be captured (see Section 3.7). Construction associated with Stage 2 cannot commence until this BOSaMP is approved by the Commonwealth Minister for the Environment.

The impacts of the MPW Project on EPBC Act TECs and threatened species are outlined in Section 2.2.2.1 and Section 2.2.2.2 below.

In November 2018, a Koala was observed during routine nest box monitoring in the Wattle Grove Offset Area. Following this unexpected find, targeted surveys on the MPW site in December 2018 detected Koala scats at five locations in the south-east of the MPW site and at 14 locations in the Wattle Grove Offset Area. Given the lack of previous records of Koalas during surveys of the Moorebank Precinct and the low density of the species indicated by the recent surveys, these records are considered likely to comprise one or more transient or dispersing animals rather than a resident breeding population. Parsons Brinckerhoff (2014) assumed that Koalas occur intermittently on the MPW Site when assessing the impacts of the MPW Concept Plan on the species.

In accordance with OEH advice, based on recent studies, that all vegetation communities occurring on shale-influenced soils should be considered to represent 'high value habitat' for Koalas, all native vegetation communities occurring within the MPW Site have been mapped within a Koala species polygon (Figure 2). Whilst there are no additional impacts resulting from the MPW Stage 2 proposal, the identification of Koala scats and subsequent preparation of a species polygon means that the species must now be offset in accordance with the FBA. Additional detail is provided in Section 2.2.2.2.

2.2.2.1 Threatened Ecological Communities

Clearing of one EPBC Act listed TEC is required for the MPW Project, the details of which are outlined in the MPW Stage 2 BAR and SSD 7709 Condition of Consent B157. The areas of EPBC Act listed TEC to be impacted by the MPW Project are shown in Figure 1 and the associated ecosystem credit requirements are listed in Table 4. This MPW EPBC BOSaMP has been prepared to guide the offset of these TEC impacts only.

Table 4: Impacts and ecosystem credits associated with the MPW Project

Plant Community Type (PCT)	Associated TECs	Moorebank Avenue site		MPW Stage 2	
		Area (ha)	Credits required	Area (ha)	Credits required
Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin (ME003)	Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion (EPBC Act – Endangered)	3.73	167 ¹	9.81	371

2.2.2.2 Threatened Flora and Fauna Species

¹ The impacts within the Moorebank Avenue site have been assessed and offset under the MPE Stage 1 State approval. The credits presented in Table 4 are consistent with the requirements of SSD 7628 CoC B104 which are greater than the MPW Stage 2 offset calculations for the same vegetation. This is due to the MPW and MPE sites having different landscape values in the FBA credit calculations. .

Two EPBC Act listed threatened flora species and one threatened fauna species have been previously recorded within the MPW Site. The impacts of the MPW project on threatened flora and fauna species are detailed in Table 5. This MPW EPBC BOSaMP has been prepared to guide the offset of these threatened species impacts only.

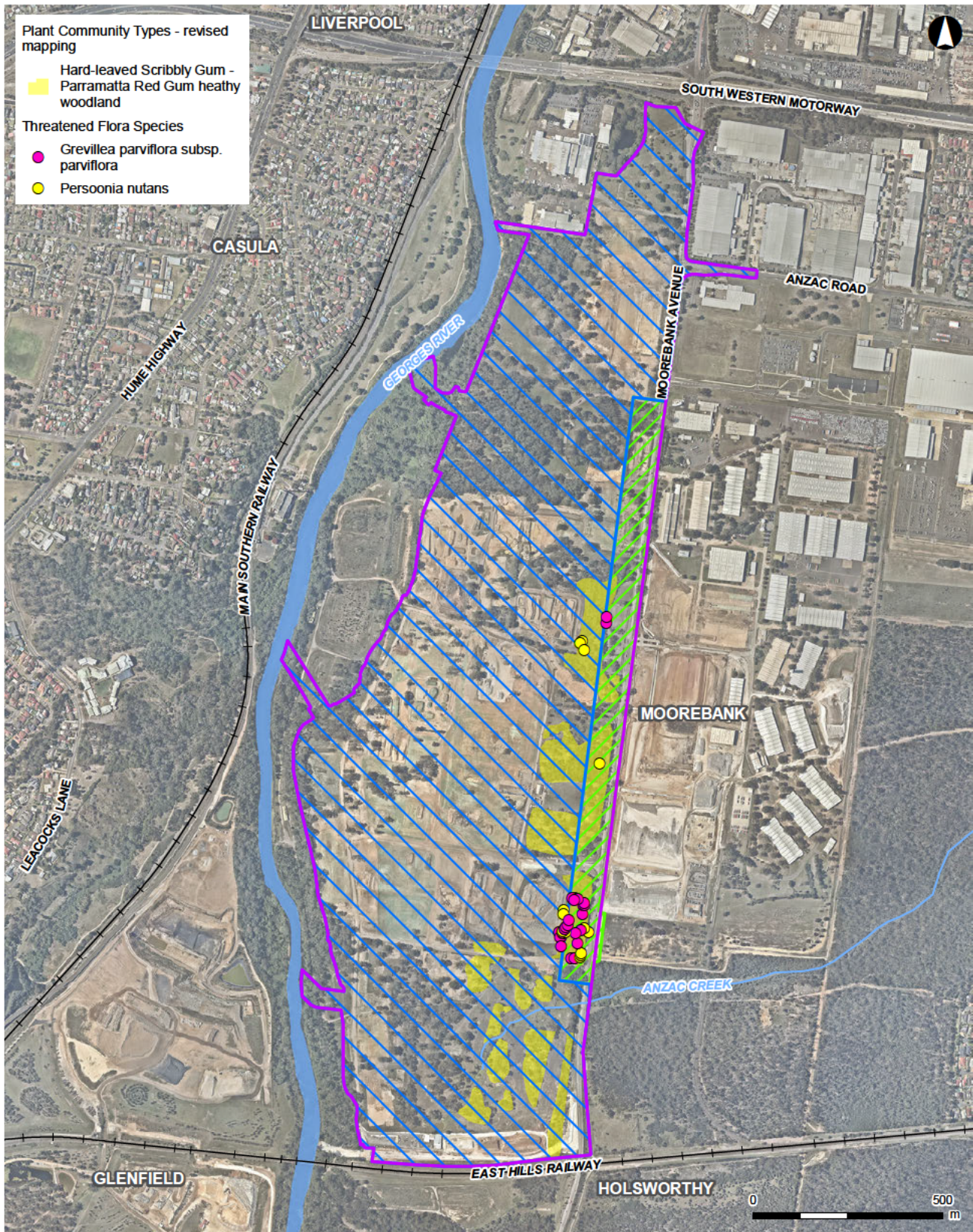
Table 5: Impacts and species credits associated with the MPW Project

Species	Moorebank Avenue site		MPW S2	
	Stems/ area	Credits required	Stems/ area	Credits required
Flora				
Small-flowered Grevillea <i>Grevillea parviflora subsp. parviflora</i>	79	1106	254	3556
Nodding Geebung <i>Persoonia nutans</i>	8	616	8	616
Fauna				
Koala <i>Phascolarctos cinereus</i>	4.54	118	38.15	992

2.2.3 MPW Stage 3

The scope of a future MPW Stage 3 has not yet been clearly defined, however it is anticipated that it would include the construction of warehouses at the southern end of the MPW Stage 2 site. All native vegetation for the MPW Project would be cleared during MPW Stage 1 Early Works and MPW Stage 2. As such, there would be no anticipated vegetation removal and therefore no biodiversity offsets required for the MPW Stage 3 project.

EPBC Biodiversity Offset Strategy



LEGEND

- MPW Stage 2 Construction Area
- MPW Stage 2 site
- Moorebank Avenue site
- Existing railway
- Watercourse

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 Aerial Imagery supplied by nearmap (Dec, 2017)

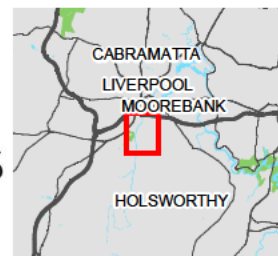
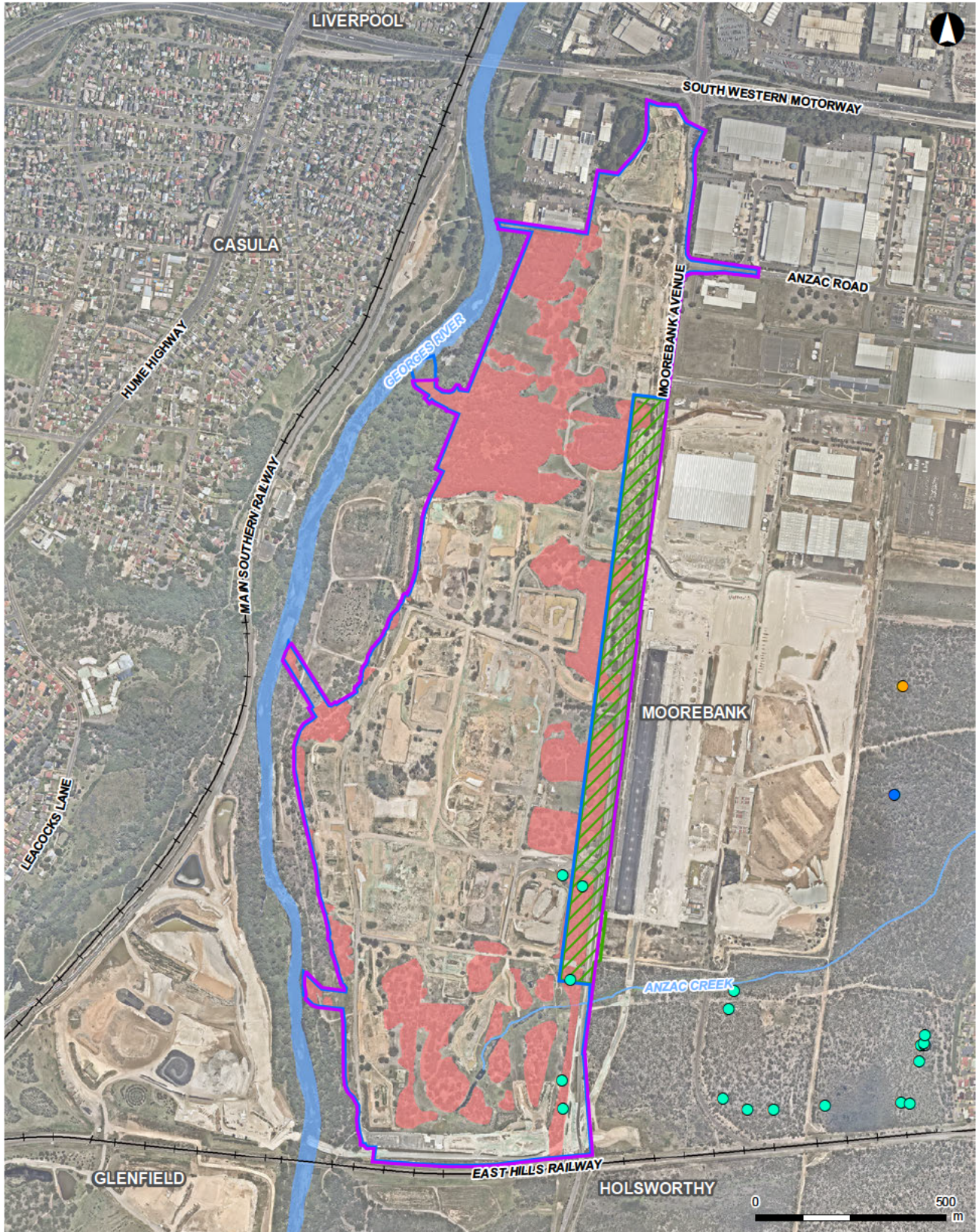


Figure 1: Impacts to EPBC listed threatened flora and ecological communities associated with the MPW project

EPBC Biodiversity Offset Strategy



LEGEND

- Amended Proposal site
- MPW Stage 2 site
- Moorebank Avenue site
- Koala detection dog - scats
- Rapid-SAT - scats
- IR camera - Koala recorded
- Koala species polygon
- Existing railway
- Watercourse

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 Aerial Imagery supplied by reamap (Dec, 2018)

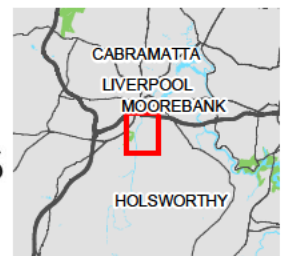


Figure 2: Impacts to threatened fauna associated with the MPW project

3 MPW PROJECT OFFSETS

A BOS was prepared as a part of the Environmental Impact Statement (EIS) (Parsons Brinckerhoff 2015) (hereinafter referred to as the MPW Concept BOS) and updated for the RtS (and supplementary RtS) for MPW Concept Approval. The MPW Concept BOS introduced the concept of incorporating an offset area into the Moorebank Precinct for the purpose of generating biodiversity offsets for the Moorebank Precinct. The details of this biobank site are provided in Section 3.1 below.

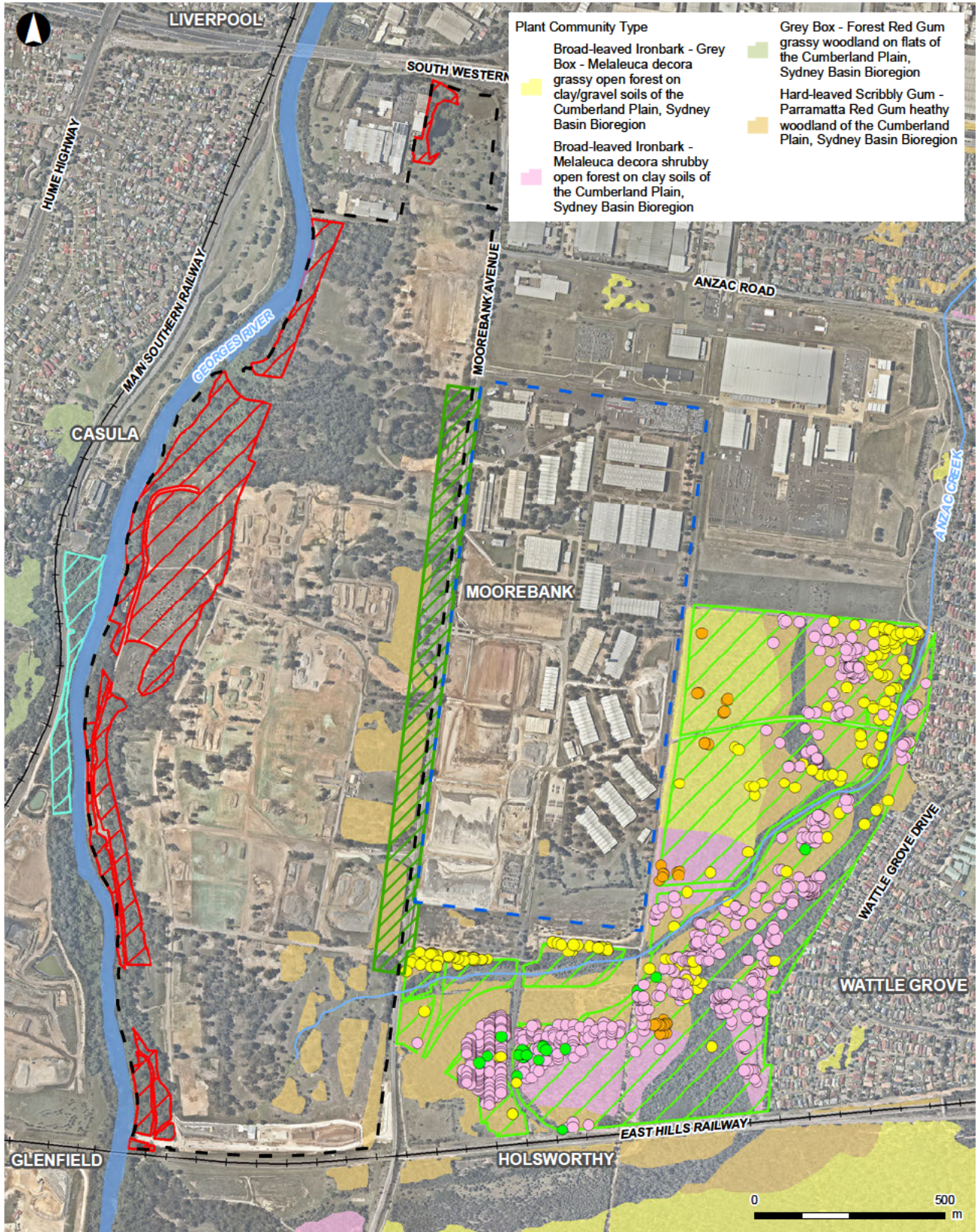
3.1 Moorebank Precinct biobank site

The Moorebank Precinct biobank site (BA 341) (hereinafter referred to as the BA 341 biobank site) is comprised of three biodiversity offset areas, as outlined in Figure 3. The three offset areas include:

- Wattle Grove Offset Area – management to maintain or improve the condition of vegetation and habitat of TECs (approximately 73.81 hectares) within part of the eastern portion of Lot 4 DP 1197707 (the Boot land) east of Moorebank Avenue, which adjoins the East Hills Railway Line to the south, land owned by the SIMTA consortium to the northwest, and the residential area of the Wattle Grove to the east.
- Moorebank Offset Area – Georges River riparian zone: restoration and management of the Georges River riparian zone (approximately 32.3–38.6 hectares) including the eastern side of the river corridor from approximately 300 metres south of the M5 Motorway for a length of approximately 2.5 km south of the East Hills Railway Line within part of Lot 1 DP 1197707 and part of Lot 100 DP 1049508.
- Casula Offset Area (also referred to as the 'hourglass land'): restoration and management of vegetation within part of Lot 4 DP 1130937 which is an irregular shaped allotment (approximately 3.2 hectares) on the western side of the Georges River.

The BA341 Biobank site is currently being managed in accordance with the executed Biobanking agreement and Management Action Plan (WSP 2018).

EPBC Biodiversity Offset Strategy



- Plant Community Type**
- Broad-leaved Ironbark - Grey Box - Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin Bioregion
 - Broad-leaved Ironbark - Melaleuca decora shrubby open forest on clay soils of the Cumberland Plain, Sydney Basin Bioregion
 - Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion
 - Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin Bioregion

LEGEND

- Casula offset site (Hourglass)
 - Moorebank offset site (Georges River)
 - Wattle Grove offset site (Bootland)
 - MPE site
 - MPW site
 - Moorebank Avenue site
 - Watercourse
 - Existing railway
- Flora Species***
- Acacia bynoeana
 - Acacia pubescens
 - Grevillea parviflora subsp. parviflora
 - Persoonia nutans

*The biobank site is subject to ongoing targeted threatened flora surveys and the extent of threatened species populations is likely to change.

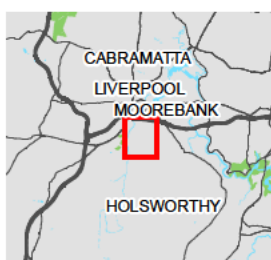
Figure 3: EPBC listed threatened flora and ecological communities within the biobank site

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3.2 EIS Biodiversity Offset Strategy

The offset strategies that were proposed in the MPW Concept BOS included the consideration of both on-site and off-site offset sites or local area schemes that contribute to the long-term conservation of threatened species and communities. The offset strategies that were chosen for the MPW Project included a combination of:

- On-site offsets – securely conserving and improving the condition of existing riparian habitat or providing a buffer to an area of existing habitat within the Project site;
- Off-site offsets – securing and improving the condition of existing habitats at other sites in the immediate locality of the Project site; and
- Purchase of biodiversity credits under the NSW Biobanking Scheme.

At the time of preparation of the MPW Concept BOS, the potential Moorebank Precinct offset areas were subject to ongoing review and refinement. Subsequently, the BA341 Biobanking Agreement has been executed and there is now certainty regarding the yield of biobanking credits. This MPW EPBC BOSaMP has used this increased certainty to consider offsetting options in more detail than was previously available.

Condition 14 (a) of the EPBC CoA that this MPW EPBC BOSaMP must *be consistent with the biodiversity offsets strategy provided at Appendix E to the finalised EIS* (Table 2). The MPW Concept BOS (Parsons Brinckerhoff 2015) concludes that:

The proposed biodiversity offset strategy consists of a dual direct offset approach including offsets both within and outside the Project site to achieve an improved conservation outcome combining the long-term protection and/or enhancement of existing habitat in moderate to good condition with the restoration, rehabilitation and re-establishment of habitat in moderate condition.

The offset strategy proposed in this MPW EPBC BOSaMP is consistent with a dual direct offset approach since the majority of offsets required for impacts to EPBC Act listed TECs and Threatened species will be sourced from the BA341 biobank site and the shortfall will be made up by credits from off-site sources. Further details of exactly how this dual direct offset approach will be implemented are provided in Section 3.3 below.

3.3 Delivery of offsets

This section details how the EPBC Act listed TEC and threatened species offset requirement will be delivered, in accordance with the NSW Biodiversity Offsets Policy for Major Projects (OEH 2014a) and FBA (OEH 2014b). The preferred mechanism is the retirement of matching credits generated by the BA341 biobank site, followed by matching credits available from offsite offset areas (if required).

3.3.1 BA 341 biobanking credits

The biodiversity offset requirement for MPW Stage 2 (detailed in Table 4 and Table 5, Figure 1 and Figure 2 above) will be partially satisfied through the retirement of credits being generated by the BA341 biobank site. Table 6 and Table 7 outline how the credits being generated by the BA341 biobank site will be allocated to the MPW Stage 2 project and where there will be a shortfall of credits for EPBC Act listed TECs and threatened species.

Table 6: Ecosystem credits available within the Moorebank Precinct offset area and project shortfall

Plant Community Type (PCT)	Associated TECs	BA 341 Biobank site		Moorebank Avenue site		MPW S2 (RtS)		Credits available from BA341 for MPW Stage 2 ²	Credits required to be sourced elsewhere / other means
		Area of PCT	Ecosystem credits generated	Area (ha)	Credits required	Area (ha)	Credits required		
Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin (ME003)	Castlereagh Scribbly Gum Woodland in the Sydney Basin bioregion (TSC Act - Vulnerable)	32.57 ha	431	3.73	167	9.81	371	404	-134
	Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion (EPBC Act – Endangered)								

² Some of the credits being generated by BA341 have already been retired to offset impacts associated with Moorebank Precinct East

Table 7: Species credits available within the Moorebank Precinct offset area and project shortfall

Plant Community Type (PCT)	BA 341 Biobank site		Moorebank Avenue site		MPW S2 (RtS)		Credits available from BA341 for MPW Stage 2	Credits required to be sourced elsewhere / other means
	Stems/ area	Ecosystem credits generated	Stems/ area	Credits required	Area (ha)	Credits required		
Threatened flora								
<i>Grevillea parviflora</i> subsp. <i>parviflora</i> Small-flowered Grevillea	6,186 individuals	43,921	79 stems	1,106	254 stems	3,556	4,662	0
<i>Persoonia nutans</i> Nodding Geebung	258 individuals	1,832	8 stems	616	8 stems	616	1,232	0
Threatened fauna								
Koala <i>Phascolarctos cinereus</i>	77.62 ha ³	543	4.54 ha	118 ⁴	38.15 ha	992	543	-449

³ This is an estimate based on the area of available suitable habitat within the Wattle Grove offset area.

⁴ It is expected that all of these credits will be available from BA341 following a variation to the Biobanking Agreement.

3.3.2 Off-site credit sources

Where Table 6 and Table 7 identify credits are required to be sourced elsewhere / by means other than BA 341, alternative credit sources have been identified to meet the offset obligation. Table 8 and Table 9 outline how the shortfall of credits will be offset from other sources / means.

Table 8: Ecosystem credits being acquired from offsite sources

Ecosystem credit	Credits required	Credit source
Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin (ME003)	107	Sufficient ME003/HN542 credits have been purchased from the market and 167 have already been retired for the Moorebank Avenue site. The remaining credits for the MPE Stage 2 site are ready to be retired.

Table 9: Species credits being acquired from offsite sources

Species credit	Credits required	Credit source
Koala	449	Sufficient Koala credits have been purchased from the market and 120 credits have been retired for the Moorebank Avenue Site. The remaining Koala credits for the MPE Stage 2 site are ready to be retired.

3.4 Additional EPBC Act offsets

This MPW EPBC BOSaMP has been prepared specifically to address the EPBC elements of the MPW offset requirement. The NSW assessment bilateral agreement applies to the MPW Project, therefore offsets secured in accordance with the NSW Major Projects Offset Policy are taken to satisfy the requirements under the EPBC Act.

All impacts to EPBC Act listed threatened species and communities have been offset using matching credits, as defined under the FBA. Additional, specific, EPBC Act offsets are therefore not required for impacts associated with the MPW Project.

3.5 Consistency of offsets with policy and conditions

The consistency of this MPW EPBC BOSaMP with the relevant Commonwealth CoA (namely Condition 14 of MPW EPBC Approval (2011/6086) has been demonstrated in Table 2.

The consistency of the RtS BOS (Parsons Brinckerhoff 2015) with the NSW Biodiversity Offsets Policy for Major Projects and the FBA is considered in detail in that strategy. The consistency of this BOSaMP with the offset rules presented in the NSW Biodiversity Offsets Policy for Major Projects and the FBA is demonstrated in Section and Section 3.3.2.

3.6 Timeframes for offset package delivery

The biodiversity impacts associated with the MPW Project that require offsets to be secured (in accordance with the FBA) are a part of the MPW Stage 2 Project. SSD 7709 Condition of Consent B157 states that 'prior to any impact on the species to be offset, the Applicant must retire biodiversity credits'. As such, offsets will be secured prior to relevant impact under Early Works or subsequent stages taking place and prior to commencement of construction.

3.7 Management of changes in biodiversity impacts

MPW Stage 2 has been approved and the biodiversity offsets that are required are documented in Condition of Consent B157. Notwithstanding, minor alterations to biodiversity impacts through detailed design mean that the quantum of offsets that are presented in this BOSaMP are subject to change. During construction, it is possible that minor design alterations and refinements to be made which can result in both minor savings and minor encroachments. Such alterations would have an effect on the final deficit and surplus values for each credit. These changes are typically identified and documented during pre-clearing surveys, particularly for threatened species.

It is anticipated that potential changes could be managed through the surplus of credits that will be generated by the BA341 biobank site, or by the purchase of additional off-site credits (see Section 3.3.2).

4 SUMMARY AND CONCLUSION

This MPW EPBC BOSaMP has identified that a dual direct offset approach is the most appropriate means of securing the required credits. This approach is consistent with the Concept Plan BOS (Parsons Brinckerhoff 2015) and includes the use of credits being generated by the BA341 biobank site, both of which are key elements of CoA 14. The majority of the required credits will be sourced from the BA341 biobank site.

Following an unexpected find of Koala in the Wattle Grove Offset Area, targeted surveys on the MPW site detected Koala scats in the south-east of the MPW site. In accordance with OEH advice, based on recent studies, that all vegetation communities occurring on shale-influenced soils should be considered to represent 'high value habitat' for Koalas, all native vegetation communities occurring within the MPW Site have been mapped within a Koala species polygon. Whilst there are no additional impacts associated with the MPW Stage 2 proposal, as a result of this find, Koala offsets are now being provided in accordance with the FBA. These areas will be offset with like-for-like species credits.

This BOSaMP has identified that there will be a shortfall of ME003 Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland ecosystem credits and Koala species credits. Like-for-like credits have been purchased for both of these from offsite sources. These credits are now available to retire.

The BA341 biobank site will be managed in accordance with the BA341 Biobanking Agreement and associated Management Action Plan. This management action plan provides for the revegetation, restoration and control of weeds across the BA341 biobank site, including within the Georges River riparian corridor. This active management will commence following the execution of the biobank agreement and retirement of a requisite number of credits.

The submission (and subsequent approval) of this MPW EPBC BOSaMP is taken to document the satisfaction of CoA 14 of the EPBC Approval. The biodiversity impacts associated with MPW that require offsets are a part of the MPW Stage 2 Project. SSD 7709 Condition of Consent B157 states that 'prior to any impact on the species to be offset, the Applicant must retire biodiversity credits'. Biodiversity credits will therefore be retired prior to impacts to the corresponding threatened species and ecological communities taking place.

REFERENCES

Arcadis (2016) *MPE Stage 2: Biodiversity Assessment Report*

Arcadis (2017a) *MPE Stage 1 Supplementary RtS Biodiversity Offset Strategy*

Arcadis (2017b) *Threatened Flora Species Management Plan*

Arcadis (2019) *MPW Stage 2 Amended Proposal: Biodiversity Assessment Report*

Hyder Consulting (2015) *SIMTA Stage 1: Biodiversity Assessment Report*.

OEH (2014a) NSW Biodiversity Offsets Policy for Major Projects

OEH (2014b) Framework for Biodiversity Assessment

Parsons Brinckerhoff (2014) *Moorebank Intermodal Freight Terminal – Ecological Impact Assessment*. Prepared for the Moorebank Intermodal Company. Dated September 2014.

WSP Parsons Brinckerhoff (2018) *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

