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MOOREBANK INTERMODAL FACILITY

Threatened Flora Offset Management Plan

19 MAY 2020

Photo: *Persoonia nutans*

Incorporating Hyder

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QUBE PROJECT MANAGEMENT SERVICES
MOOREBANK INTERMODAL FACILITY

Threatened Flora Offset Management Plan

Author	[redacted]
Checker	[redacted]
Approver	[redacted]
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1 INTRODUCTION

1.1 Background

The Sydney Intermodal Terminal Alliance (SIMTA) received Commonwealth approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for the construction and operation of the Moorebank Precinct East (MPE) Project (the MPE Project) on 6 March 2014 (EPBC 2011/6229).

The MPE Project is located approximately 27 kilometres (km) south-west of the Sydney Central Business District (CBD) and approximately 26 km west of Port Botany and includes the former Defence National Storage and Distribution Centre (DNSDC) site.

1.1.1 Project description

The MPE Project is situated on the MPE site on Moorebank Avenue, Moorebank, south west of Sydney. SIMTA is in the process of developing the MPE site into an intermodal terminal facility and warehouse/distribution facility, which will offer container storage and warehousing solutions with direct rail access to Port Botany. Construction of the rail connection from the MPE site to the Southern Sydney Freight Line (SSFL) was undertaken as part of the first stage of works for the MPE Project.

Construction for the MPE project commenced in mid-2020 with operations being launched in a staged manner from Q2-2020.

The MPE Project (Figure 1-1) includes an Import Export Terminal (IMEX), including warehouse and distribution facilities, rail link, freight village (ancillary site and operational services), stormwater, landscaping, servicing and associated works on the eastern side of Moorebank Avenue, Moorebank. The MPE project has been developed in three key stages:

- Stage 1 - Construction of the IMEX and rail link
- Stage 2 - Construction of warehouse and distribution facilities
- Stage 3 - Extension of the IMEX and completion of warehouse and distribution Facilities.

The construction and operation of Stage 1 of the MPE Project was approved on 12 December 2016 (SSD 6766) and is being delivered across two delivery packages:

- Package 1: The Rail Link (Figure 1-1), includes the rail connection commencing at the IMEX terminal, which traverses across Moorebank Avenue, Anzac Creek, the Georges River, and Glenfield Waste Facility before connecting to the Southern Sydney Freight Line (SSFL).
- Package 2: The IMEX (Figure 1-1) includes the following key components:
  - Truck processing, holding and loading areas - entrance and exit from Moorebank Avenue
  - Rail loading and container storage areas – installation of four rail sidings with adjacent container storage area serviced by manual handling equipment initially and overhead gantry cranes progressively
  - Administration facility and associated car parking- light vehicle access from Moorebank Avenue

Approval for Stage 2 of the MPE Project was received on 31 January 2018 (SSD 7628) and is currently under construction. The project is set to include:

- Warehousing comprising approximately 300,000m^2 Gross Floor Area (GFA) and additional ancillary offices
- A freight village, comprising 8,000m^2 GFA of retail, commercial and light industrial land uses
- Establishment of an internal road network, and connection of MPE to the surrounding public road network
- Ancillary supporting infrastructure including: stormwater, drainage and flooding infrastructure; utilities relocation and installation; vegetation clearing, remediation, earthworks, signage and landscaping
- Subdivision of the MPE Stage 2 site
- The Moorebank Avenue upgrade
- Upgrading existing intersections along Moorebank Avenue

A modification to MPE Stage 2 consent instrument (SSD 7628) regarding the prescription for maximum batter slopes for on-site detention basins (OSDs) was recently approved on 31 January 2020 (MOD 2 – SSD 7628). The modification includes:

- Revision of the construction and operation footprint at the southern extent of the site to include the revised design for OSD 2 that addresses the requirement for OSDs to have maximum batter slopes of 1V:4H: and
- Removal of the requirement for batter slopes to allow OSD9, located at the north-west of the site, to be constructed without the 1V:4H batters and instead to be constructed with vertical walls.

Figure 1-1: MPE site overview

1.1.2 MPE Project impacts

Two threatened flora species listed under the EPBC Act are directly impacted by the MPE Project:

- *Persoonia nutans* (Nodding Geebung), a shrub listed as Endangered under both the EPBC Act and the NSW *Biodiversity Conservation Act 2016* (BC Act). The MPE Project will result in the removal of 17 individual specimens of this species.
- *Grevillea parviflora* subsp. *parviflora* (Small-flower Grevillea), a shrub listed as Vulnerable under both the EPBC Act and BC Act. The MPE Project will result in the removal of 20 individual stems of this species.

Impacts to EPBC threatened flora species occur at two locations within the MPE project footprint (Figure 3-3).

- within a portion of Stage 1, Package 1: the Rail Link; and
- within the MPE Stage 2 MOD 2 project area: OSD Basin 2 (which includes a section of the MPE Stage 2 project footprint)

A total of 20 Small-flower Grevillea and 11 Nodding Geebung have been removed from the portion of the Rail Link located directly south of the MPE site and east of Moorebank Avenue.

Six additional Nodding Geebung have been removed to facilitate the revised footprint of OSD Basin 2 at the southern extent of the MPE Stage 2 project adjacent to the Moorebank biobank site.

Threatened flora identified in the MPE project area are further discussed in detail in Section 3.

Impacts to native vegetation primarily occurred during construction of the Rail Link. Two small patches of native vegetation located on the south-eastern border of Stage 1, Package 2: IMEX and within the MPE Stage 2 MOD 2 footprint were removed to facilitate the MPE Project. Impacts to native vegetation are displayed Figure 1-2.

The MPE Project has impacted upon Threatened Ecological Communities (TEC), including Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion, an endangered ecological community under the *Environment Protection and Biodiversity Conservation Act 1999*.

The Biodiversity Assessment Report (BAR) (Arcadis 2017a) prepared for the MPE Stage 1 Response to Submissions (RtS) and the Biodiversity Development Assessment Report prepared for MPE Stage 2 MOD 2 (Arcadis 2019a) assessed the significance of impacts to Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion. An Assessment of Significance under the EPBC Act to assess the impacts of the MPE Stage 1 Project to Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion concluded that impacts would not be significant, therefore offsets for this TEC were not required under the EPBC Act Environmental Offsets Policy.

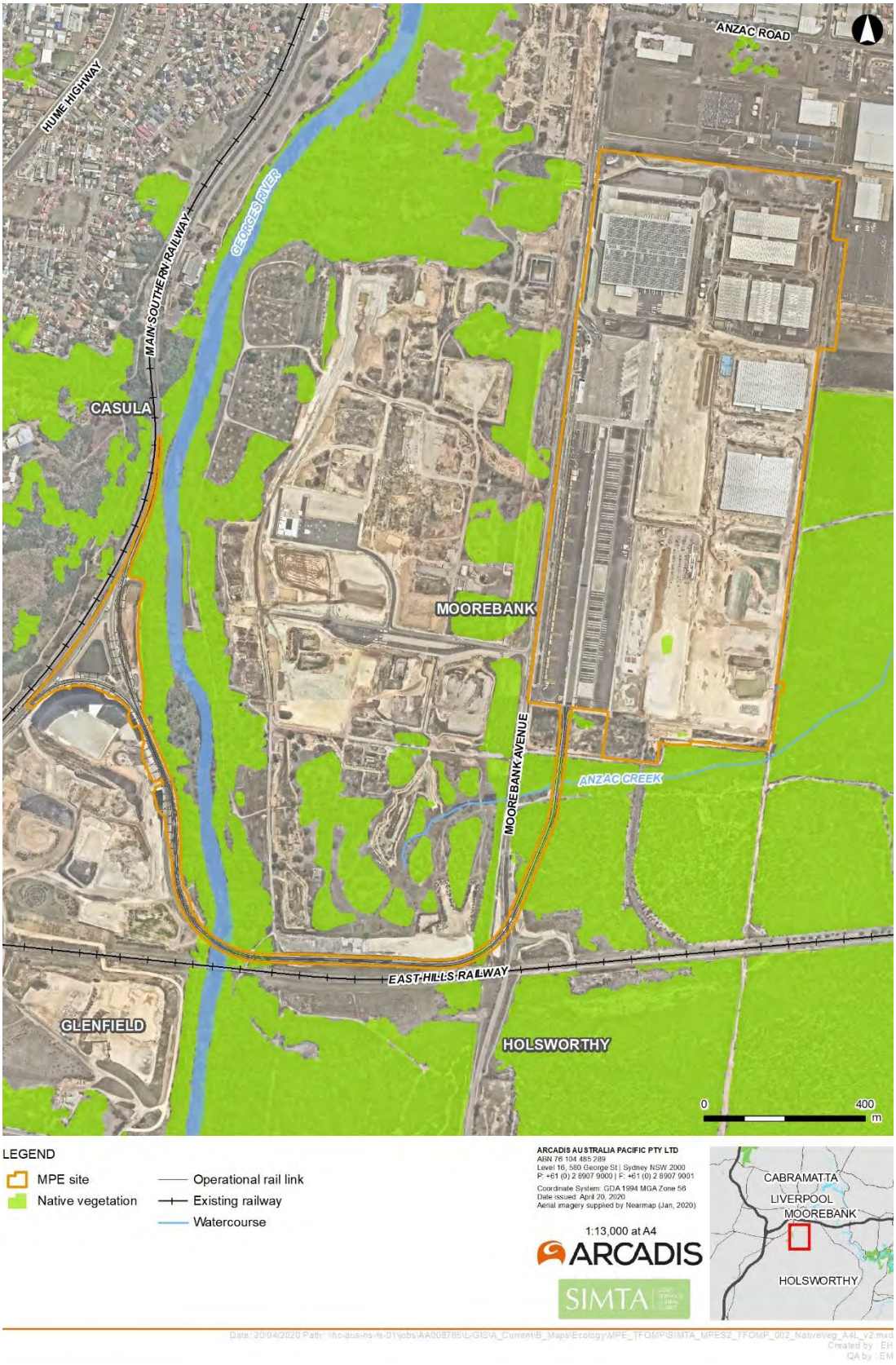

Figure 1-2. Native vegetation identified within and surrounding MPE site prior to construction

1.2 Purpose

This Threatened Flora Offset Management Plan (TFOMP) has been prepared to satisfy Conditions 3, 4 and 6 of the MPE Project EPBC Approval dated 6 March 2014 (EPBC 2011/6229), as detailed in Table 1-1.

This TFOMP was initially prepared in 2017 including the results of the targeted threatened flora surveys associated with the MPE Project EPBC Approval (EPBC 2011/6229) and results of additional surveys conducted between 2016 and 2017.

The most recent revision of the TFOMP (this document) includes updates to EPBC offset calculations to determine the required offset for the removal of an addition six Nodding Geebung and the designation of an additional offset area to satisfy this additional EPBC offset requirements. This is further explained in Section 1.3.

Table 1-1: EPBC 2011/6229 Conditions of Approval 3, 4 and 6

CoA	Condition Requirements	How condition is addressed	Where addressed in this plan
3	For the better protection of Hibbertia sp. Bankstown, the person taking the action must engage a suitably qualified expert to undertake a targeted search for individuals of Hibbertia sp. Bankstown within all areas of potential habitat during the species' flowering period.	Targeted surveys undertaken in 2014 and 2016.	Section 3
4.	For the better protection of Bynoe's Wattle, the person taking the action must engage a suitably qualified expert to undertake a field habitat assessment that targets the ecological requirements of Bynoe's Wattle, in all areas of Castlereagh Scribbly Gum Woodland likely to be cleared as a result of the proposed action. If the assessment determines there is potential for the species to occur on site, then a suitably qualified expert must undertake a targeted search for individuals of Bynoe's Wattle within all areas of potential habitat identified by the habitat assessment during the species' flowering period.	Targeted surveys undertaken in 2014 and 2016.	Section 3
6	For the better protection of Nodding Geebung, Small-flower Grevillea (and potentially, Hibbertia sp. Bankstown and Bynoe's Wattle pending the outcome of conditions 3 and 4) the person taking the action must engage a suitably qualified expert to prepare a Threatened Flora Offset Management Plan (TFOMP) (or plans) for the approval of the Minister. The TFOMP must include (but need not be limited to):	Preparation of this TFOMP	Entirety of this plan
a)	Details of a direct offset that satisfies the requirement of the Department's offset policy, in accordance with the offset user guide (including timeframes for the	Direct offsets provided in accordance with the EPBC Act Environmental Offsets Policy dated October 2012,	Section 3.6 Section 4

CoA	Condition Requirements	How condition is addressed	Where addressed in this plan
	delivery or acquisition of the direct offset);	calculated using the Offset User Guide	
b)	Maps (s) and shapefile that identify the location and boundaries of the direct offset;	Maps showing location and boundary of the direct offset sites within Wattle Grove Offset Area.	Section 4 Figure 4-4
c)	Details of the management action and performance objectives which will maintain and enhance the Nodding Geebung and Small-flower Grevillea habitat and/or population covered by the TFOMP (including duration, intensity, and timing of management actions);	Relevant sections of Management Action Plan in Appendix D of the BAR prepared for the Biobanking agreement (WSP 2017) provided	Section 5
d)	An assessment of the baseline population and distribution for Nodding Geebung and Small-flower Grevillea within the direct offset, including: The number of plants protected and their location; and Plant and habitat protection	Baseline surveys for threatened flora species carried out in 2014, 2015 and 2016	Section 4
e)	Measures for regular monitoring of the status of individuals of Nodding Geebung and Small-flower Grevillea and their habitat as measured against the baseline population and distribution, including: Fluctuations in population size and distribution; and response to disturbance and/or management actions	The Biobanking Agreement (BA314) for Moorebank biobank site includes requirement for annual monitoring of threatened flora populations. EPBC offset sites will be monitored during MPE operational monitoring annual surveys. Inaugural monitoring of threatened flora within the biobank site and the EPBC offset sites was conducted in spring/ summer 2019/2020.	Section 6
f)	Provisions to revise the approved TFOMP in response to monitoring associated with condition 6 (e) Native vegetation clearance must not occur until the TFOMP has been approved. The TFOMP must be implemented once approved. Should the action result in, or be likely to result in, residual impacts to Hibbertia sp. Bankstown or Bynoe's Wattle (as determined by the Minister), the TFOMP must also demonstrate how it meets the standards described in (a) and (f), for these two species.	The Biobanking agreement includes provision for revising management action plans every five years in response to annual reporting outcomes.	Section 6

This TFOMP has been prepared to address offsetting and management of EPBC listed threatened flora species only. The offsetting and management of threatened ecological communities and threatened flora species listed under the NSW BC Act, but not the EPBC Act, have been addressed in the Biodiversity Offset Packages (Arcadis 2018; Arcadis 2019b) and the MPE Stage 2 MOD 2 Biodiversity Development Assessment Report (BDAR) (Arcadis 2019a).

1.3 Document Update

Since the approval of the TFOMP prepared in response to the CoA (EPBC 2011/6229) for MPE Stage 1 in 2017, additional impacts to the EPBC listed threatened species Nodding Geebung have resulted from the wider MPE Project. This document update identifies these additional impacts to Nodding Geebung and demonstrates how direct offsets will be delivered for this species as per the EPBC Offsets Assessment Guide.

The following additional impacts to Nodding Geebung have occurred since the initial TFOMP was drafted:

- Four Nodding Geebung were directly impacted by the MPE Stage 2 project. The four plants are located in proximity to each other at the southern extent of the MPE Stage 2 project footprint.
- Two Nodding Geebung were directly impacted by MOD 2 of the MPE Stage 2 project. The project footprint for MOD 2 overlaps the MPE Stage 2 footprint at its southern extent; it is within this footprint overlap that the two Nodding Geebung will be impacted.

Updates have been made to the EPBC Offset Calculations (Table 3-3) and EPBC offset sites (Section 4.2) to ensure that sufficient offsets are achieved for impacts to Nodding Geebung.

1.4 Glossary and key terms

Table 1-2 provides a summary of the key acronyms and terms which are included within this Plan.

Table 1-2: Glossary and key terms

Term	Meaning
Acronyms	
BDAR	Biodiversity Development Assessment Report
BAR	Biodiversity Assessment Report
BC Act	Biodiversity Conservation Act 2016
BOS	Biodiversity Offset Strategy
DAWE	Department of Agriculture, Water and Environment
DoEE	Commonwealth Department of Environment and Energy
DPIE (EES)	Department of Planning, Industry and Environment (Environment, Energy and Science)
DAWE	Department of Agriculture, Water and the Environment

Term	Meaning
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning and Assessment Act 1979
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
FBA	Framework for Biodiversity Assessment
GPS	Global Positioning Survey
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
SIMTA	Sydney Intermodal Terminal Alliance
SSFL	Southern Sydney Freight Line
TEC	Threatened Ecological Community
TFOMP	Threatened Flora Offset Management Plan (this plan)
Key Terms	
Biobanking agreement	An agreement entered into between the owner of the land and the Minister for the Environment for the purpose of establishing a biobank site. Once registered, the biobanking agreement runs with the land.
Biobank site	Land that is designated by a biobanking agreement to be a biobank site. The proposed biobank site referenced in this document includes three identified offset areas: the Wattle Grove Offset Area, Moorebank Offset Area, and Casula Offset Area (shown in Figure 4-1 of this Plan).
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.
Direct offset	Under the EPBC Act Environmental Offsets Policy, direct offsets are those actions that provide a measurable conservation gain for an impacted protected matter. A minimum of 90 per cent of the offset requirements for any given impact must be met through direct offsets.

Term	Meaning
EPBC Offset sites	Areas forming direct offsets for the impacts to EPBC Act listed threatened flora species. The EPBC offset sites are comprised of the Small-flower Grevillea offset area and the Nodding Geebung offset area.
Grevillea parviflora subsp. *parviflora* (Small-flower Grevillea) offset area	A parcel of land to be conserved and managed for the purpose of offsetting impacts to Small-flower Grevillea. This offset is located wholly within the Wattle Grove Offset Area. The location of this offset is shown in Figure 4-4.
Moorebank Intermodal Terminal Precinct	The site which is the subject of both the MPE Concept Approval (MP_10_0913) and the MPW Concept Approval (SSD 5066)
MPE Project	The Intermodal terminal facility on the MPE site as approved by the MPE Concept Approval (MP 10_0913) and the EPBC Approval (2011/6229) and including the MPE Stage 1 Proposal (14-6766). N.B. Previously the SIMTA Concept Approval
MPE site	The site which is the subject of the MPE Concept Approval, and includes the site which is the subject of the MPE Stage 1 and MPE Stage 2 Approval, and all subsequent modifications. N.B. Previously the SIMTA site
MPE Stage 1	The whole of the land to which the MPE Stage 1 Project approval SSD 14-6766 relates including both MPE Stage 1 Package 1, and MPE Stage 1 Package 2.
MPE Stage 1, Package 1	The construction of the Rail Link connecting the Southern Sydney Freight Line to the IMEX, traversing across the Boot land, RailCorp Land, Moorebank Avenue, the MPW Golf Course, Georges River, and Glenfield Waste Facility (Figure 1-1).
MPE Stage 1, Package 2	Construction of the IMEX (Figure 1-1) including the following key components: 1. Truck processing, holding and loading areas - entrance and exit from Moorebank Avenue 2. Rail loading and container storage areas – installation of four rail sidings with adjacent container storage area serviced by manual handling equipment initially and overhead gantry cranes progressively Administration facility and associated car parking- light vehicle access from Moorebank Avenue
MPE Stage 2	The whole of the land to which the MPE Stage 2 Project approval SSD 7628 relates. MPE Stage 2 includes the following key components: • Warehousing comprising approximately 300,000m^2 Gross Floor Area (GFA) and additional ancillary offices • A freight village, comprising 8,000m^2 GFA of retail, commercial and light industrial land uses • Establishment of an internal road network, and connection of MPE to the surrounding public road network

Term	Meaning
	• Ancillary supporting infrastructure including: stormwater, drainage and flooding infrastructure; utilities relocation and installation; vegetation clearing, remediation, earthworks, signage and landscaping • Subdivision of the MPE Stage 2 site • The Moorebank Avenue upgrade • Upgrading existing intersections along Moorebank Avenue
MPE Stage 2 MOD 2	The MPE Stage 2 MOD 2 Project comprises of the following components: • Revision of the construction and operation footprint at the southern extent of the site to include the revised design for OSD 2 that addresses the requirement for OSDs to have maximum batter slopes of 1V:4H: and • Removal of the requirement for batter slopes to allow OSD9, located at the north-west of the site, to be constructed without the 1V:4H batters and instead to be constructed with vertical walls.
Native vegetation	Areas of plant community types mapped by Arcadis and WSP Parsons Brinckerhoff in the Moorebank Precinct (including Moorebank Precinct East and Moorebank Precinct West) being a consolidation of all assessments for the Moorebank Precinct conducted since 2011.
Native vegetation clearance	Native vegetation clearance includes the cutting down, felling, thinning, logging, removing, killing, destroying, poisoning, ringbarking, uprooting or burning of any native vegetation.
Nodding Geebung offset area	Three parcels of land to be conserved and managed for the purpose of offsetting impacts to Nodding Geebung. This offset is located partially within the Wattle Grove Offset Area, with one section (P3) located immediately adjacent to the Wattle Grove Offset Area. The location of this offset is shown in Figure 4-4.
RailCorp Land	Lot 1 DP 825352 (part of the Rail Corridor) and owned by Sydney Trains.
Rail Link	The rail link including the area on either side to be impacted by the construction of MPE Stage 1 Package 1
Wattle Grove offset area	Occurs within the Boot land. Contains all of the species credits that will deliver the direct offset for EPBC Act threatened flora. An application for a biobanking agreement has been lodged with OEH to establish a biobank site which includes this offset area.

1.5 Objectives

The objectives of this TFOMP are to:

- Provide a description of the methodology, timing and results of targeted threatened flora surveys undertaken to meet the requirements of Conditions 3 and 4.
- Confirm that the proposed offsets for impacts to threatened flora species satisfy the requirements of the EPBC Act Offsets Policy, as required in Condition 6.

- Provide detail on the proposed management actions and performance measures to maintain and enhance the threatened flora species populations and habitat in the offset site to meet the requirements of Condition 6.

1.6 Alignment to other documents

This plan has been prepared in consideration of the following documents:

- *Biodiversity Assessment Report: Biobanking Agreement: Wattle Grove Offset Area, Casula Offset Area and Moorebank Conservation Area* (WSP 2017).
- *Moorebank Intermodal Facility: Threatened Flora Offset Management Plan* (Arcadis 2017b)
- *MPE EPBC Offset Site. EPBC Threatened Flora Monitoring Report* (Arcadis 2020)
- *Persoonia nutans (Nodding Geebung) Recovery Plan* (DEC 2006).
- *SIMTA Intermodal Terminal Facility Stage 1: Biodiversity Assessment Report* (Hyder Consulting 2015a), prepared to support the Environment Impact Statement (EIS) for Stage 1 of the MPE Project and submitted to NSW Department of Planning and Environment (DP&E).
- *SIMTA Intermodal Terminal Facility Stage 1: Biodiversity Assessment Report* (Hyder Consulting 2015b), prepared to support the Response to Submissions (RtS) for Stage 1 of the MPE Project and submitted to NSW Department of Planning and Environment (DP&E).
- *SIMTA Intermodal Terminal Facility Stage 1: Biodiversity Offset Strategy* (Hyder Consulting 2015c), prepared to address Condition 12 (f) of DP&E's Secretary's Environmental Assessment Requirements (SEARs) and EPBC 2011/6229 Conditions 6(a) and (b).
- *SIMTA Intermodal Terminal Facility Stage 1: Threatened Flora Species Management Plan* (Appendix A of Hyder 2015b), prepared to address the requirement for a Threatened Flora Species Management Plan by the Concept Plan Approval Statement of Commitments. Note that this TFOMP updates and replaces the Threatened Flora Species Management Plan.
- *SIMTA Intermodal Terminal Facility Stage 1: Updated Biodiversity Assessment Report* (Arcadis 2017d)
- *SIMTA Moorebank Intermodal Terminal Facility: Biodiversity Development Assessment Report (BDAR)* (Arcadis 2019a), prepared to assess impacts on biodiversity from the MPE Stage 2 MOD 2 project and submitted to NSW Department of Planning and Environment (DP&E).
- *SIMTA Moorebank Intermodal Terminal Facility: Flora and Fauna Assessment* (Hyder 2013), prepared to support the Environment Impact Statement (EIS) for the MPE Concept Plan and submitted to NSW Department of Planning and Environment (DP&E) and the former Commonwealth Department of the Environment (now DoEE).
- *SIMTA Moorebank Precinct East – Stage 2 Proposal: Biodiversity Assessment Report.* Report prepared to support the Moorebank Precinct East-Stage 2 Proposal Response to Submissions (Arcadis 2017c)
- *SIMTA Moorebank Precinct East – Stage 2 Proposal: Biodiversity Assessment Report*. Report prepared support the Moorebank Precinct East-Stage 2 Proposal Environmental Impacts Statement (Arcadis 2016).

1.7 Consultation

The TFOMP (rev D dated 4 July 2017) was submitted to the Department of Environment and Energy (DoEE) (now the Department of Agriculture, Water and Environment) for review and approval on 5 July 2017. Subsequent to this, on 13 July 2017, a meeting was held between DoEE, Tactical Group and Arcadis to discuss the TFOMP with particular reference to information required to satisfy Conditions 3, 4 and 6 of the MPE Project EPBC Approval (refer to Section 1.2, above).

The minutes for this meeting are provided in Appendix A of this TFOMP. A summary of the actions (as identified in the minutes) and the locations of where these have been addressed in this TFOMP is provided in Table 1-3. As is shown from Table 1-3, this TFOMP (rev E dated 28 July 2017) has been updated to respond to comments provided by DoEE in this meeting.

DoEE additionally provided formal review comments on 27 July 2017. The comments and responses are provided in Appendix A of this Plan.

Table 1-3: Actions from DoEE meeting (13 July 2017)

Topic	Action	Where addressed in this plan
2.0 - Project history	Further information be provided within the TFOMP to identify the impacted areas of the Rail link, clearly identifying any EPBC listed threatened species within the impacted areas. A map, or several maps, are to be prepared to show this information.	Figure 3-2 and Figure 3-3 identifies the EPBC threatened species that were recorded during targeted surveys including those that would be impacted by the project.
3.0 – TFOMP Structure	Include further maps showing a clearer delineation of the impact area vs the offset area, i.e. providing the Rail link impact at a larger scale so that individual impacted plant species can be identified more clearly.	Figure 3-2 and Figure 3-3 identifies the EPBC threatened species that would be impacted by the project.
4.0 – EPBC Approval (2011/6229) conditions of approval	Condition 6(a) – Provide further details on the calculations undertaken to determine the offset. In particular, the following further detail was sought: – Provide the calculations for impacts on threatened species based on both size of area impacted (hectares) (for Small-flower Grevillea) and individuals impacted (for Nodding Geebung). – Details on the impacts to Small flowered Grevillea. It was identified by JR that **Table 4-2** was missing from the submitted TFOMP document.	Section 3.6.1 and Section 3.6.2 identify the offset requirement for Nodding Geebung and Small-flower Grevillea respectively. Table 4-2 provides the offset calculations and justification for decisions made within the calculator.
	Condition 6(b) – Request that the offset area for the EPBC listed threatened species be specifically identified within the TFOMP, i.e. through including a polygon around the areas to be retired for offset of the EPBC listed threatened species.	Figure 4-4 - Figure 4-6 identifies the specific offset sites for EPBC Act listed threatened flora species.
	Condition 6(c) – Request that further information be provided in the TFOMP relating to the duration, intensity and timing	Section 5 outlines the management actions to be undertaken within the Wattle

Topic	Action	Where addressed in this plan
	of the management measures for EPBC listed threatened species. Also requested that further information be provided relating to the current extent and status of weed infestation and erosion on the offset site and measures that would be implemented to manage these potential issues.	Grove Offset Site. More specifically, Section 5.2 details the specific management activities to be undertaken within the EPBC offset sites. Additional information has been added to Section 4.2.1.1 and Section 4.2.1.2 regarding the baseline condition of habitat within the EPBC Act offset sites.
	Condition 6(d) – Request that further information be included within the TFOMP to provide details on the number of plants/individuals, habitat and quality of the habitat impacted by the project, i.e. identify a baseline.	Section 3.6.1 and Section 3.6.2 identify the number plants that will be impacted. **Section 4.2.1.1** and **Section 4.2.1.2** details the condition of habitat within the impacted vegetation.
	Condition 6(e) – Request inclusion of a table with specific measures to assess fluctuations in population size and frequency. Detail should be included relating to how and when monitoring is being undertaken and more methods provided for measurement of population in addition to photo points. As an alternative, a reference to a specific section of the biobanking agreement report where these measures are included could be provided.	Section 6.2 details the specific monitoring and reporting requirements for the EPBC offset sites, beyond the monitoring and reporting that would be undertaken for the Biobank sites.
	Condition 6(f) – Request further detail in the TFOMP relating to contingency measures that could be undertaken to manage fluctuations in the EPBC listed threatened flora populations. Inclusion of these measures would provide scope for managing population fluctuations without having to update the TFOMP in accordance with Condition 14. In the instance that a corrective measure is implemented, DAWE would be notified.	Section 6.3 details the adaptive management measures that will be implemented within the EPBC offset sites. Several scenarios have been considered.

2 LEGISLATIVE AND OTHER REQUIREMENTS

2.1 Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, defined in the EPBC Act as Matters of National Environmental Significance (MNES). Actions on Commonwealth land that are likely to have a significant impact upon the environment also require approval under the EPBC Act.

Two MNES were identified as subject to impacts from the MPE Project: Small-flower Grevillea, listed as Vulnerable under the EPBC Act, and Nodding Geebung, listed as Endangered under the EPBC Act.

A referral under the EPBC Act was made to the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) (now the Department of Water, Agriculture and the Environment) for a proposed action relating to the SIMTA Project. The referral of the proposed action under the EPBC Act was accepted by the Department on 21 December 2011. On 23 January 2012, the MPE Project was determined to be a controlled action under the EPBC Act and the proposed action would need to be assessed through the preparation of an Environmental Impact Statement (EIS). EIS guidelines for the SIMTA Project were issued in June 2012.

On the 6 March 2014 the Minister for the Environment granted approval (EPBC:2011/622) to the MPE Project. Condition of Approval (CoA) 5(d) includes the requirement for 'provisions to ensure no more than 17 individuals of Nodding Geebung and 634 stems of Small-flower Grevillea are cleared'.

The Bilateral Agreement between NSW and the Commonwealth at the time of the environmental assessment and referral was not applicable to the MPE Project.

2.1.1 EPBC Act Environmental Offsets Policy

The EPBC Act Environmental Offsets Policy dated October 2012 outlines the Commonwealth's approach to the use of environmental offsets ('offsets') under the EPBC Act, with the term 'environmental offsets' referring to measures that compensate for the residual adverse impacts of an action on the environment. Offsets provide environmental benefits to counterbalance the impacts that remain after avoidance and mitigation measures. These remaining, unavoidable impacts are termed 'residual impacts' and for assessments under the EPBC Act, offsets are only required if residual impacts are significant.

It has been determined that the MPE Project (MPE Stage 1, MPE Stage 2 and MPE Stage 2 MOD 2) will have residual impacts on two threatened flora species listed under the EPBC Act; Nodding Geebung and Small-flower Grevillea (described in further detail in Section 3 of this plan). Accordingly, a direct offset is required to compensate for residual impacts to these species. EPBC offset sites are described in further detail in Section 4.2 of this plan.

3 THREATENED FLORA SPECIES

The methodology and results of surveys for assessment of the MPE Project have been identified in the:

- Flora and Fauna Assessment (Hyder Consulting 2013) prepared for the MPE Concept Plan EIS
- Biodiversity Assessment Report (BAR) (Hyder Consulting 2015a) prepared for the MPE Stage 1 EIS and updated for the MPE Stage 1 RtS (Hyder Consulting 2015b)
- Biodiversity Assessment Report (BAR) (Arcadis 2016) prepared for the MPE Stage 2 EIS and updated for the MPE Stage 2 RtS (Arcadis 2017c)
- Biodiversity Development Assessment Report (BDAR) prepared for the MPE Stage 2 MOD 2 project (Arcadis 2019a)
- Additional reports prepared following delivery of EIS for the MPE project.

This section outlines the extensive surveys undertaken to date. Areas of potential threatened flora species habitat subject to targeted survey are displayed in Figure 3-1.

3.1 EIS investigations

3.1.1 Methodology

Terrestrial flora surveys were conducted for assessment of the MPE Project over a total of eighteen days between May 2011 and March 2015 to map vegetation and identify threatened flora species. Threatened plant species and their habitat were surveyed by undertaking general habitat assessments, plot surveys and targeted searches.

The area of the Boot land to the south of the MPE site was traversed on foot and all plant species observed were recorded. Targeted searches for threatened plant species with potential to inhabit the area were undertaken during random meanders.

Additional targeted searches for threatened plant species were conducted in the area of the Boot land south of the MPE site following detection of threatened species listed under the EPBC Act and BC Act: Nodding Geebung and Small-flower Grevillea . The searches were initially undertaken in July 2012 and repeated in November 2014 and January 2015.

In response to EPBC Act conditions of approval, *Acacia bynoeana* (Bynoe's Wattle) and *Hibbertia sp. Bankstown* were also targeted during the threatened flora surveys conducted in 2014. The 2014 surveys were limited to areas of the Boot land west of the existing disused rail spur.

3.1.2 Results

MPE Stage 1 BAR

Two threatened flora species listed under the EPBC Act were recorded within the project footprint during field surveys conducted for the MPE Stage 1 BAR (Hyder Consulting 2015b):

- *Persoonia nutans (*Nodding Geebung)
- *Grevillea parviflora subsp. parviflora* (Small-flower Grevillea)

Neither Bynoe's Wattle nor *Hibbertia sp. Bankstown* were recorded.

MPE Stage 2 BAR

Two threatened flora species listed under the EPBC Act were recorded during field surveys conducted for the MPE Stage 2 BAR (Arcadis 2016):

- *Persoonia nutans (*Nodding Geebung)
- *Grevillea parviflora* subsp. *parviflora* (Small-flower Grevillea)

Hibbertia sp. *Bankstown* and Bynoe's Wattle surveys

In accordance with Condition 3 of the EPBC Approval, targeted searches for *Hibbertia* sp*. Bankstown* were undertaken within all areas of potential habitat in the area of Boot land south of the MPE site during the species' flowering period. These targeted searches were undertaken in the area of Boot land south of the MPE site as no other potential habitat occurs along the Rail link or IMEX. The recognised flowering or reliable survey period for this species is October to December, with seed setting from October to January (DPIE 2019d). Surveys in accordance with Condition 3 were conducted in October 2014, October and November 2016 and February 2017.

Based on recent taxonomic revision within the *Hibbertia* genus (Toelken & Miller 2012), *Hibbertia* sp. *Bankstown* is now recognised in NSW as *Hibbertia puberula* subsp*. glabrescens* (National Herbarium of NSW 2017).

During these surveys a number of *Hibbertia puberula* subsp. *puberula* individuals were recorded both within the MPE Project footprint and the Wattle Grove Offset Area. This subspecies is not considered to form part of the *Hibbertia puberula* subsp. *glabrescens* (*Hibbertia* sp. Bankstown) listing and is not a listed threatened flora species under the EPBC Act. No further consideration of *Hibbertia puberula* subsp. *glabrescens* (*Hibbertia* sp. Bankstown) is required under this TFOMP.

In accordance with Condition 4 of the EPBC Approval, targeted searches for *Acacia bynoeana* (Bynoe's Wattle) were undertaken within all areas of potential habitat in the area of Boot land south of the MPE site during the species' flowering period. The species flowers from September to March (DAWE 2020c). Surveys in accordance with Condition 4 were conducted in October 2014 and October and November 2016. Bynoe's Wattle was identified in the area of the Boot land south of the MPE site and was not recorded within or adjacent to the area impacted by the MPE Project during this survey event. This species is discussed further in Section 3.4.1.3 below.

3.2 Post-EIS Investigations

3.2.1 Methodology

Targeted surveys for *Hibbertia puberula* subsp. *puberula* were conducted on the Boot land south of the MPE site in October and November 2016 by ecologists from Arcadis and WSP. The species was surveyed using north-south transects four metres wide, spaced 10 metres apart. GPS waypoints were recorded at points where the species occurred and the number of plants within each approximately four metre x four metre quadrat was recorded. This methodology was used for consistency with previous threatened flora surveys in the survey area, and was in accordance with the *NSW Guide to Surveying Threatened Plants* (OEH 2016). Samples of *Hibbertia* spp. were collected and submitted to the NSW Herbarium for confirmation of identification.

Field assessment of the RailCorp land was conducted in March 2016 and February 2017. The site was walked over and the condition of vegetation and flora and fauna habitat noted. Targeted searches for threatened plant species were undertaken, with a focus on the vicinity of the area to be impacted by the MPE Project.

Additional targeted surveys for *Hibbertia* spp. were conducted in the area of Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland west of Moorebank Avenue in February and March 2017.

3.2.2 Results

The surveys within the Boot land south of the MPE site in late 2016 and early 2017 identified three additional threatened plant species listed under the BC Act, one of which is also listed under the EPBC Act:

- *Acacia bynoeana* (Bynoe's Wattle) (BC Act and EPBC Act)
- *Hibbertia fumana* (BC Act)
- *Hibbertia puberula* subsp. *puberula* (BC Act)

Additional records of Nodding Geebung were also identified during these surveys.

3.3 MPE Stage 2 MOD 2 BDAR

3.3.1 Methodology

Field surveys were undertaken for the MPE Stage 2 MOD 2 project area over three days in February and May 2019. Targeted surveys for threatened flora entailed walking parallel transects spaced approximately 3 metres apart across the proposed modification footprint and within a 70 metre buffer to the west of the footprint. Where threatened flora species were detected, the number of individuals were recorded and GPS point locations captured.

3.3.2 Results

Four threatened flora species as listed under the BC Act were recorded within, or in close proximity to, the proposed modification footprint during surveys. Two of these species are listed as threatened under the EPBC Act. Impacts will occur to three threatened flora species identified during surveys:

- *Hibbertia fumana* (BC Act)
- *Hibbertia puberula* subsp. *puberula* (BC Act)
- *Persoonia nutans* (Nodding Geebung) (BC Act and EPBC Act)

Acacia bynoeana, listed as under the BC Act and EPBC Act, was located 70 metres to the west of the proposal footprint and will not be impacted.

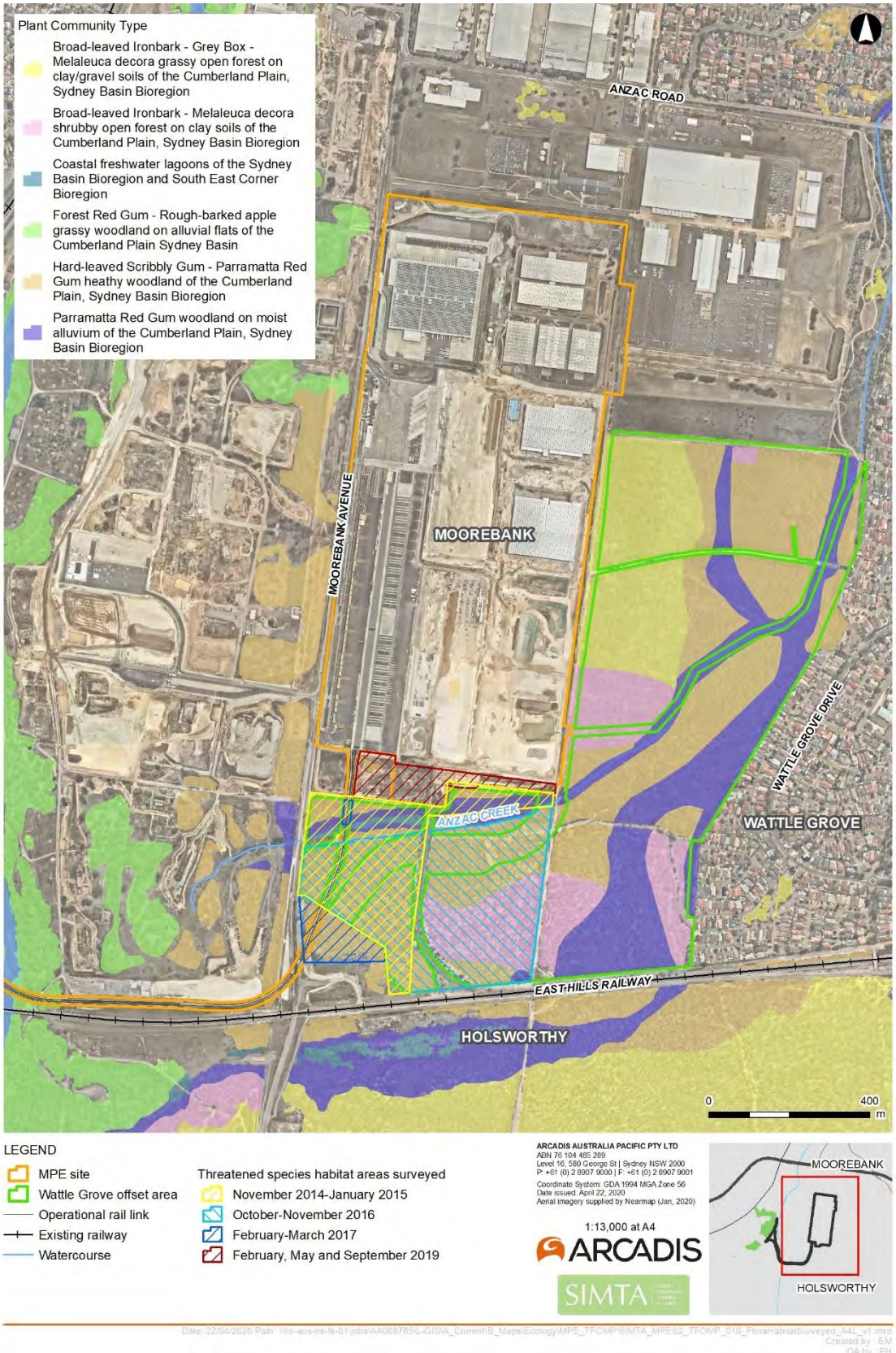

Figure 3-1: Areas of threatened flora species habitat subject to targeted surveys

3.4 Threatened flora species recorded during surveys

A total of six threatened flora species were recorded during surveys of the MPE site and the Boot land between 2011 and 2020. Of these, four are currently listed under the EPBC Act (Table 3-1).

Table 3-1: Threatened flora species recorded during surveys

Scientific name	Common name	EPBC Act status	BC Act status
Acacia bynoeana	Bynoe's Wattle	Vulnerable	Endangered
Acacia pubescens	Downy Wattle	Vulnerable	Vulnerable
Grevillea parviflora subsp. *parviflora*	Small-flower Grevillea	Vulnerable	Vulnerable
Hibbertia fumana	-	Not listed	Critically Endangered
Hibbertia puberula subsp. *puberula*	-	Not listed	Endangered
Persoonia nutans	Nodding Geebung	Endangered	Endangered

Since this TFOMP has been prepared to address the offsetting requirements for EPBC Act listed threatened species, only these threatened flora will be discussed from here on.

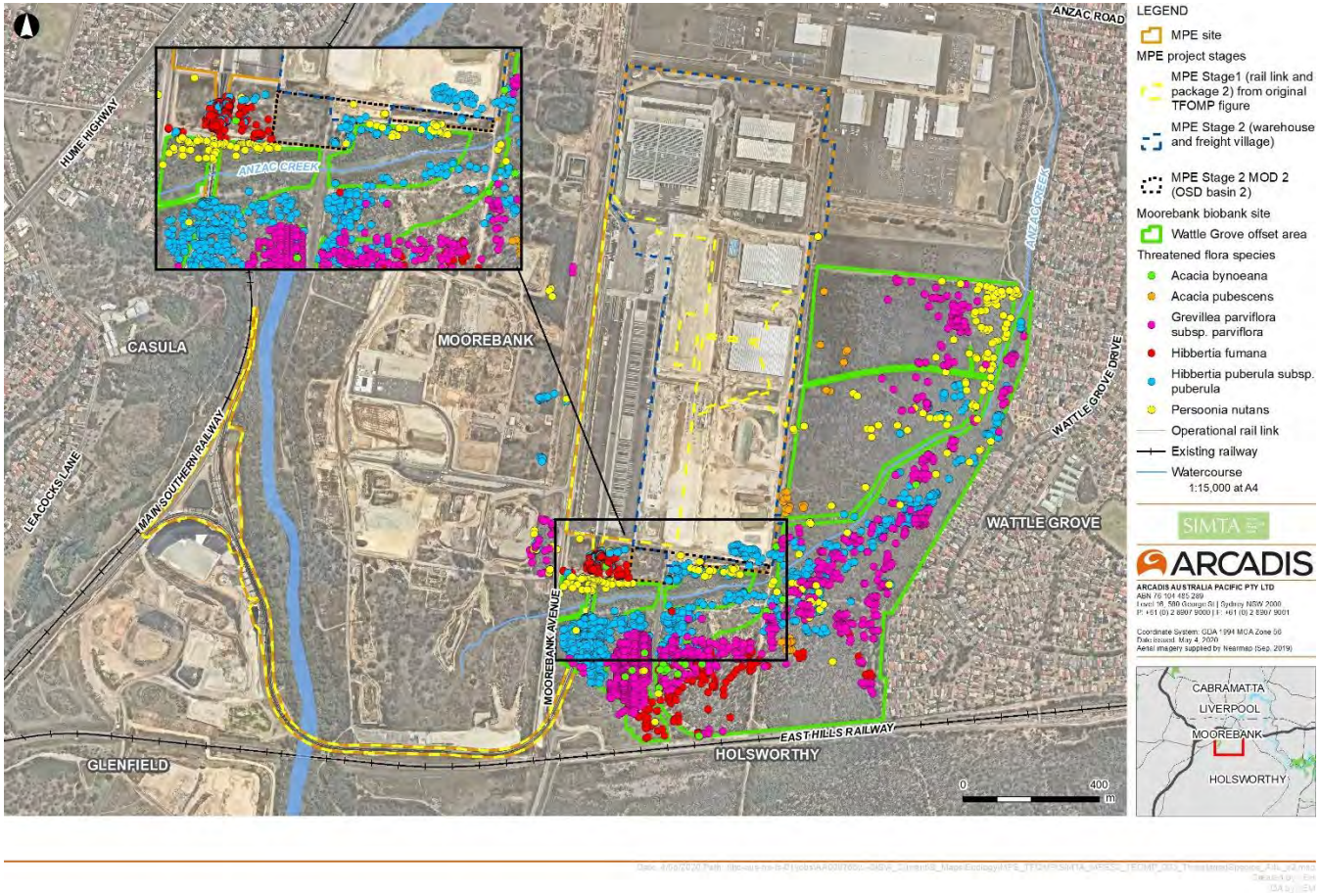

Figure 3-2. Threatened species recorded within Wattle Grove offset area and the MPE

3.4.1 EPBC Act listed species

3.4.1.1 Small-flower Grevillea

This species is sporadically distributed throughout the Sydney Basin and in the Hunter in the Cessnock - Kurri Kurri area (particularly Werakata National Park. Sydney region occurrences are usually on Tertiary sands and alluvium, and soils derived from the Mittagong Formation. Soil landscapes include Lucas Heights or Berkshire Park (DPIE 2019a; DAWE 2020a).

Flowering has been recorded between July to December as well as April-May. Flowers are insect-pollinated and seed dispersal is limited. Seedling recruitment after fire is uncommon, and most recovery after disturbance appears to be resprouting from rhizomes. Given this, the species is considered to form clonal populations and as such population estimates have been based on stem counts.

A large number of stems of Small-flower Grevillea were recorded during surveys in Wattle Grove offset area, with the highest stem density found in the central southern part of Wattle Grove offset area, south of Anzac Creek (Figure 3-2). Transect surveys conducted in 2014 identified large populations in the southern part of Wattle Grove offset area, with additional stems recorded to the east and north-east by Parsons Brinckerhoff (2015) in surveys of biodiversity offset areas. A total of 6186 stems of Small-flower Grevillea have been identified within the Wattle Grove offset area to date.

Small-flower Grevillea in the southern part of the Boot land occurs in association with Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin (ME003). The condition of habitat is generally good, with a low abundance of weeds and little evidence of sedimentation and erosion.

The overall health of the population appears to be good. Surveys in 2014/2015 identified a greater number stems than that identified in 2012 which indicated a regenerating population. Most plants were small, but within the normal range observed for this species (0.3-1 m). Some individuals were observed to be flowering at the time of surveys (Hyder Consulting 2015a, Hyder Consulting 2015b).

The health and resilience of the Small-flower Grevillea population was observed following the 2018 wildfire. The fire burnt a large portion of Wattle Grove offset site and a large proportion of the Small-flower Grevillea population. In follow up surveys approximately 18 months post fire a large proportion of the Small-flower Grevillea had regenerated. Annual monitoring (Arcadis 2020) conducted in November 2019 of the Small-flower Grevillea EPBC offset site identified 143 stems; one stem more than was identified within the offset site during pre-fire surveys.

Photo 3.1: Grevillea parviflora subsp. *parviflora* (Small-flower Grevillea) (DPIE 2017)

3.4.1.2 Nodding Geebung

Nodding Geebung is restricted to the Cumberland Plain in western Sydney, between Richmond in the north and Macquarie Fields in the south. Northern populations are confined to aeolian and alluvial sediments and occur in a range of sclerophyll forest and woodland vegetation communities, with the majority of individuals occurring within Agnes Banks Woodland or Castlereagh Scribbly Gum Woodland and some in Cooks River / Castlereagh Ironbark Forests. Peak flowering is from November to March with sporadic flowering all year round (DPIE 2019c; DAWE 2020b)

Nodding Geebung occurs across the Boot land, with the majority of the population found in previously disturbed areas north of Anzac Creek and south of the MPE site (Figure 3-4) in association with Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin. A total of 258 plants have been recorded in the Wattle Grove offset site to date.

Habitat supporting Nodding Geebung populations in 2014/2015 was observed to be in generally good condition with a low abundance of weeds and little evidence of sedimentation and erosion. However, many plants observed appeared to be suppressed by dense shrub growth. Plants ranged in size from small individuals that had just seeded or suckered to very large mature individuals which appeared to have a high reproductive value. The overall health of the population appeared to be good and population size appeared stable (Hyder Consulting 2015a, Hyder Consulting 2015b).

Surveys conducted in 2016 did not identify young plants recorded in the powerline easement (i.e. disturbed land adjoining the northern margin of Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland) in 2012.

In 2018 a bushfire burnt the southern half of the Wattle Grove offset area including the areas designated as EPBC offset sites for Nodding Geebung. All plants were destroyed in the eastern half of the offset area except for two mature Nodding Geebung identified in one of the direct EPBC offset sites. Annual monitoring surveys of the EPBC offset sites conducted in November 2019 (Arcadis 2020) observed a similar number of Nodding Geebung as were identified during pre-fire surveys. However, of the 112 plants identified only two were mature individual. Habitat for Nodding Geebung within the burn areas may prove more favourable for this species, with less dense shrub cover being evident.

Photo 3.2: Persoonia nutans (Nodding Geebung) (DPIE 2019c)

3.4.1.3 Bynoe's Wattle

Bynoe's Wattle occurs in heath or dry sclerophyll forest on sandy soils. The species seems to prefer open, sometimes slightly disturbed sites such as trail margins, edges of roadside spoil mounds and in recently burnt patches. Associated overstorey species include Red Bloodwood, Scribbly Gum, Parramatta Red Gum, Saw Banksia and Narrow-leaved Apple (OEH 2017; DAWE 2020c).

Bynoe's Wattle was recorded mainly south of the MPE site centrally within the Wattle Grove offset area (Figure 4-3). All *Acacia bynoeana*, were recorded in Hard-leaved Scribbly Gum – Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin (ME003). A total of 38 plants have been recorded in Wattle Grove offset area.

One specimen was located immediately to the west of the MPE Stage 2 Mod 2 project, outside of the Wattle Grove offset area (Figure 3-3). This specimen is not anticipated to be impacted by the MPE project.

Photo 3.3: Acacia bynoeana (Bynoe's Wattle)

3.4.1.4 Downy Wattle

Downy Wattle occurs on alluviums, shales and at the intergrade between shales and sandstones in open woodland and forest. Found in a variety of plant communities, including Cooks River/Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland (DPIE 2019b; DAWE 2020d).

Downy Wattle was recorded in three distinct patches in the Boot land (Figure 4-3). One patch contained three stems within a few metres of one another. Each of the other two patches contained a large number of stems. Due to its suckering habit resulting in clonal reproduction, it is difficult to determine how many genetic

individuals are represented. The total number of stems over the three patches was counted at 226 stems.

Acacia pubescens was recorded in in both Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin (ME003) and Broad-leaved Ironbark -Grey Box- Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin (ME004). The condition of habitat is generally good, with a low abundance of weeds and little evidence of sedimentation and erosion. The two stems recorded in the native vegetation east of the powerline easement that borders the MPE site in 2012 were resurveyed in 2017, and a larger population of 43 stems was recorded.

Photo 3.4: Acacia pubescens (Downy Wattle)

3.5 Impacts to EPBC threatened fora

The identified impacts to EPBC threatened flora species as a result of the MPE Project are displayed in Table 3-2. Locations of threatened flora species to be directly impacted by the Rail Link and MPE Stage 2 MOD 2 project are shown in Figure 3-3.

Of the four species listed in Table 3-2 only two species, Small-flower Grevillea and Nodding Geebung, have been determined as requiring direct offsets under the EPBC Act. The other two species are not directly impacted and as such do not require direct offsets under Condition 6 of the EPBC Approval.

Table 3-2: Impacts to EPBC threatened flora from the MPE Project

Species	EPBC Act status	BC Act status	Directly impacted by MPE Project	MPE Stage 1	MPE Stage 2	MPE Stage 2 MOD 2	Total Number of plants/ stems impacted
Acacia bynoeana	Vulnerable	Endangered	No	N/A	N/A	N/A	N/A
Acacia pubescens	Vulnerable	Vulnerable	No	N/A	N/A	N/A	N/A
Grevillea parviflora subsp. *parviflora*	Vulnerable	Vulnerable	Yes	20	0	0	20 stems
Persoonia nutans	Endangered	Endangered	Yes	11	4	2	17 plants

Figure 3-3. Threatened species to be impacted by the MPE Project

3.6 Commonwealth offset requirements

MPE Project impacts on threatened flora species listed under the EPBC Act are limited to Small-flower Grevillea and Nodding Geebung. Direct offsets are required under Condition 6 of the EPBC Act Approval for these species.

Offset calculations have been prepared for the MNES subject to residual significant impacts from the MPE Project, based on the guidance provided in the EPBC Offset Assessments Guide. These calculations have been undertaken to assess the suitability of the proposed offset sites to achieve 100% of the required offset for the MPE Project.

The offsets calculator provided with the EPBC offsets policy (Commonwealth of Australia 2012) allows for calculation of the level of habitat quality and area or number of individuals required to be offset based on the level of impact from the MPE Project. For offset calculations based on areas of community or habitat, the calculator requires a habitat quality 'score' on a scale of 1 to 10 as a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability. Three components contribute to the calculation of this score: site condition, site context and species stocking rate.

Inputs into the calculator for the offset area include:

- Temporal scales including time over which loss is averted (maximum 20 years) and time until ecological benefit.
- Risk scales including risk of loss without and with the establishment of the offset.
- Future habitat quality with and without the establishment of an offset.
- Confidence in the result is the level of certainty about the success of the proposed offset.

Once all the above data attributes are entered into the offsets calculator, a percentage of the impact offset is provided.

3.6.1 Nodding Geebung

A total of 17 plants of Nodding Geebung will be directly impacted by the MPE Project.

According to the EPBC Offsets Assessment Guide, an offset site supporting 155 individuals with restoration measures to increase the population by at least 16 individuals would provide a suitable offset for the impacts to the species. The values entered into the EPBC Offsets Assessment Guide and a rationale for the offset measures are provided in Table 3-3. The locations of Nodding Geebung in the vicinity of the MPE Project are shown in Figure 3-4.

Table 3-3. Nodding Geebung – EPBC Offsets guide inputs

Attribute	Value	Rationale
Impact calculator inputs		
Number of individuals impacted	17	A total of 17 individuals would be directly impacted by the MPE Project.
Offset calculator inputs		
Time horizon (years)	20	Considering the offset is proposed to be established in perpetuity, the maximum risk-related time horizon of 20 years was assigned.
Start value (number of individuals)	155	A value of 155 individuals has been assigned based on the number of individuals recorded in the Nodding Geebung direct offset sites, within the Wattle Grove offset area (refer to Section 5 for identification of these areas).
Future value without offset (number of individuals)	147	The habitat in the Nodding Geebung offset area is in reasonably good condition and there are few threats to habitat. Nevertheless, the current management of the site is not optimal for the species, with many plants observed to be suppressed by dense shrub growth, and young plants recorded in the powerline easement in 2012 no longer extant in 2014-2016. As such, the future value without the offset has been reduced by 5 individuals (approximately 5 percent of the recorded population).
Future value with offset (number of individuals)	171	A future site value of 171 individuals has been assigned based on the potential for translocation and/or plantings, and ongoing management improving habitat conditions to facilitate natural recruitment of individuals increasing the start value by 16 individuals.
Confidence in result (%)	90	There is a high confidence of a potential offset to provide an improved outcome for the species considering the number of individuals that would be protected (155 individuals) providing an improved outcome for the species. This is based on adequate restoration, monitoring and management actions being implemented.
% of impact offset	100%	This scenario would provide for 100% of the required offset.
Other measures (up to 10%)	10	There is potential to provide up to 10% of the offset as other measures. This may include restoration or protection of areas of habitat for the species.

Figure 3-4 *Persoonia nutans* (Nodding Geebung) records in the vicinity of the MPE site

3.6.2 Small-flower Grevillea

A total of 20 stems of Small-flower Grevillea will be directly impacted by the MPE Project; the locations of Small-flower Grevillea in the vicinity of the MPE Project are shown in Figure 3-5.

According to the EPBC Offsets Assessment Guide, an offset supporting 142 stems with restoration measures to increase the population by at least 17 stems would provide a suitable offset for impacts to the species.

It is considered likely that an increase in the population size of this species can be achieved within the proposed offset area. Given that this species is known to have clonal growth, offsets have been calculated based on the number of stems instead of the number of individuals.

The values entered into the EPBC Offsets Assessment Guide and a rationale for the offset measures are provided in Table 3-4.

Table 3-4 *Grevillea parviflora* subsp. *parviflora* (Small-flower Grevillea) – EPBC Offsets guide inputs

Attribute	Value	Rationale
Impact calculator inputs		
Number of stems impacted	20	A total of 20 stems would be directly impacted by the MPE Project.
Offset calculator inputs		
Time horizon (years)	20	Considering the offset is proposed to be established in perpetuity, the maximum risk-related time horizon of 20 years was assigned.
Start value (number of stems)	142	A value of 142 stems has been assigned based on the number of stems recorded on the Small-flower Grevillea offset area, within the Wattle Grove offset area (refer to Section 5 for identification of these areas). It is likely that the Small-flower Grevillea offset area contains a higher number of stems; intensive surveys conducted in 2012 recorded 202 stems within this area.
Future value without offset (number of stems)	135	The Small-flower Grevillea habitat in the Small-flower Grevillea offset area was observed to be in reasonable condition and there are few threats to habitat. Nevertheless, the current management of the site is not optimal for the species, with dense shrub growth within the offset site and adjacent areas. As such, the future value without the offset has been reduced by 7 stems (approximately 5 percent of the recorded population).
Future value with offset (number of stems)	159	A future site value of 159 stems has been assigned based on the potential for ongoing management improving habitat conditions to facilitate natural recruitment of stems, increasing the start value by 17 stems.
Confidence in result (%)	90	There is a high confidence of a potential offset to provide an improved outcome for the species considering the number of stems that would be protected (minimum of 142 stems) providing an improved outcome for the species. This is based on adequate restoration, monitoring and management actions being implemented.
% of impact offset	104%	This scenario would provide for 104% of the required offset.
Other measures (up to 10%)	10	There is potential to provide up to 10% of the offset as other measures. This may include restoration or protection of areas of habitat for the species.

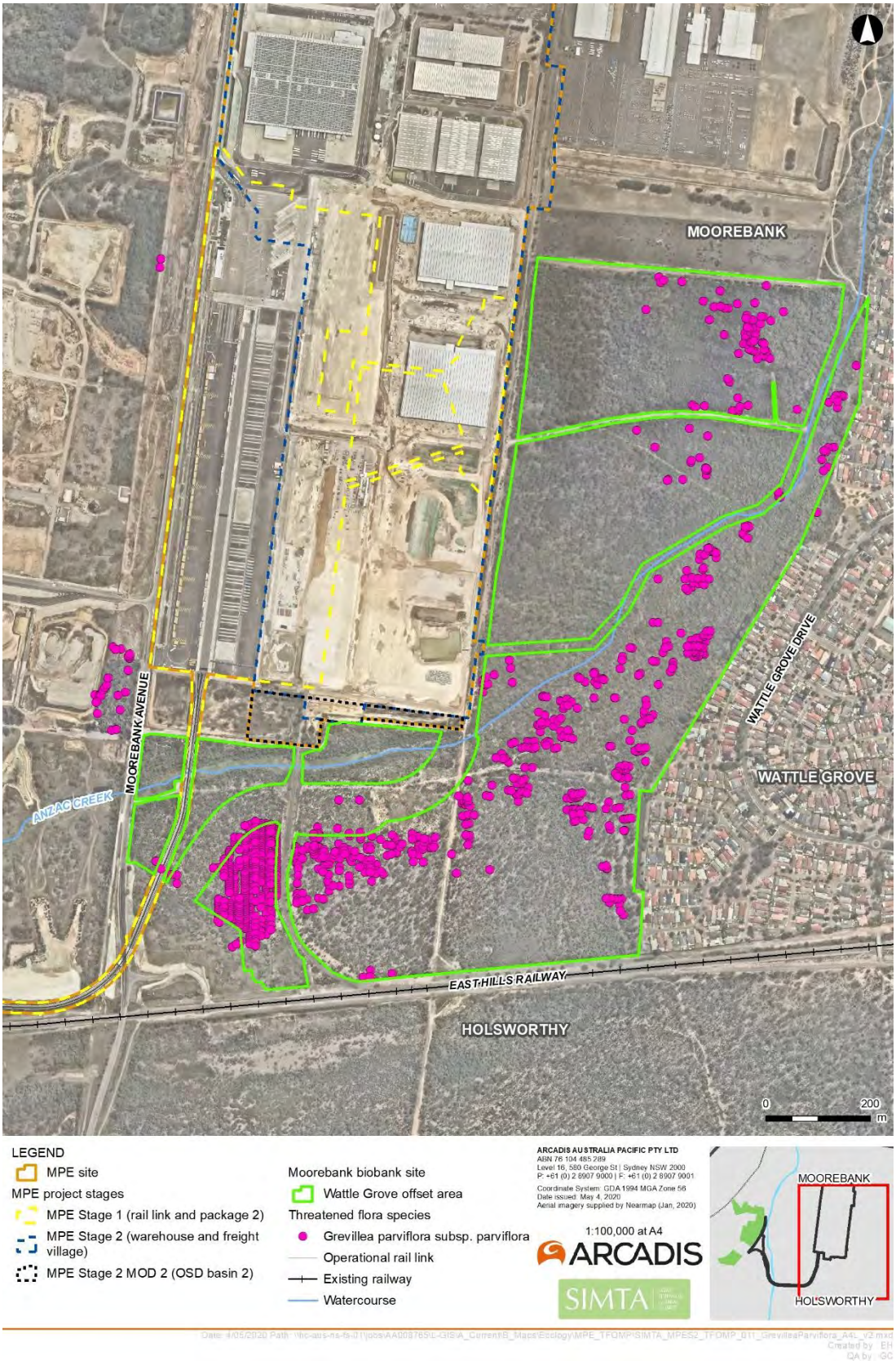

Figure 3-5: Grevillea parviflora subsp. *parviflora (Small-flower Grevillea) records in the vicinity of the MPE site*

4 OFFSETS

4.1 Moorebank Biobank Site

Direct offsets for both EPBC Act and BC Act threatened flora species impacted by the MPE Project have been delivered through the establishment of the Moorebank biobank site. EPBC CoA for the project required additional offsets to be delivered in accordance with the EPBC *Offsets Assessment Guide*, which required the establishment of specific EPBC offset sites. Offset sites were established within and adjacent to the Moorebank biobank site.

The Moorebank biobank site was established in January 2019 to offset the broader project impacts to biodiversity under state legislation. Biodiversity credits generated from the Moorebank biobank site and required management actions of the landowner is outlined in the Biobanking Agreement 341 (BA341) (Appendix B).

BA341 provides funded management actions, monitoring and long-term security of the biobank site in-perpetuity. Securing offset areas under the NSW BioBanking Scheme (now Biodiversity Offset Scheme) guarantees that they are implemented lawfully, equitably and transparently to conserve and improve biodiversity values. The establishment of designated EPBC offset areas within the biobank site safeguards them in perpetuity.

The Moorebank biobank site is comprised of three biodiversity offset areas including (Figure 4-1):

- Wattle Grove offset area
- Moorebank offset area
- Casula offset area

A large majority of species credits delivered to offset impacts from the MPE Project on threatened flora species have been sourced from the Wattle Grove offset area.

Threatened flora records from the Wattle Grove offset area collected by WSP Parsons Brinckerhoff during site investigations for the Biobanking agreement and follow up surveys conducted by Arcadis (Section 3) are presented in Figure 4-3.

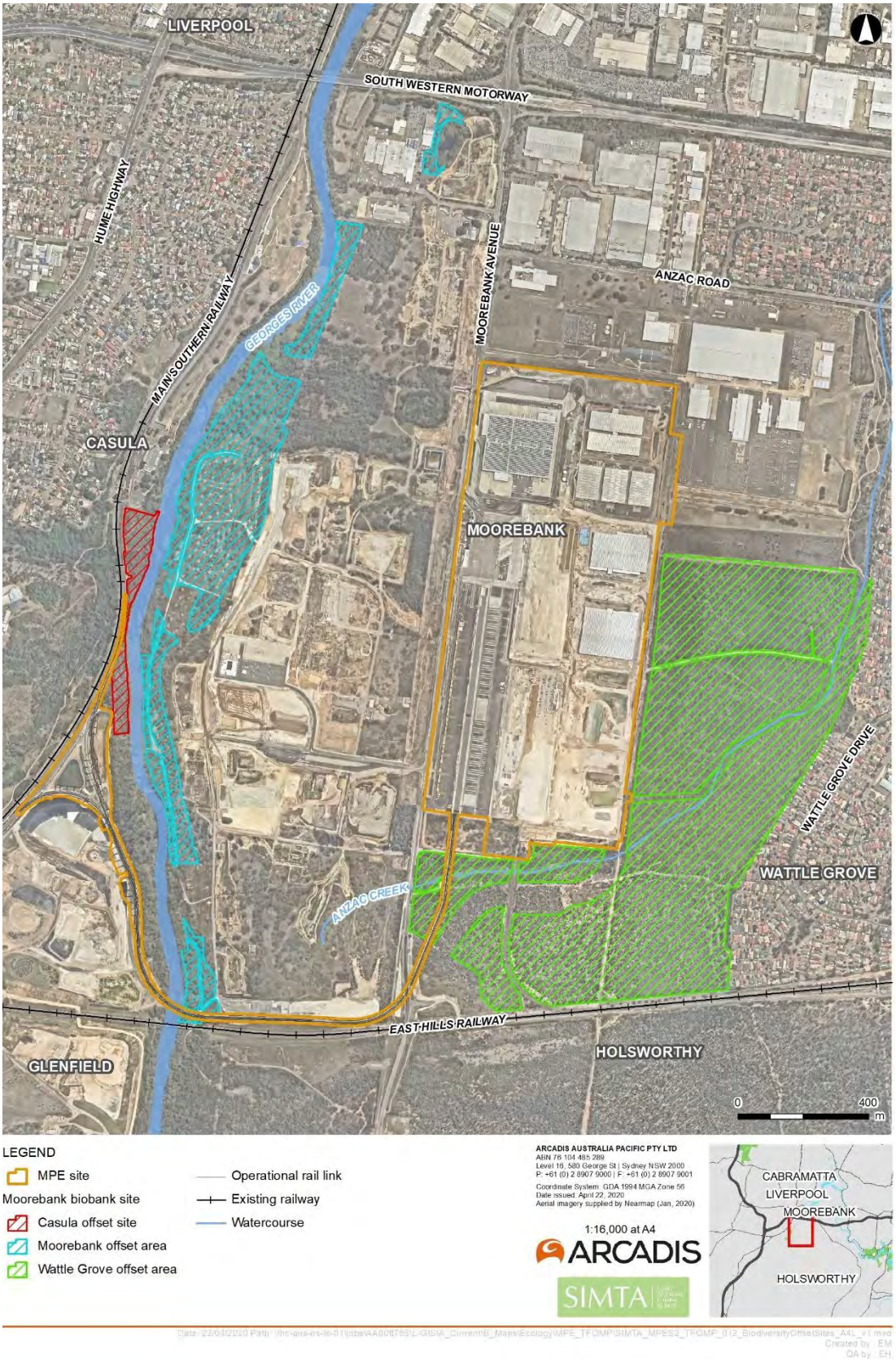

Figure 4-1: Biodiversity offset sites in Biobanking agreement

Figure 4-2: Plant community types in Wattle Grove Offset Area

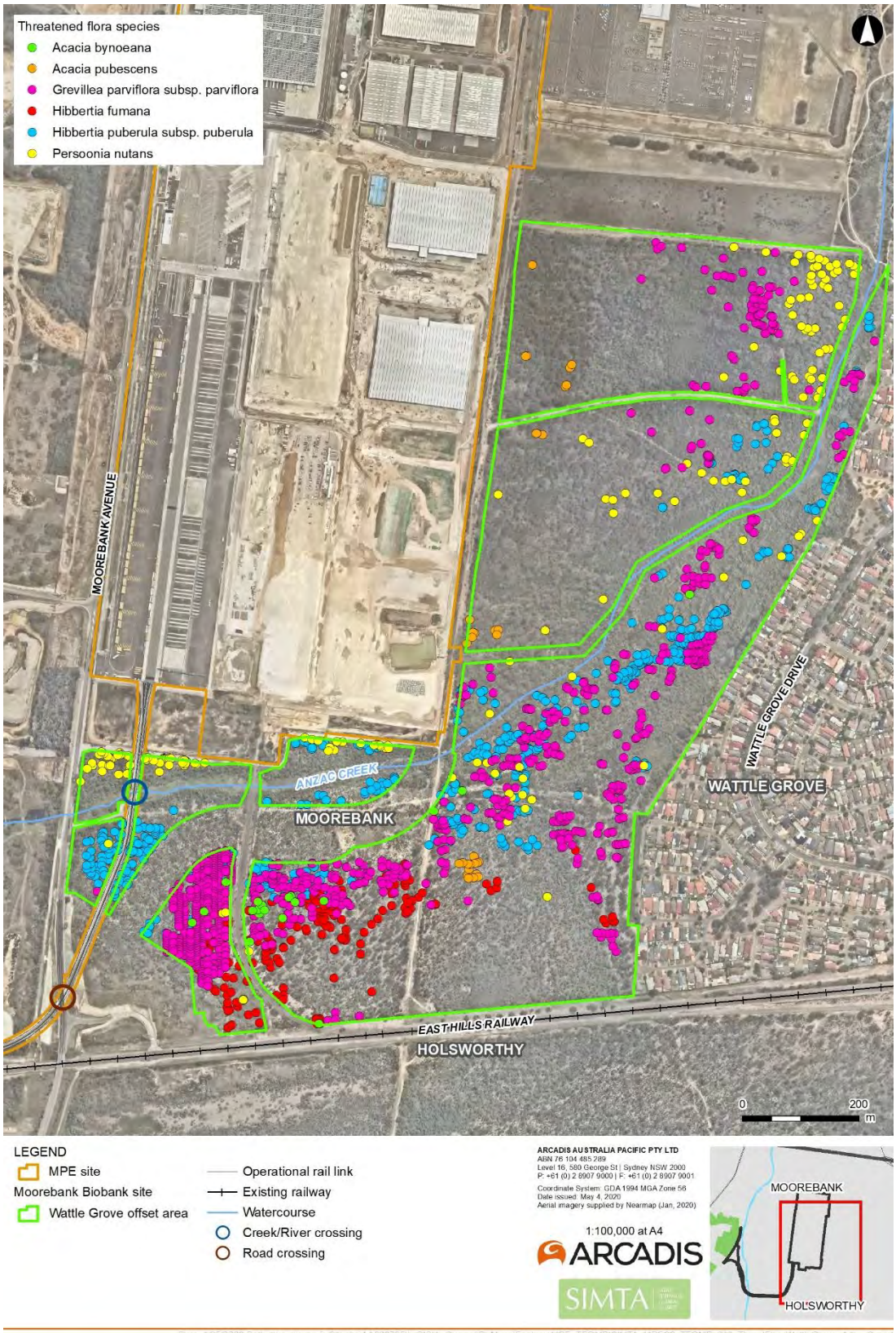

Figure 4-3. Threatened flora species recorded in Wattle Grove Offset Area

4.2 EPBC offset sites

Five discrete areas within and immediately adjacent to the Wattle Grove offset area have been identified as providing suitable offsets for threatened flora species to satisfy the EPBC Act offset requirements.

Four of these offset areas were established during the inaugural EPBC offset site annual monitoring event conducted in November 2019. EPBC offset site 'P4' remains to be established to offset the additional six Nodding Geebung which were removed to facilitate the MPE Stage 2 and MPE Stage 2 MOD 2 projects.

EPBC offset sites are shown in Figure 4-4 - Figure 4-6 and details summarised in Table 4-1. Further details of each offset site are provided below in sections 4.2.1.1 and 4.2.1.2.

Table 4-1: EPBC Act offset areas

Offset sites	Section	Area	Number of plants/stems of threatened flora species
Nodding Geebung offset site	P1	0.25 ha	31 plants of Nodding Geebung
	P2	0.2 ha	46 plants of Nodding Geebung
	P3	0.26 ha	35 plants of Nodding Geebung
	P4	1.81 ha	43 plants of Nodding Geebung
	Total	2.52 ha	155 plants of Nodding Geebung
Small-flower Grevillea offset site	N/A	0.1 ha	>142 stems of Small-flower Grevillea

4.2.1.1 Nodding Geebung offset site

The Nodding Geebung offset site comprises four separate patches of Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin totalling approximately 2.52 ha. Three of the patches are located in the southern extent of the Bootland one patch is situated in the north.

The patches in the southern extent are situated to the north of Anzac Creek, within and adjacent to the Wattle Grove offset area. The single patch in the north-eastern extent of the Bootland is completely contained within the Wattle Grove offset site.

The habitat in the offset area is generally in good condition, with low incidence of exotic species; some areas, have dense cover of shrubs such as *Kunzea ambigua* and *Melaleuca nodosa,* which may be suppressing growth of understorey species including Nodding Geebung.

The Nodding Geebung offset area does include large areas of edge habitat adjoining the cleared powerline easement. The edge habitat is not considered to be detrimental for Nodding Geebung*;* most of the plants recorded were growing close to the edge of the native vegetation. Some parts of the offset area have been historically disturbed, with clearing observed in historical aerial photographs; this clearing and soil disturbance may have encouraged germination of Nodding Geebung.

A total of 155 plants of Nodding Geebung have been identified in the Nodding Geebung offset site. This is consistent with the start value of 155 individuals in the

EPBC Offsets Assessment Guide calculation in Table 3-3. It is proposed, using restoration measures will increase the population by at least 16 individuals.

The threatened flora species *Hibbertia puberula* subsp. *puberula,* listed under the BC Act, was also recorded in the south-eastern section (P3) of the Nodding Geebung offset area.

4.2.1.2 Small-flower Grevillea offset site

The Small-flower Grevillea offset area consists of a 0.1 hectare section of Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin within the Wattle Grove offset area. This section of the offset area has been selected as it contains an area of occupied habitat in generally good condition, with low incidence of exotic species.

A total of 142 stems of Small-flower Grevillea were identified in the Small-flower Grevillea offset area during its establishment; prior to the 2018 wildfire. This is consistent with the start value of 142 individuals in the EPBC Offsets Assessment Guide calculation (Table 3-4). It is proposed, using restoration measures, will increase the population by at least 17 individuals.

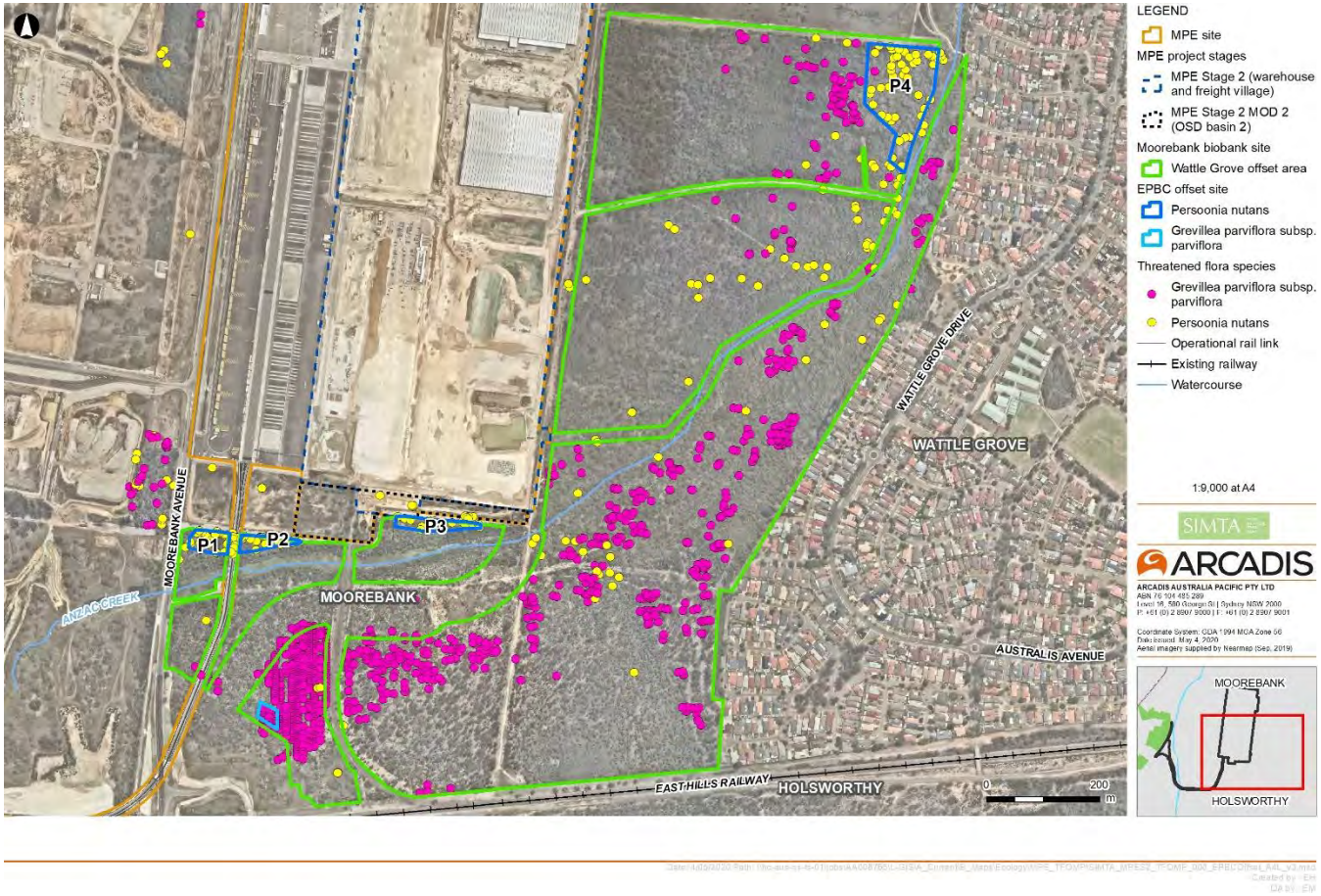

Figure 4-4: Offset sites for EPBC Act listed threatened flora species

Figure 4-5. EPBC offset sites in southern extent of Wattle Grove offset area

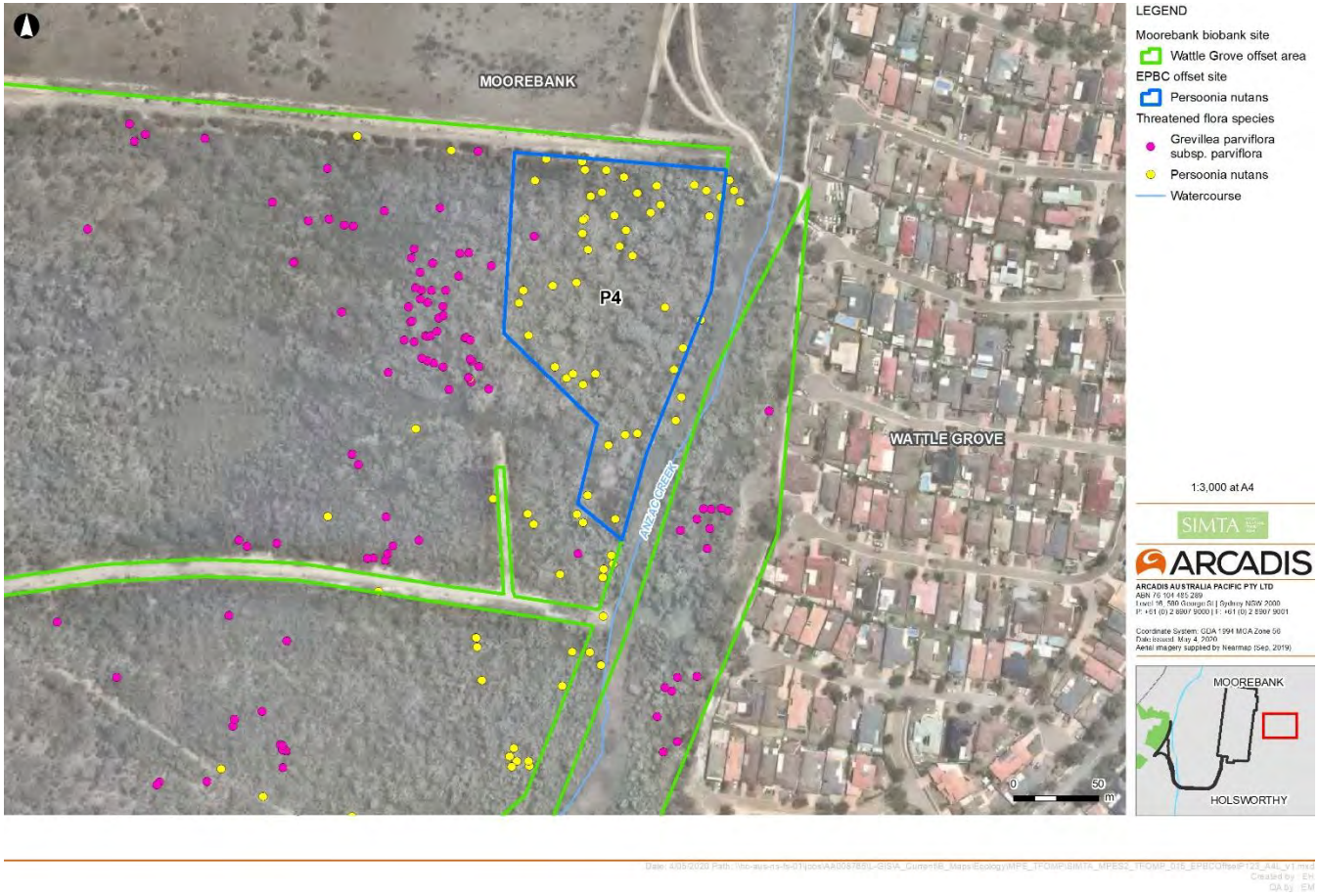

Figure 4-6. EPBC Offset Site in northern extent of Wattle Grove offset area

4.3 Direct offset site consistency with EPBC Act Environmental Offsets Policy

The suitability of the proposed direct offsets for both Small-flower Grevillea and Nodding Geebung has been assessed against the offset principles outlined under Section 7 of the EPBC Act Environmental Offsets Policy dated October 2012. This assessment is provided below in Table 4-2.

Table 4-2: Consistency of proposed direct offset with EPBC Act Offset Principles

Offset principle	How proposed offset is consistent with principle
Suitable offsets must deliver an overall conservation outcome that improves or maintains the viability of the protected matter	The Wattle Grove Offset Area will deliver long-term protection and management of the impacted populations of both Small-flower Grevillea and Nodding Geebung through in-perpetuity conservation under the NSW Biobanking scheme. Whilst there will be a loss of 20 stems of Small-flower Grevillea and 17 individuals of Nodding Geebung, much larger populations of both of these threatened species will be conserved, managed and monitored on the Wattle Grove offset area. Given this, it is considered that the conservation and management of the Wattle Grove offset area will lead to an improved long-term conservation outcome for these species.
Suitable offsets must be built around direct offsets but may include other compensatory measures.	The entire offset package for both Small-flower Grevillea and Nodding Geebung will be delivered as a direct offset – within the Wattle Grove offset area.
Suitable offsets must be in proportion to the level of statutory protection that applies to the protected matter	The Wattle Grove offset area will deliver like for like direct offsets for Small-flower Grevillea and Nodding Geebung that are proportional to the level of statutory protection that applies to the protected matter, as determined with reference to the EPBC Act Offsets Assessment Guide (Section 3.6).
Suitable offsets must be of a size and scale proportionate to the residual impacts on the protected matter	The offset requirements for Nodding Geebung and Small-flower Grevillea have been calculated using the EPBC Offsets Assessment Guide (Section 3.6). The calculated offset ratio ranges from approximately 9:1 for Nodding Geebung to 7:1 for Small-flower Grevillea.
Suitable offsets must effectively account for and manage the risks of the offset not succeeding	Given that the threatened flora offsets will be delivered as direct offsets proposed to be secured under a Biobanking agreement under the BC Act, which provides in-perpetuity funding for management actions that are tied to a strong regulatory framework of monitoring and auditing, the offset proposed is deemed to be low risk.

Offset principle	How proposed offset is consistent with principle
Suitable offsets must be additional to what is already required, determined by law or planning regulations, or agreed to under other schemes or programs	The Wattle Grove offset area has been established under a proposed Biobanking agreement for the Moorebank offset site. Biodiversity credits generated from the Moorebank biobank site have used to offset impacts to state and federally listed entities impacted from the MPE and Moorebank Precinct West (MPW) projects. However, a sufficient number of credit and individuals of Small-flower Grevillea and Nodding Geebung occur within the offset site such that one plant is not fulfilling two offsetting obligations: • There are a surplus of Small-flower Grevillea within the biobank site to offset impacts from the SIMTA Project. • It was identified that there are 171 Nodding Geebung within the Moorebank biobank site were available to be secured as direct offsets under the EPBC Act for impacts of the MPE Project. Of this number, 155 Nodding Geebung have been be secured within the EPBC offset site as a direct offset in accordance with the EPBC Offset Assessment Guide. . The site is not subject to any other existing environmental offset or conservation agreement under any local, State or Commonwealth law or planning regulation.
Suitable offsets must be efficient, effective, timely, transparent, scientifically robust and reasonable	Through the delivery of direct offsets for EPBC Act threatened flora using the NSW Biobanking scheme it is considered that this approach is effective, timely, transparent, scientifically robust and reasonable.
Suitable offsets must have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced	Given the Wattle Grove offset area has been established under the NSW Biobanking Scheme, the site will be subject to annual monitoring and independent auditing by NSW DPIE (EES). The framework for the scheme was established under Part 7A of the BC Act and is supported by the *Threatened Species Conservation (Biodiversity Banking) Regulation 2008*, BioBanking Assessment Methodology (BBAM 2014) and Compliance Assurance Strategy. The Compliance Assurance Strategy underpins the Biobanking agreement and outlines how NSW DPIE (EES) will guarantee that it is implemented lawfully, equitably and transparently and ensures that biodiversity values at the site are conserved and improved.

5 MANAGEMENT ACTIONS ON THE EPBC OFFSET SITES

The responsibility for management actions and performance measures across the broader Wattle Grove offset area, which is subject to the Biobanking agreement (BA341), lies with the landowner of the Biobank site. These prescribed management actions and performance measures are guaranteed commitments to be carried out on the direct offset site. The BAR prepared for the application for the Biobanking agreement (WSP 2017) can be referred to for full detail (Appendix C), however, a summary of the relevant management actions to be implemented for the Wattle Grove offset area in the Management Action Plan in Appendix D of the BAR (included in Appendix C of this Plan) is provided below in sections 5.1 to 5.3.

The NSW Biobanking Scheme is the primary mechanism to deliver biodiversity offsets for the MPE Project. Management actions and performance measures that apply to a Biobanking agreement become a legal arrangement between the land owner and NSW DPIE (EES). Accordingly, no additional management actions or performance measures beyond those specified in the Biobanking agreement are proposed as part of this TFOMP.

The following sections (Section 5 and Section 6) relate specifically to the management and monitoring of the EPBC direct offset site (identified in Section 4).

5.1 Biobanking Management Actions

Standard management actions are required on all Biobank sites to improve vegetation condition when entering into a Biobanking agreement.

The standard management actions that apply to the EPBC direct offset sites (a component of the Wattle Grove Offset Area and immediately adjacent area) as detailed in Appendix D to the BAR and the Moorebank Biobanking Agreement (BA341) (Appendix C of this Plan) are:

- management of grazing for conservation;
- weed control;
- management of fire for conservation;
- management of human disturbance (e.g. Illegal mountain bike trails management);
- retention of regrowth and remnant native vegetation;
- replanting or supplementary planting where natural regeneration will not be sufficient;
- retention of dead timber;
- erosion control; and
- retention of rocks.

Additional management actions proposed for the Biobank site which may apply to the Wattle Grove Offset Area include:

- control of feral and overabundant native herbivores – Large Macropods;
- vertebrate pest management – Foxes, Rabbits;
- nutrient control;
- maintenance or introduction of natural flow regimes.

The details of management actions are outlined within a series of specific management plans that describe how they will be implemented. These management plans are incorporated into the formal Biobanking agreement (Appendix B) and include:

- Weed management plan
- Fire for conservation management plan
- Management plan to control feral and overabundant native herbivores
- Vertebrate pest management plan.

5.2 Management of threatened flora species

Recovery strategies have been identified for threatened flora species across the Wattle Grove offset area, as defined in the Management Action Plan in Appendix 4 of the BAR prepared for the application for the Biobanking agreement (Appendix C of this Plan) (Table 5-1).The EPBC offset sites within the Wattle Grove Offset Area occur almost entirely within management zone 9, therefore the management actions for Small-flower Grevillea and Nodding Geebung align with the management zone 9 actions. The sections of the Nodding Geebung offset area and Small-flower Grevillea offset area that lie immediately adjacent to the Wattle Grove Offset Area will be subject to the same management actions as the areas within the Wattle Grove offset area.

Table 5-1:Recovery strategies identified for EPBC offset flora species in the Wattle Grove Offset Area (zone 9)

Threatened species	Recovery strategies	Timing and duration	Performance criteria
EPBC offset target species			
Small-flower Grevillea	Restrict access to sites	Year 1: 20 years	Fencing installed and maintained to remain functional
	Create and maintain weed free bushland areas	Primary weed control: Year 1-5	<5% weed cover
		Maintenance weeding: Year 5-10	<1-1% weed cover
		Maintenance weeding: Year 11+	<1-1% weed cover
	Ensure appropriate fire regimes for species (minimum fire free period of 8 - 15 years)	Conduct ecological burns every 6-20 years in winter: 20 years	Monitoring of burn site to be undertaken every 6 months. Net gain in the number of plants over the duration of management to meet the offset obligation
	Avoid spraying herbicide within the vicinity of the species	At all times (monitored annually in spring): 20 years	No damage to threatened species through inappropriate herbicide use. Evidence would trigger corrective actions (see Section 6.3)
	Monitor species for grazing or damage, this may indicate large macropod overabundance to inform control frequency	Monitored annually in spring: 20 years	Evidence of excessive grazing would trigger corrective actions under the overabundant herbivore management action plan (see Section 6.3)
	Protect individuals from pedestrian traffic along formal tracks, use fencing if required	Year 1: 20 years	Fencing installed and maintained to remain functional
	Ensure that this species is considered in all works and future planning matters	At all times: 20 years	Net gain in the number of plants over the duration of management to meet the offset obligation

Threatened species	Recovery strategies	Timing and duration	Performance criteria
Nodding Geebung	Restrict access to sites	Year 1: 20 years	Fencing installed and maintained to remain functional
	Create and maintain weed free bushland areas	Primary weed control: Year 1-5	<5% weed cover
		Maintenance weeding: Year 5-10	<1-1% weed cover
		Maintenance weeding: Year 11+	<1-1% weed cover
	Ensure appropriate fire regimes for species (minimum fire free period of 10 years)	Annually in spring: 20 years	Evidence of excessive grazing would trigger actions under the overabundant herbivore management plan
	Monitor site for Acacia baileyana, which may outcompete species	Annually in spring: 20 years	Evidence of encroachment by this species would trigger corrective actions (see Section)
	Monitor species for grazing or damage, this may indicate large macropod overabundance to inform control frequency	Monitored annually in spring: 20 years	Evidence of excessive grazing would trigger corrective actions under the overabundant herbivore management action plan (see Section 7.2)
	Protect individuals from pedestrian traffic along formal tracks, use fencing if required	Year 1: 20 years	Fencing installed and maintained to remain functional
	Ensure that this species is considered in all works and future planning matters	At all times: 20 years	Net gain of 11 plants over the duration of management to meet the offset obligation

Table 5-2:Recovery strategies identified for other EPBC listed threatened flora species in the Wattle Grove Offset Area

Threatened species	Recovery strategies
Other threatened flora species	
Bynoe's Wattle	Restrict access to sites Create and maintain weed free bushland areas Monitor species for grazing or damage, this may indicate large macropod overabundance to inform control frequency Ensure appropriate fire regimes for species (minimum fire free period 10 - 12 years) Protect individuals from pedestrian traffic along formal tracks, use fencing if required Ensure that this species is considered in all works and future planning matters
Downy Wattle	Restrict access to sites Create and maintain weed free bushland areas Ensure appropriate fire regimes for species (minimum fire free period 5 - 7 years) Monitor population for hybrids Monitor species for grazing or damage, this may indicate large macropod overabundance to inform control frequency Protect individuals from pedestrian traffic along formal tracks, use fencing if required Ensure that this species is considered in all works and future planning matters

5.3 Funding of management actions

Overall the Total Fund Deposit of the proposed Biobanking agreement commits [redacted] to fund in-perpetuity management and monitoring of the biobank site, including the EPBC offset sites (Appendix B). A 20 year fully funded management action plan has been developed that outlines the cost, intensity and timing of management actions. It is considered that the delivery of direct offsets through the NSW Biobanking Scheme will provide a legally binding commitment to fully funded in-perpetuity management and monitoring of EPBC Act listed threatened flora species.

Annual monitoring of designated EPBC offset sites will be undertaken as a part of operational monitoring of the MPE site in accordance with EPBC Act CoA 6(e).

6 ADAPTIVE MANAGEMENT AND MONITORING OF THE DIRECT OFFSET SITE

6.1 Monitoring and reporting

The Management Action Plan in Appendix D of the BAR (Appendix C of this plan) and included within the Biobanking Agreement (Appendix B of this plan) outlines monitoring, reporting and record keeping requirements. These apply on an annual basis and are to include photographic points at monitoring sites, a monitoring schedule, annual reporting requirements and record-keeping procedures. Monitoring and associated reporting to NSW DPIE (EES) is the responsibility of the landowner and is outlined in detail in the Biobanking agreement. Remedial actions will be undertaken where the monitoring and NSW DPIE determine that biodiversity outcomes are not being achieved. The process for this is outlined in the Biobanking Agreements and includes the following statement:

> *The landowner must notify the Chief Executive* (of the Office of Environment and Heritage {now the Department of Planning, Industry and the Environment}) *in writing as soon as practicable after becoming aware of any failure to comply with this agreement or any other incident at the Biobank site (or surrounds) which results or may result in a sudden or significant decline of biodiversity values at the Biobank site. In particular, the landowner must notify the Chief Executive of:*
>
> - *the nature, location and time of the incident*
> - *the impact of the incident on biodiversity values*
> - *the measures that have been taken or will be taken in response to the incident*
> - *any provision of this agreement which may have been breached*
> - *the extent of any damage caused or permitted by the incident*
> - *the measures which have been taken or will be taken to prevent a recurrence of the incident.*

It is expected that such measures will provide that appropriate remedial actions are taken as required, including supervision and sign off by NSW DPIE (EES).

6.2 Specific EPBC offset sites monitoring

In addition to the annual monitoring undertaken across the entire Wattle Grove Offset Area, specific monitoring would be undertaken within the EPBC offset sites (Figure 4-4). Annual monitoring of the EPBC Offset sites will be undertaken as a part of operational monitoring of the MPE site in accordance with EPBC Act CoA 6(e). These monitoring events would comprise a full population census applying the parallel field traverse method (also referred to as parallel transects by Cropper (1993)). In addition, there would be habitat assessment and additional photo points specific to the EPBC offset locations. Additional details are provided in Table 6-2.

Table 6-1: Specified monitoring activities for the EPBC offset sites

Monitoring activity	Methodology	Frequency
Population census	Parallel field traverses across the EPBC offset sites, recording the number of plants encountered. Transects to be on a three metre spacing. For Nodding Geebung, the plants in the offset area will be marked with numbered metal tags. The size (height and spread), health and reproductive status (evidence of flowering and fruiting) of each plant is to be recorded to allow recruitment to be monitored. The location of each plant would be recorded with a GPS.	Annually in spring
Photo point monitoring	Additional photo points will be established on the perimeter of the EPBC offset sites, in addition to a single central point with photos in each of the four cardinal directions. Timber stakes would be used to mark photo point monitoring locations to ensure accurate replication.	Annually in spring
Habitat assessment	A habitat assessment will be undertaken at each of the EPBC offset sites. The habitat monitoring would comprise a comprehensive assessment relevant to the target species. Variables considered will include: • Per cent foliage cover of canopy species • Per cent foliage cover of shrub species • Per cent foliage cover of ground cover species • Per cent foliage cover of exotic species • Evidence of dieback.	Annually in spring

6.3 Adaptive management

In terms of the provisions to revise the Management Action Plan under the proposed Biobanking agreement, these are conducted at five yearly intervals and are specifically driven by the result of annual reporting and effectiveness of biodiversity gain at the direct offset site. Any revision or modification to the Management Action Plan must be approved by NSW DPIE (EES).

In response to potential fluctuations in the population size of target threatened species within the EPBC Act offset sites (Figure 4-4), specific remedial measures have been identified. Table 6-2 provides a range of scenarios and remedial actions to manage population fluctuations.

Table 6-2:Potential remedial actions to manage population fluctuations within the offset sites

Scenario	Remedial action
Population decline of greater than 10% of stem count within a 12 month period	Identify and document visible causes of population decline such as habitat degradation, unauthorised access or fire. Consider and document any climatic events that could have resulted in population fluctuations such as unseasonably hot or dry conditions. Review the use of herbicide for weed control within the offset site and in adjacent areas. Implement manual (rather than chemical) weed control methods within a buffer zone to the EPBC offset site if appropriate.

Scenario	Remedial action
Population decline of greater than 25% of stem count within a 5 year period	Identify and document visible causes of population decline such as habitat degradation, unauthorised access or fire. Consider and document any climatic events that could have resulted in population fluctuations such as unseasonably hot or dry conditions. Review the use of herbicide for weed control within the offset site and in adjacent areas. Implement manual (rather than chemical) weed control methods within a buffer zone to the EPBC offset site if appropriate. Consider the impact of long term bush restoration and native species establishment on the populations of threatened species within the offset site. For example, promotion of native shrub recruitment could result in shading of threatened species seedlings. In such instances thinning of the native shrub layer (excluding the threatened species) may be required. Seed collection and/or propagation of cuttings from a selection of individuals to preserve the genetic material of the population, should the population decline continue.
Population decline of greater than 50% of stem countfrom baseline over any duration.	Identify and document visible causes of population decline such as habitat degradation, unauthorised access or fire. Consider and document any climatic events that could have resulted in population fluctuations such as unseasonably hot or dry conditions if appropriate. Review the use of herbicide for weed control within the offset site and in adjacent areas. Implement manual (rather than chemical) weed control methods within a buffer zone to the EPBC offset site. Consider the impact of long term bush restoration and native species establishment on the populations of threatened species within the offset site. For example, promotion of native shrub recruitment could result in shading of threatened species seedlings. In such instances thinning of the native shrub layer (excluding the threatened species) may be required. Seed collection and/or propagation of cuttings from a selection of individuals to preserve the genetic material of the population, should the population decline continue.

If remedial actions listed above are implemented, DAWE will be notified. Should additional actions be required, DAWE would be consulted and, if necessary, the TFOMP would be updated. Any updates would require written approval from the Minister under Condition 14 of EPBC 2011/6229 Conditions of Approval.

7 REFERENCES

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APPENDIX A CONSULTATION

MINUTES

ARCADIS Design & Consultancy for natural and built assets

Issue date	14/07/2017
Issue to	[redacted]
Issued by	[redacted]
Subject	MPE EPBC Approval (2011/6229) – Threatened Species Offset Management Plan (TFOMP), DoEE consultation
Client	SIMTA
Meeting date	13/07/2017
Time	9:00am
Location	DoEE offices, 51 Allara Street, Canberra
Present	[redacted]
Copy to	[redacted]

Summary

The purpose of the meeting was to discuss the TFOMP prepared by Arcadis to satisfy conditions 3,4 and 6 of the EPBC Approval (No. 2011/6229) for the Moorebank Precinct East Project (MPE Project) (MP 10_0193).

Overall, comments provided by DoEE were related to increasing the depth of the content included directly within the TFOMP, including more targeted information from the state biobanking agreement for the project (currently being assessed by the NSW Office of Environment and Heritage (OEH)) as it relates to impacting and offsetting EPBC listed threatened species.

Minutes

ITEM	COMMENTS	ACTION
1.0	**Introductions**	
2.0	**Project history**	
	• A summary of the MPE Project and the MPW Project and associated approvals (both State and Commonwealth) was provided by NC.	Note
	• [redacted] requested that further information be provided within the TFOMP to identify the impacted areas of the Rail link, clearly identifying any EPBC listed threatened species within the impacted areas. A map, or several maps, are to be prepared to show this information.	Arcadis to update TFOMP (Section 1) accordingly.
	• [redacted] and [redacted] noted that as a result of the School of Military Engineering (SME) having vacated the MPW site some aspects of the EPBC conditions are no longer pertinent to the action. Notwithstanding this, it is still SIMTA's intention to satisfy all conditions within the approval as was recently shown with the submission of content to satisfy condition 9.	Note

3.0	**TFOMP Structure**	
	• [redacted] summarised the information provided in each section of the TFOMP.	Note
	• [redacted] requested further maps showing a clearer delineation of the impact area vs the offset area, i.e. providing the Rail link impact at a larger scale so that individual impacted plant species can be identified more clearly.	Arcadis to update TFOMP (Section 3) accordingly.
	• [redacted] asked whether a buffer area between the Rail link and the offset area had been provided. [redacted] and [redacted] explained that the Rail link corridor had been restricted to 20m in width to minimise the impacts, and that management measures (such as fencing and weed management) were proposed to ensure that the areas identified for the offset would not be adversely impacted by the Project.	Note
4.0	**EPBC Approval (2011/6229) conditions of approval**	
	• [redacted] discussed how the TFOMP was prepared to address conditions of approval 3,4 and 6 of the EPBC Approval (2011/6229). Specific reference was made to Table 1-1 of the TFOMP which provides a summary of how the conditions have been met and relevant sections of the report where details can be found. Further discussion followed below regarding satisfying each specific sub-items within the applicable condition of approval.	Note
	• Condition 3 – [redacted] noted that surveys did not identify *Hibbertia sp. Bankstown*, however did identify *Hibbertia puberula subsp. puberula* within the area impacted. • Condition 4 – Bynoe's Wattle (*Acacia bynoeana*) was identified in surveys, however there will be no impacts to the species as a result of the action – the closest record was located 140 metres from the Rail link. As such, this species is not subject to offset requirements under the EPBC Act. • [redacted] asked whether SIMTA surveyed the western edge of the George's River for the condition 3 and 4 surveys. [redacted] noted that this area has surveyed multiple times, however it does not represent relevant habitat to the EPBC listed threatened species listed in the conditions. • [redacted] agreed in principle with the survey methods undertaken to satisfy these conditions.	Note
	• Condition 6(a) – [redacted] requested that Arcadis provide further details on the calculations undertaken to determine the offset. In particular, the following further detail was sought: – Arcadis provide the calculations for impacts on threatened species based on both size of area impacted (hectares) (for *Grevillea parviflora* subsp. *parviflora*) and individuals impacted (for *Persoonia nutans*).	Arcadis to update TFOMP (Section 4) to include further information relating to calculations and provide Table 4-2 Arcadis to provide Excel offsets guide calculator files to DoEE.

	– Details on the impacts to *Grevillea parviflora subsp. parviflora* (Small flowered Grevillea). It was identified by [redacted] that Table 4-2 was missing from the submitted TFOMP document. [redacted] noted that the risk of loss (of the EPBC listed threatened species) without offset was low, which means that the overall offset impact / benefit is not skewed toward the value of the offset. DoEE agreed with this approach.	
•	Condition 6(b) – [redacted] requested that the offset area for the EPBC listed threatened species be specifically identified within the TFOMP, i.e. through including a polygon around the areas to be retired for offset of the EPBC listed threatened species. [redacted] asked whether the offset area would only be related to the EPBC listed threatened species to be offset, i.e. if other species or communities were identified in this area now or in the future could they be utilised for offsetting other aspects of either the MPE Project, MPW Project or potentially another project through sale of the credits. [redacted] noted the concern and indicated that DoEE's initial thought is that the area could be identified and delineated to relate only to the threatened species to be offset allowing for this site also to be used for offsetting other species or communities in the future. Notwithstanding this [redacted] indicated that DoEE would clarify this point with the internal offset policy team.	Arcadis to update TFOMP (Section 5) to clearly show offset areas for EPBC listed species DoEE to provide further information on whether delineating an offset site for threatened species would restrict it from future offsets for other species/communities not included in the original offset.
•	Condition 6(c) – [redacted] requested that further information be provided in the TFOMP relating to the duration, intensity and timing of the management measures for EPBC listed threatened species. [redacted] also requested that further information be provided relating to the current extent and status of weed infestation and erosion on the offset site and measures that would be implemented to manage these potential issues.	Arcadis to update TFOMP (Section 6) to identify timing for management measures and specific measures to manage both weeds and erosion (as relevant)
•	Condition 6(d) – [redacted] requested further information be included within the TFOMP to provide details on the number of plants/individuals, habitat and quality of the habitat impacted by the project, i.e. identify a baseline.	Arcadis to update TFOMP (Section 4) to include this information.
•	Condition 6(e) – [redacted] requested inclusion of a table with specific measures to assess fluctuations in population size and frequency. Detail should be included relating to how and when monitoring is being undertaken and more methods provided for measurement of population in addition to photo points. As an alternative, a reference to a specific section of the biobanking agreement report where these measures are included could be provided.	Arcadis to update TFOMP (Section 7) to provide further detail on periodic monitoring of EPBC listed threated species.
•	Condition 6(f) – [redacted] requested further detail in the TFOMP relating to contingency measures that could be undertaken to manage fluctuations in the EPBC listed threatened flora populations. Inclusion of these measures would provide scope for managing population fluctuations without having to update the TFOMP in accordance with condition 14. In the instance that a corrective measure is implemented, DoEE would be notified.	Arcadis to update TFOMP (Section 7) to provide further details on corrective measures that could be implemented to manage EPBC listed

		threatened species population fluctuations.
5.0	**Other matters**	
	• [redacted] and [redacted] identified that no definition is provided within the EPBC Approval for 'native vegetation', despite a very specific definition of 'native vegetation clearing'. It is noted that the approach undertaken in the Flora and Fauna Assessment (FFA) for the MPE EPBC Referral delineates between native and non-native vegetation and this approach was referenced in the EPBC assessment report. A definition (refer to Figure 1-2) has been provided in the TFOMP to be consistent with the approach undertaken for the FFA.	Note
	• [redacted] and [redacted] noted there are a number of other threatened flora species listed in the TFOMP due these species being present within the Wattle Grove offset area, which is proposed in part to be used for the EPBC direct offsets under this referral. The impacted other species include *Hibbertia puberula subsp. puberula,* listed under the TSC Act but not the EPBC Act. The other non-impacted species include *Acacia pubescens,* listed under the TSC Act and EPBC Act and *Hibbertia fumana,* listed under the TSC Act but not the EPBC Act. [redacted] acknowledged the inclusion and understood why they had been included, however noted that non-EPBC listed species are not required to be considered by DoEE in the assessment of this TFOMP.	Note
6.0	**Next steps**	
	• [redacted] suggested that the minutes for the meeting could be used to identify any updates required for the TFOMP to satisfy the conditions of approval. DoEE agreed with this approach, noting that once agreed, and subject to a further review of the TFOMP following the meeting, the actions from the minutes would be used as the basis for the DoEE review comments.	DoEE to review these minutes and provide comment with particular reference to inclusions required for the TFOMP.

Post Approvals Assessment

EPBC Number	2011-6229
Project	SIMTA Moorebank Precinct East Project
NESTRA	High
Approval Holder	Sydney Intermodal Terminal Alliance
Name of document under review	Threatened Species Offset Management Plan
Officer reviewing	[redacted]
Date comments provided to Approval Holder	

Date revised document and comments received	
Date Dept review of revised document	

Condition	Condition Met/ Not met	Department Notes/Comments Date	Approval Holder/Consultant response Date	Dept review of revised documents Date
General		Further information and maps that clearly identify impact areas as distinct from the offset areas.		
3. For the better protection of Hibbertia sp. Bankstown, the person taking the action must engage a suitably qualified expert to undertake a targeted search for individuals of Hibbertia sp. Bankstown within all areas of potential habitat during the species' flowering period.		The approval holder noted that surveys did not identify Hibbertia sp. Bankstown, however did identify Hibbertia puberula subsp. puberula within the area impacted. Could a map be provided to show the survey locations in relation to the project boundary/impact area.	An additional figure (Figure 3-1) has been added to the TFOMP, showing areas of potential habitat subject to threatened species surveys.	
4. For the better protection of Bynoe's Wattle, the person taking the action must engage a suitably qualified expert to undertake a field habitat assessment that targets the ecological requirements of Bynoe's Wattle, in all areas of Castlereagh Scribbly Gum Woodland likely to be cleared as a result of the proposed action. If the assessment determines there is potential for the species to occur on site, then a suitably qualified expert must undertake a targeted search for individuals of Bynoe's Wattle within all areas of potential habitat identified		Bynoe's Wattle (Acacia bynoeana) was identified in surveys, and the approval holder argues that there will be no impacts to the species as a result of the action – the closest record was located 140 metres from the Rail link. Could a map be provided to show the survey locations and presence of Byone's Wattle in relation to the project boundary/impact area.	An additional figure (Figure 3-3) has been added to the TFOMP, showing threatened flora species to be impacted by the Rail link. Figure 3-3 includes the closest records of Bynoe's Wattle to the Rail link.	

Condition	Condition Met/ Not met	Department Notes/Comments Date	Approval Holder/Consultant response Date	Dept review of revised documents Date
by the habitat assessment during the species' flowering period.				
6. For the better protection of Nodding Geebung, Small-flower Grevillea (and potentially, Hibbertia sp. Bankstown and Bynoe's Wattle pending the outcome of conditions 3 and 4) the person taking the action must engage a suitably qualified expert to prepare a Threatened Flora Offset Management Plan (TFOMP) (or plans) for the approval of the Minister. The TFOMP must include (but need not be limited to):				
a) details of a direct offset that satisfies the requirements of the Department's offset policy, in accordance with the offset user guide (including timeframes for the delivery or acquisition of the direct offset)	**Not met**	Further details on the calculations undertaken to determine the offset. In particular: - Calculations for impacts on threatened species, and justification of the choice of protected matter attribute, i.e. size of area impacted (hectares) (for Grevillea parviflora subsp. parviflora) vs individuals impacted (for Persoonia nutans). - Details on the impacts to Grevillea parviflora subsp. parviflora (Small flowered Grevillea). It indicated at the recent meeting, Table 4-2 was missing from the submitted TFOMP document.	Additional detail has been provided in Section 4.1.1 and 4.1.2 on the impacts on threatened species and justification of the selected protected matter attribute used in each calculation. An additional figure (Figure 3-3) has been added to the TFOMP, showing more detail on impacts to threatened species as a result of the Rail link. Table 4-2 has been reinserted into the TFOMP.	
b) map(s) and shapefiles that identify the location and boundaries of the direct offset		The offset area for the EPBC listed threatened species should be specifically identified in the TFOMP with: - a polygon around the areas to be retired for offset of the EPBC listed threatened species. - Shapefiles (ESRI ArcGIS Shapefile containing .shp, .shx or dbf files) that should also be provided.	An additional figure (Figure 5-3) has been added to the TFOMP, showing the EPBC offset areas. The areas are described in section 5.2.1 of the TFOMP. Shapefiles of the EPBC offset area polygons have been provided with the updated Plan	

Condition	Condition Met/ Not met	Department Notes/Comments Date	Approval Holder/Consultant response Date	Dept review of revised documents Date
c) details of the management actions and performance objectives which will maintain and enhance the Nodding Geebung and Small-flower Grevillea habitat and/or population covered by the TFOMP (including the duration, intensity, and timing of management actions)		Further information on: - the duration, intensity and timing of the management measures for EPBC listed threatened species. - the current extent and status of weed infestation and erosion on the offset site and measures that would be implemented to manage these potential issues.	Further details of the proposed management actions in the EPBC offset site, including duration and timing of offset measures, have been included in Table 6-1. The current condition of the habitat in the EPBC offset areas is described in section 5.2.1.	
d) an assessment of the baseline population and distribution for Nodding Geebung and Small-flower Grevillea within the direct offset, including: i. the number of plants protected and their location; and ii. plant and habitat condition.		Further information on the number of plants/individuals, habitat and quality of the habitat impacted by the project, i.e. identify a baseline.	It is assumed that in order to satisfy the referenced condition that further information on the number of plants/individuals, habitat and quality of the habitat in the offset areas is required, not the impact area. These details are provided in section 5.2.1.1 and 5.2.1.2 of the updated TFOMP.	
e) measures for regular monitoring of the status of individuals of Nodding Geebung and Small-flower Grevillea and their habitat as measured against the baseline population and distribution, including: i. fluctuations in population size and distribution; and ii. response to disturbances and/or management actions.		The TFOMP should include a table with specific measures to assess fluctuations in population size and frequency. Detail should be included relating to how and when monitoring is being undertaken and more methods provided for measurement of population in addition to photo points. As an alternative, a reference to a specific section of the biobanking agreement report where these measures are included could be provided.	Specific monitoring measures for the EPBC offset areas are included in Table 7-1 of the TFOMP.	

Condition	Condition Met/ Not met	Department Notes/Comments Date	Approval Holder/Consultant response Date	Dept review of revised documents Date
f) provisions to revise the approved TFOMP in response to monitoring associated with condition 6(e)		Further detail in the TFOMP relating to contingency measures that could be undertaken to manage fluctuations in the EPBC listed threatened flora populations.	A new table (Table 7-2) has been added to the TFOMP specifying measures to manage fluctuations in threatened flora populations.	
Native vegetation clearance must not occur until the TFOMP has been approved. The TFOMP must be implemented once approved. Should the action result in, or be likely to result in, residual impacts to Hibbertia sp. Bankstown or Bynoe's Wattle (as determined by the Minister), the TFOMP must also demonstrate how it meets the standards described in (a) to (f), for these two species.				

APPENDIX B MOOREBANK BIOBANK SITE: BIOBANKING AGREEMENT (BA341)

APPENDIX C BIODIVERSITY ASSESSMENT REPORT FOR BIOBANKING AGREEMENT: WATTLE GROVE OFFSET AREA, CASULA OFFSET AREA AND MOOREBANK CONSERVATION AREA