



**Australian Government**

**Department of Infrastructure, Transport,  
Regional Development and Communications**

File Reference: F21/3792-16

Ben Armstrong  
Associate Director Environment Operations, Customer & Place Making  
Sydney Metro  
PO Box K659  
Haymarket NSW 1240

Dear Mr Armstrong

**Biodiversity Construction Environmental Management Plan (CEMP)**

I write to notify you that, in accordance with Condition 39 of the Airport Plan, I have today approved the Biodiversity CEMP (Rev 5) submitted by Sydney Metro on 21 February 2022. This follows my recent approval of the Construction (Rail) Plan. Thank you for Sydney Metro's engagement with the department over the last few months as these plans were developed.

Now that the Biodiversity CEMP has been approved Sydney Metro is required:

- a. To take reasonable steps to ensure that each person involved in carrying out a development that is part of the Rail Development is informed of, and complies with, the approved Biodiversity CEMP (Condition 45(3) of the Airport Plan).
- b. To maintain accurate records demonstrating implementation of, and compliance with, the approved Biodiversity CEMP, and other applicable conditions contained in Section 3.11.6 of the Airport Plan. Records must be made available to the Infrastructure Department on request (Condition 46 of the Airport Plan).
- c. To publish information in a report about its compliance with the conditions set out in section 3.11.6 of the Airport Plan (Rail Conditions) and its implementation of the approved Biodiversity CEMP (Condition 47 of the Airport Plan).
- d. To ensure that an independent audit of its compliance with the conditions set out in section 3.11.6 (except Condition 44) and condition 46 of the Airport Plan (Rail Conditions) is conducted, by an approved independent auditor, in respect of the 12-month period commencing with commencement of Rail Construction Works. The independent audit report must be submitted to the Infrastructure Department, with a copy provided to the Environment Department, within six months of the end of the period in respect of which the audit was conducted (Condition 48 of the Airport Plan).
- e. Unless otherwise agreed by an Approver, to publish the approved Biodiversity CEMP on its website (Condition 50 of the Airport Plan).

If you have any queries in relation to this letter, please do not hesitate to contact me.

Yours sincerely

David Jansen

Assistant Secretary

Western Sydney Airport Regulatory Policy Branch

19

April 2022



# Sydney Metro Western Sydney Airport Biodiversity Construction Environmental Management Plan



Sydney Metro Integrated Management System (IMS)

<b>Applicable to:</b>	Airport Rail Development
<b>Document Owner:</b>	Sydney Metro
<b>System Owner:</b>	-
<b>Status:</b>	Final
<b>Version:</b>	Rev05
<b>Date of issue:</b>	18 February 2022
<b>Review date:</b>	-
© Sydney Metro 2022	



## Table of contents

<b>1.</b>	<b>Introduction .....</b>	<b>11</b>
1.1.	Sydney Metro .....	11
1.2.	Sydney Metro Western Sydney Airport .....	13
1.3.	Background / Context.....	13
1.3.1.	Biodiversity Offset Strategy for on-airport lands .....	15
1.3.2.	Airport Plan Biodiversity Staging Report.....	16
1.4.	Document purpose .....	17
1.5.	Consistency.....	18
1.6.	Sydney Metro environmental management system overview .....	19
1.7.	Consultation requirements of this plan .....	20
1.8.	Certification and approval .....	20
1.9.	Distribution .....	20
<b>2.</b>	<b>Scope of works.....</b>	<b>22</b>
2.1.	Overall Project scope .....	22
2.2.	Preparatory activities.....	24
2.3.	Construction sites.....	24
<b>3.</b>	<b>Objectives and targets.....</b>	<b>26</b>
3.1.	Objectives .....	26
3.2.	Targets and performance objectives .....	26
<b>4.</b>	<b>Legal and other requirements.....</b>	<b>28</b>
4.1.	Relevant legislation and guidelines .....	28
4.2.	Legislation .....	28
4.3.	Guidelines and standards .....	32
4.4.	Approvals and other specifications .....	34
4.5.	Part 13 Permit conditions .....	34
4.6.	Airport Plan conditions .....	37
4.7.	WSA Environmental impact requirements .....	46
4.7.1.	WSA EIS requirements .....	46
4.7.2.	SM - WSA EIA requirements .....	46
<b>5.</b>	<b>Existing environment.....</b>	<b>52</b>
5.1.	Construction activities to date .....	52
5.2.	Ecological assessments undertaken for the WSA EIS.....	53
5.3.	Post- EIS ecological assessment.....	53
5.4.	Endangered ecological communities .....	53
5.5.	Threatened or other significant flora species .....	59
5.5.1.	Stage 1 CIZ.....	59
5.5.2.	SM - WSA on-airport outside Stage 1 CIZ .....	59
5.6.	Vegetation corridors .....	59
5.7.	Threatened fauna.....	60

	5.7.1.	Stage 1 CIZ.....	60
	5.7.2.	SM-WSA support sites in the RCIZ outside Stage 1 CIZ.....	61
5.8.		Migratory species .....	64
	5.8.1.	Stage 1 CIZ.....	64
	5.8.2.	SM-WSA support sites in the RCIZ outside Stage 1 CIZ.....	64
5.9.		Aquatic fauna .....	64
	5.9.1.	Stage 1 CIZ.....	64
	5.9.2.	SM-WSA support sites in the RCIZ outside Stage 1 CIZ.....	64
5.10.		Aquatic flora .....	65
<b>6.</b>		<b>Biodiversity aspects and impacts .....</b>	<b>66</b>
	6.1.	Construction activities .....	66
	6.2.	Ecological impacts .....	66
		6.2.1. SM - WSA direct impacts .....	66
		6.2.2. Direct impacts .....	68
		6.2.3. Indirect impacts.....	68
		6.2.4. Indirect impacts on-airport outside stage 1 .....	69
	6.3.	Environmental Risk Assessment.....	69
		6.3.1. Risk Assessment process.....	70
<b>7.</b>		<b>Environmental Control Measures.....</b>	<b>81</b>
<b>8.</b>		<b>Biodiversity Management.....</b>	<b>94</b>
	8.1.	Vegetation management.....	94
	8.2.	Biodiversity management protocols .....	95
		8.2.1. Habitat management.....	95
		8.2.2. Aquatic flora and fauna management.....	96
		8.2.3. Threatened species management .....	96
	8.3.	Unexpected Finds Protocol .....	97
	8.4.	Weed and disease management .....	97
	8.5.	Bushfire management.....	97
	8.6.	Biodiversity Offsets Strategy .....	97
	8.7.	Completion Report .....	98
<b>9.</b>		<b>Environmental roles and responsibilities.....</b>	<b>99</b>
	9.1.	Ecologist.....	99
<b>10.</b>		<b>Environmental, inspection, monitoring and auditing.....</b>	<b>100</b>
	10.1.	Environmental inspections .....	100
		10.1.1. Sydney Metro environmental inspections .....	100
		10.1.2. Contractor environmental inspections.....	100
		10.1.3. Pre-start inspection .....	100
	10.2.	Biodiversity monitoring .....	101
	10.3.	Environmental auditing.....	104
	10.4.	Environmental reporting .....	104
	10.5.	Environmental compliance tracking .....	107



<b>11.</b>	<b>Competence, training and awareness</b> .....	<b>108</b>
11.1.	Environmental Project Induction .....	108
11.2.	Contractor specific site inductions.....	108
11.3.	Toolbox talks, training and awareness .....	109
11.4.	Daily pre-start meetings .....	109
<b>12.</b>	<b>Communications and complaints management</b> .....	<b>110</b>
12.1.	Complaints management .....	110
12.2.	Community and stakeholder communication .....	110
12.3.	Environmental incidents and complaints management.....	110
<b>13.</b>	<b>Review and improvement</b> .....	<b>111</b>
13.1.	Continuous improvement .....	111
13.2.	Change management.....	111
13.3.	Review of approved plans.....	111
<b>14.</b>	<b>References</b> .....	<b>113</b>
<b>Appendix A</b>	<b>Vegetation Management Plan</b> .....	<b>115</b>
<b>Appendix B</b>	<b>Biodiversity Management Protocols</b> .....	<b>124</b>
<b>Appendix C</b>	<b>Weed and Disease Management Plan</b> .....	<b>157</b>
<b>Appendix D</b>	<b>Bushfire Management Plan</b> .....	<b>166</b>

## Figures

Figure 1-1	Sydney Metro Western Sydney Airport alignment.....	12
Figure 1-2	Project on-airport stages and biodiversity offset areas.....	17
Figure 1-3	SM - WSA Construction Environmental Management System and CEMP context	20
Figure 2-1	Construction footprint and key construction sites .....	23
Figure 2-2	Indicative main construction program for the project.....	24
Figure 2-3	Indicative construction activities at the Project construction site .....	25
Figure 5-1	Major Earthworks progress on WSA CIZ.....	52
Figure 5-2	Vegetation Types (PCT) within the SM - WSA RCIZ outside Stage 1.....	56
Figure 5-3	Threatened Ecological Communities within the SM - WSA RCIZ outside Stage 1	58
Figure 5-4	Threatened fauna species habitat within SM-WSA support sites in the RCIZ on-airport outside Stage 1 CIZ .....	64
Figure 6-1	Risk severity ranking .....	71
Figure 8-1	Indicative Biodiversity Protocols .....	94

## Tables

Table 1-1	Biodiversity CEMP relationship with other CEMP documentation .....	14
Table 1-2	Construction stages and location of biodiversity offset areas on-airport .....	16
Table 3-1	Biodiversity objectives and targets .....	26
Table 4-1	Principal legislation and relevance .....	28
Table 4-2	Relevant guidelines and standards.....	32
Table 4-3	Conditions of approval attached to part 13 Permit E2017-0138 relating to WSA Stage 1 works .....	34



Table 4-4 Conditions of approval attached to part 13 Permit E2021-0187 relating to the SM-WSA support sites in the RCIZ ..... 35

Table 4-5 Airport Plan Conditions of approval relevant to biodiversity management..... 38

Table 4-6 Summary of biodiversity management requirements from the SM - WSA EIA..... 47

Table 5-1 Endangered Ecological Communities within the Stage 1 Construction Impact Zone ..... 54

Table 5-2 Vegetation communities within the SM - WSA RCIZ outside Stage 1 ..... 54

Table 5-3 Threatened flora likely to occur within SM - WSA on-airport outside Stage 1 CIZ.. 59

Table 5-4 EPBC Act Threatened species not detected during the field surveys but may be present..... 60

Table 5-5 BC Act Threatened species not detected during the field surveys but may be present ..... 60

Table 5-6 Migratory species listed under the EPBC Act known to occur within the Airport site64

Table 6-1 Direct impact to native vegetation within the Airport Site..... 67

Table 6-2 Direct impact to TECs listed under the BC Act and EPBC within the Airport Site .. 67

Table 6-3 Direct impact to threatened species within the Airport Site ..... 68

Table 6-4 Likelihood descriptor ..... 70

Table 6-5 Consequence descriptor ..... 70

Table 6-6 Risk severity and management response..... 71

Table 6-7 Biodiversity Risk Assessment..... 72

Table 7-1 Environmental mitigation and management measures..... 82

Table 10-1 Biodiversity monitoring requirements..... 101

Table 10-2 Proposed methodology for Green and Golden Bell Frog targeted surveys ..... 102

Table 10-3 Aquatic flora and fauna management performance measures ..... 102

Table 10-4 Weed and pathogen monitoring schedule and performance indicators..... 103

Table 10-5 Biodiversity management reporting ..... 105

## Document Control

<b>Title</b>	Sydney Metro- Western Sydney Airport Biodiversity Construction Environmental Management Plan
<b>Document No/Ref</b>	SM-21-00033455

### Version Control

Revision	Date	Description
01	17 March 2021	Draft for Tender
02	11 August 2021	Draft for WSA Review
03	1 November 2021	Issue to DITRDC
04	27 January 2022	Final to DITRDC
05	18 February 2022	Final

## Terms and Definitions

Terms	Definitions
<b>The Act</b>	Airports Act 1996 (Cth) (Airports Act)
<b>AEPR</b>	Airports (Environment Protection) Regulations 1997
<b>AEW</b>	Advanced and Enabling Works
<b>Airport</b>	Western Sydney International (Nancy-Bird Walton) Airport (WSI) located at the Airport Site. Note: The Airport is referred to in the Act as Sydney West Airport and is commonly known as Western Sydney International (Nancy-Bird Walton) Airport
<b>Airport Lease</b>	An airport lease for the Airport granted under section 13 of the Act
<b>Airport Lessee Company</b>	The company that is granted a lease over the Airport Site
<b>Airport Plan</b>	Means the September 2021 approved Airport Plan which includes the Variation for the SM - WSA Rail Development on the WSI airport and which otherwise means airport plan for the Airport Site as determined by the Infrastructure Minister under section 96B of the Act in December 2016 as varied from time to time in accordance with the Airports Act.
<b>Airport Site</b>	The site for Sydney West Airport as defined by the Airports Act.
<b>AFFM</b>	Aquatic Flora and Fauna Management
<b>AS</b>	Australian Standard
<b>BC Act</b>	Biodiversity Conservation Act 2016 (NSW)
<b>Biodiversity CEMP</b>	Biodiversity CEMP
<b>BMP</b>	Bushfire Management plan
<b>CCS</b>	Community Communication Strategy
<b>CEEC</b>	Critically Endangered Ecological Community
<b>CEMF</b>	Construction Environmental Management Framework
<b>CEMP</b>	Construction Environmental Management Plan
<b>CIZ</b>	Construction Impact Zone
<b>CNVS</b>	Construction Noise and Vibration Standard
<b>CoA</b>	Conditions of Approval
<b>CPLS</b>	Cumberland Plain Land Snail
<b>CSSI</b>	Critical State Significant Infrastructure
<b>CTMF</b>	Construction Traffic Management Framework
<b>CTR</b>	Compliance Tracking Review
<b>Cwth</b>	Commonwealth
<b>DAWE</b>	Department of Agriculture, Water and the Environment (Cwth)
<b>DECC</b>	NSW Department of Environment and Climate Change
<b>DITRDC</b>	Department of Infrastructure, Transport, Regional Development and Communications
<b>DPIE</b>	Department of Planning, Industry and Environment
<b>Ecological sustainable development</b>	Using, conserving and enhancing the community's resources so that the ecological processes on which life depends are maintained and the total quality of life now and in the future, can be increased (Council of Australian Governments, 1992).



Terms	Definitions
<b>ECM</b>	Environmental Control Map
<b>ECZ</b>	Environmental Conservation Zone
<b>EESG</b>	NSW Environment, Energy and Science Group (formerly OEH)
<b>EEC</b>	Endangered Ecological Community
<b>EIN</b>	Environmental Improvement Notice
<b>EIS</b>	Environmental Impact Statement
<b>Environment Minister</b>	The Minister responsible for the EPBC Act
<b>EP&amp;A Act</b>	Environment Planning and Assessment Act 1979 (NSW)
<b>EPA</b>	NSW Environment Protection Authority
<b>EPBC Act</b>	Environment Protection and Biodiversity Conservation Act 1999 (Cwth)
<b>EPL</b>	Environment Protection Licence under the POEO Act
<b>ER</b>	Environmental Representative
<b>ESCP</b>	Erosion and sediment control plan
<b>EWMS</b>	Environmental Works Method Statement
<b>E&amp;SMS</b>	Environment and Sustainability Management System
<b>FAW</b>	Finalisation Auxiliary Works
<b>GGBF</b>	Green and Golden Bell Frog
<b>IMS</b>	Sydney Metro Integrated Management System
<b>Infrastructure Department</b>	The department responsible for administering the Act, currently the Australian Government Department of Infrastructure, Transport Regional Development and Communications (DITRDC)
<b>ISO</b>	International Standardization Organisation
<b>KPI</b>	Key Performance Indicator
<b>LGA</b>	Local Government area
<b>LEP</b>	Local Environmental Plan
<b>NVMP</b>	Noise and Vibration Management Plan
<b>OCCS</b>	Overarching Community Communication Strategy
<b>OOHW</b>	Out-of-Hour Works
<b>PCT</b>	Plant Community Type
<b>POEO Act</b>	Protection of the Environment Operations Act 1997 (NSW)
<b>Preparatory Activities</b>	<p>Preparatory Activities mean the following:</p> <ol style="list-style-type: none"> <li>a. day to day site and property management activities;</li> <li>b. site investigations, surveys (including dilapidation surveys), monitoring, and related works (e.g. geotechnical or other investigative drilling, excavation, or salvage);</li> <li>c. establishing construction work sites, site offices, plant and equipment, and related site mobilisation activities (including access points, access tracks and other minor access works, and safety and security measures such as fencing but excluding bulk earthworks);</li> <li>d. enabling preparatory activities such as:</li> </ol>

Terms	Definitions
	<ul style="list-style-type: none"> <li>i. demolition or relocation of existing structures (including buildings, services, utilities and roads);</li> <li>ii. the disinterment of human remains located in grave sites identified in the European and other heritage technical report in volume 4 of the EIS; and</li> <li>iii. application of environmental impact mitigation measures; and</li> <li>e. any other activities which an Approver determines are Preparatory Activities for this definition</li> </ul>
<b>Project</b>	The Sydney Metro Western Sydney Airport Construction and operation as approved by the EPBC and Airport Plan as the Action or Rail Development within the Rail Construction Impact Zone on-airport, being the WSI airport, in agreeance with the Deed between SM - WSA and WSA Co.
<b>Proponent</b>	The person or organisation identified as the proponent in Schedule 1 of the planning approval. In this case Sydney Metro Authority
<b>RCIZ</b>	Rail Construction Impact Zone
<b>REMM</b>	Revised Environmental Mitigation Measure
<b>SBT</b>	Station Boxes and Tunnelling Works
<b>SCAW</b>	Surface and Civil Alignment Works
<b>Site Occupier</b>	<p>Site Occupier means:</p> <ul style="list-style-type: none"> <li>(a) before an Airport Lease is granted – the Commonwealth; and</li> </ul> <p>Note: Where a condition specifies an activity to be carried out by the Commonwealth, the Infrastructure Department will be responsible for carrying out the activity on behalf of the Commonwealth (unless stated otherwise).</p> <ul style="list-style-type: none"> <li>(b) after an Airport Lease is granted – the ALC.</li> </ul>
<b>SM</b>	Sydney Metro
<b>SM WSA</b>	Sydney Metro Western Sydney Airport
<b>SM WSA EIA</b>	SM - WSA EIS Appendix J: EPBC Act Draft Environmental Impact Assessment of On-airport proposed action (EPBC 2019/8541)
<b>SMP</b>	Sustainability Management Plan
<b>SSI</b>	State Significant Infrastructure
<b>SSTOM</b>	Stations, Systems, Trains, Operations and Maintenance
<b>SWCEMP</b>	Soil and Water Construction Environmental Management Plan
<b>SWMP</b>	Soil and Water Management Plan
<b>SWMS</b>	Safe Works Method Statement
<b>TFPP</b>	Threatened Flora Propagation Program
<b>TfNSW</b>	Transport for New South Wales
<b>TRH</b>	Total recoverable hydrocarbons
<b>VMP</b>	Vegetation Management Plan
<b>WDMP</b>	Weed and Disease Management Plan
<b>WSA</b>	<p>Western Sydney Airport Co (ACN 618 989 272), the entity responsible for constructing and operating the Airport in accordance with the Airport Plan.</p> <p>For the purposes of the Airports Act 1996 (Cth), WSA is the “airport-lessee company” for WSI</p>
<b>WSI airport</b>	Western Sydney International (Nancy-Bird Walton) (WSI) Airport



# 1. Introduction

## 1.1. Sydney Metro

Sydney Metro is Australia's biggest public transport project. Services between Rouse Hill and Chatswood started in May 2019 on the new stand-alone metro railway system. The Sydney Metro network and program of work includes the Metro North West Line (which opened in May 2019), Sydney Metro City & Southwest (which is currently under construction and due to open in 2024), Sydney Metro West (with construction due to start in 2020) and Sydney Metro – Western Sydney Airport (SM - WSA) (Project). Potential future extensions to Schofields/Tallawong in Rouse Hill in the north and to Macarthur in the south are under consideration and are being safeguarded but do not form part of the Project.

The project is shown in Figure 1-1 and would become the transport spine for Greater Western Sydney, connecting communities and travellers with the new Western Sydney International (Nancy-Bird Walton) Airport (referred to as Western Sydney International) (WSI airport) and the growing region.

The Project is being delivered under the Western Sydney City Deal, a partnership between the NSW Government, Australian Government and eight councils of the Western Parkland City. The NSW and Australian Governments have a shared objective of having the rail line operational when WSI airport is planned to open for passenger services.

The new railway line will service Greater Western Sydney and the new WSI airport. It will become the transport spine for the Western Parkland City's growth for generations to come, connecting communities and travellers with the rest of Sydney's public transport system with a fast, safe and easy metro service. The Project will link residential areas with job hubs from St Marys through to the new airport and the Western Sydney Aerotropolis.

It will provide a major economic stimulus for Western Sydney, supporting more than 14,000 jobs during construction for the NSW and national economies, including more than 250 new apprenticeships. The project comprises components that are located outside WSI airport (off-airport) and components that are located within WSI airport (on-airport).

The approval process for the off-airport and on-airport components of the project are different and are outlined below. One outcome of the on-airport approval is that a condition of working on the WSI airport site will require the Project to produce and have approved, a series of Construction Environmental Management Plans (CEMP) prior to the SM - WSA commencing construction on-airport. This Biodiversity CEMP (BCEMP) is one of a series of nine CEMPs for the Project which will be consistent with the WSI airport CEMPs and address all on-airport environmental components of the Project.

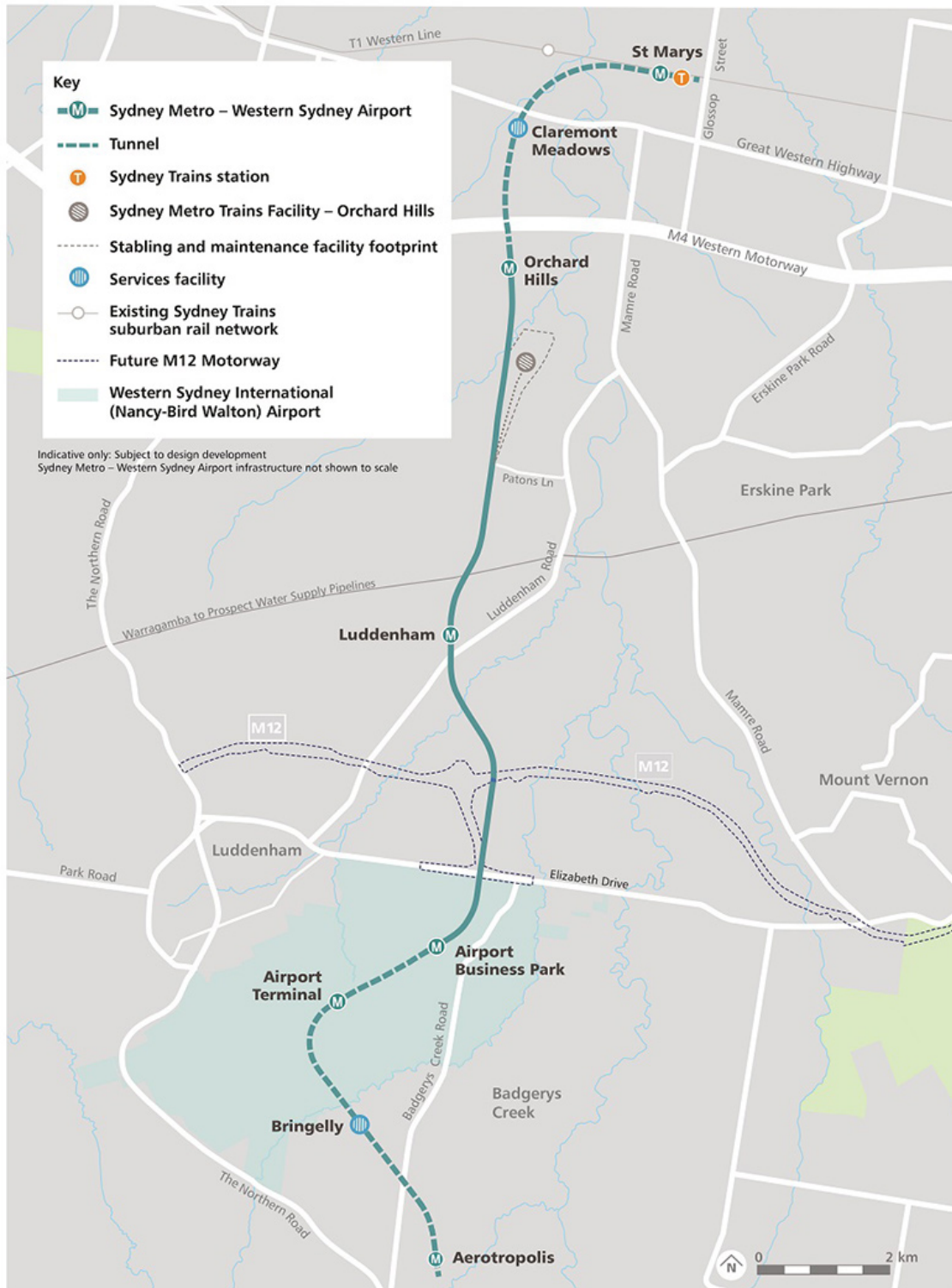


Figure 1-1 Sydney Metro Western Sydney Airport alignment

## 1.2. Sydney Metro Western Sydney Airport

The Western Sydney Airport Plan sets out the vision for the development and operation of Western Sydney International and provides authorisation for Stage 1 of the airport. The construction of Stage 1 of the airport is expected to be completed to enable operations to commence in 2026 and will comprise a single runway, a terminal and other relevant facilities to accommodate around 10 million passengers annually as well as air freight traffic.

Interface with Western Sydney International Rail access to Western Sydney International Airport would contribute to the success of the airport and the Western Parkland City, as it would facilitate passengers' and workers' journeys, reduce road congestion and support the economic viability of the airport.

The Project is proposed to enter the WSI airport site from the north and would include Airport Business Park Station and Airport Terminal Station. The rail line would travel through the airport, before exiting the airport site beneath Badgerys Creek in the southeast. Sydney Metro has been, and will continue, working closely with Western Sydney Airport to ensure design development and Construction (Rail) Planning of the Project is coordinated with the construction and operation of WSI airport.

## 1.3. Background / Context

The Airport Plan for the WSI airport was determined in December 2016, following preparation and exhibition of an Environmental Impact Statement (EIS), and incorporates the conditions specified by the Commonwealth Environment Minister. The delivery of the Project on the WSI airport site has been authorised through a variation of the Airport Plan by the Commonwealth Infrastructure Minister on 15 September 2021, taking into account advice from the Commonwealth Environment Minister.

In September 2019, the Commonwealth Infrastructure Minister referred the On-airport components of the Project to the Commonwealth Environment Minister. In December 2019, the delegate of the Commonwealth Environment Minister decided that advice is required under section 160 of the EPBC Act as the proposed action is likely to have a significant impact on the environment and will require further assessment (EPBC 2019/8541).

The following documents were prepared as part of the SM - WSA EIS, to respond to the Request for Further Information, and were published, in accordance with the Direction to Publish, from 21 October to 18 November 2020:

- SMWSA EPBC Act Final Environmental Impact Assessment of on-airport proposed action (EPBC 2019/8541)
- SMWSA EIS Technical Paper 3: Biodiversity Development Assessment Report
- SMWSA EIS Appendix F: Construction Environmental Management Framework.

An EPBC Act Final Environmental Impact Assessment of on-airport proposed action

(EPBC 2019/8541) and an updated Biodiversity Development Assessment Report were approved by the Commonwealth Department of Agriculture, Water and the Environment (DAWE) and formed part of the conditions of the Airport Plan which was lodged with the Department of Infrastructure, Transport, Regional Development and Communications (DITRDC) and approved by the Commonwealth Environment Minister.



This NVCEMP (this Plan) has been prepared to satisfy the requirements of Condition 3.11.6 of the Airport Plan (AP) for the Railway Development of the WSI Airport. Condition 39 (2(a)) of the Airport Plan requires that a Sydney Metro NV CEMP be approved under the Airport Plan prior to the commencement of the Project.

This Biodiversity CEMP provides the management approach and requirements for managing noise and vibration during construction of the Project. This Plan forms one of nine CEMPs which are collectively covered by the Sydney Metro Construction Environmental Management Framework (CEMF). To ensure the environmental resources, responsibilities and management measures are implemented during the construction activities the SM CEMF will be included within the Sydney Metro Construction (Rail) Plan.

The implementation of the Sydney Metro Construction (Rail) Plan and the CEMF are aligned with Project level management plans including the Community Communications Strategy and the Sustainability Plan as illustrated in Figure 1-2.

The Construction (Rail) Plan, including the CEMF, and nine CEMPs provide the environmental management approach and requirements and therefore should not be read in isolation to each other due to interconnecting management outcomes and objectives. Specifically, for the Noise and Vibration CEMP, it is considered that the following management plan linkages can be made:

- Traffic and Access CEMP – Construction traffic will be a contributor to noise.
- Biodiversity CEMP – Noise impacts on fauna will be a management consideration.
- Community Communications Strategy – Similar to visual and landscape impacts, it is anticipated that the surrounding community and stakeholders will be sensitive to noise and vibration impacts, particularly during works undertaken outside of the normal construction hours and / or prolonged noisy activities.
- Sustainability Plan– Management and reduction of noise and vibration impacts about quality of life for surrounding communities.

Where relevant, linkages to other CEMPs and management objectives have been included in the risk assessment and the environmental control measures, Section 7.3 and Section 9 respectively. Table 1-1 highlights relationships and linkages of this Noise and Vibration CEMP with other CEMPs and management plans including key cross-referencing to Airport Plan and EIS requirements.

**Table 1-1 Biodiversity CEMP relationship with other CEMP documentation**

CEMP	Airport Plan (3.11.6)	SM - WSA EIA Table 8-1: On-airport environmental management framework requirements	SM - WSA EIA Table 8-3: Mitigation measures
<b>Aboriginal Cultural heritage</b>	39 2(f)	CEMF5	AH8
<b>Air quality</b>	39 2(e)	CEMF10	AQ1-3
<b>Biodiversity</b>	39 2(b)	CEMF6	FF1, 3, 5, 6, 9-11 HR2
<b>Community Communications Strategy</b>	40	N/A	N/A

CEMP	Airport Plan (3.11.6)	SM - WSA EIA Table 8-1: On-airport environmental management framework requirements	SM - WSA EIA Table 8-3: Mitigation measures
European and other heritage	39 2(g)	CEMF5	NAH9
Noise and vibration	39 2(a)	CEMF4	NV1
Soil and water	39 2(c)	CEMF3 CEMF8	HYD1 WQ1-2 GW4-6 SC1,5-9, 11 HR1,3
Sustainability plan	41	N/A	SUS1-3 GHG1
Traffic and access	39 2(d)	CTMF	T1,3 ,4,6
Visual landscape	39 2(i)	CEMF7	LV1-3
Waste and resources	39 2(h)	CEMF9 CEMF11	WR1-3

#### Key

Moderate to high relevance to this CEMP

Some relevance to this CEMP

### 1.3.1. Biodiversity Offset Strategy for on-airport lands

Sydney Metro has prepared the Rail Biodiversity Offset Strategy (Rail BOS) for on-airport lands to address condition 43 of the Airport Plan. The Rail BOS details the residual biodiversity impacts that will result from the construction of the on-airport component of the project and how these impacts will be offset in accordance with State and Commonwealth requirements.

The project's offset requirements will be delivered through purchase and retirement of available credits and payment into the Biodiversity Conservation Fund (BCF) under the NSW Biodiversity Offset Scheme. It should be noted that the Commonwealth Government's Assessment Bilateral Agreement endorses the NSW Biodiversity Offsets Scheme and NSW Biodiversity Assessment Method (BAM) (OEH, 2017) for Matters of National Environmental Significance (MNES).

The required number of credits for each construction stage and area will must be retired prior to commencing construction for that stage.

The Rail BOS for works on-airport includes:

- the maximum number and class of biodiversity credits that may be required to offset the impacts of the Project on biodiversity values, consistent with the quantum identified in the EIA (Sydney Metro, 2021b) and Revised BDAR (Sydney Metro, 2021a) for the on-airport component of the project





- a process for quantifying the impacts to biodiversity based on the final design of the Project and quantifying the final number and class of biodiversity credits required to offset the impacts of Project on biodiversity values
- details of how the credit requirement related to each stage of construction defined in the Staging Report will be determined and reported
- how the offset requirement will be satisfied, including the timing to secure offsets in relation to each stage of construction defined in the Staging Report.

Sydney Metro will not commence the on-airport Project, as defined in the Airport Plan (as varied September 2021), until the Rail BOS has been approved. Sydney Metro will implement the approved Rail BOS until a competition report is provided to the Approver.

### 1.3.2. Airport Plan Biodiversity Staging Report

Sydney Metro has prepared the Airport Plan Biodiversity Staging Report to address condition 43 of the Airport Plan conditions that relate to the Staging Report. The Airport Plan Biodiversity Staging Report is consistent with the Rail BOS and the revised Biodiversity Development Assessment Report.

The Airport Plan Biodiversity Staging Report defines construction stages and location of biodiversity offset areas on-airport as summarised in Table 1-2 and illustrated in Figure 1-2. The Airport Plan Biodiversity Staging Report allows clearing of biodiversity offset areas to occur sequentially or concurrently. Where done concurrently the biodiversity offset obligations will be satisfied for all areas that are to be cleared. In either case, biodiversity offset retirement requirements will be met prior to commencement of construction in that biodiversity offset area.

**Table 1-2 Construction stages and location of biodiversity offset areas on-airport**

Construction Stages	Stage and Area	Description	Location	Are Biodiversity Offsets required?
Station Box and Tunnelling	SBT – Area A	Potential permanent spoil placement area 1	South of Airport Terminal	Yes
Station Box and Tunnelling	SBT – Area B	Potential permanent spoil placement area 2	South of Airport Business Park	Yes
Station Box and Tunnelling	SBT – Area C	Precast yard between Pitt Street and Longley’s Road	South of Pitt Street	Yes
Station Box and Tunnelling	SBT – Area D	Roads to the potential permanent spoil placement areas	Road between Airport Terminal and potential permanent spoil placement area 1 and road between potential permanent spoil placement areas.	No
Surface and Civil Alignment Works	SCAW - Area A	Precast yard south of Longley’s Road	South of Longleys Road	Yes

Construction Stages	Stage and Area	Description	Location	Are Biodiversity Offsets required?
Advanced and Enabling Work	AEW - Area A	Roads surrounding the precast yard (Longley's Road, Pitt Street and Link Road)	Pitt Street, Longleys Road and Link Road	Yes
Advanced and Enabling Work	AEW - Area B	Utilities route from the precast yard to the Environmental Conservation Zone along Pitt Street.	Power supply along Pitt Street	No

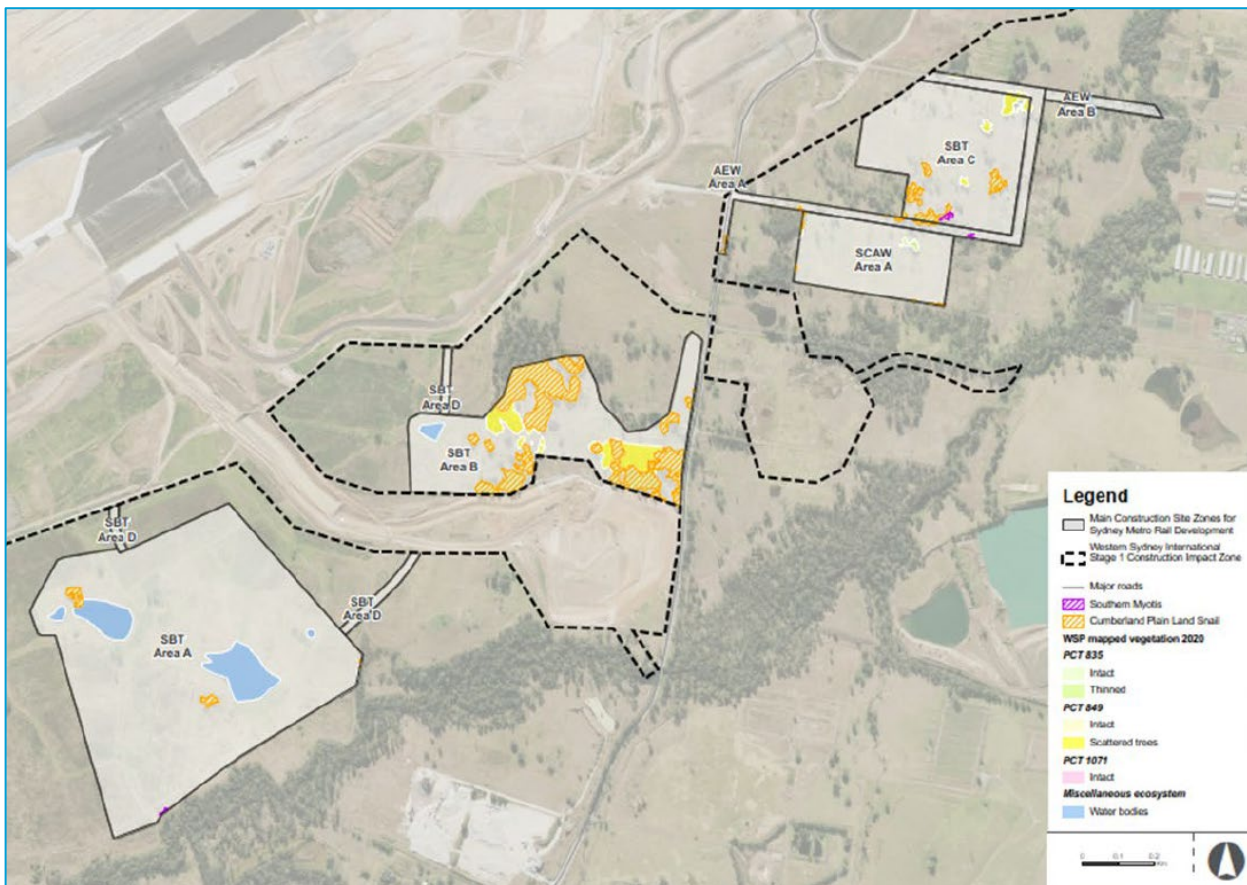


Figure 1-2 Project on-airport stages and biodiversity offset areas

### 1.4. Document purpose

The purpose of this Plan is to provide the foundation for the management of biodiversity impacts in accordance with best practice and legal requirements (including environmental mitigation measures, controls, monitoring and reporting) during the construction phase of the Project based on the assessment undertaken as part of the EIA.

This Plan details the biodiversity management requirements that must be satisfied in order to demonstrate compliance with the Condition 39 (2) of Section 3.11.6 of the Airport Plan for the construction of the Railway Development of the Western Sydney Airport.

Legal and other requirements are identified within the CEMF (refer to CEMF Chapter 2) and maintained in a register. Mitigation measures (specific to biodiversity) required to satisfy these requirements are derived from the EIA and through risk assessment processes (refer Section 6.3) and included within this CEMP (Section 7). Where the development of the Project environmental assessment has not covered that addressed by the WSA assessment, the WSA mitigation measures have been adopted also to provide consistency with the WSA CEMPs (Section 7).

Implementation of these measures is ensured through monitoring, training and competence, inspection, audit and reporting actions detailed in Sections 10 and 11, with the responsibilities for implementation identified in Section 9. Continual improvement processes in relation to compliance with regulatory requirements are detailed in the CEMF Section 3.18.

In summary, this plan sets out to achieve the following:

- Provision of details for the management and mitigation measures to be implemented, including timing and responsibilities.
- Ensuring the commitments of the Conditions of Approval (as set out in the Airport Plan) and regulatory requirements are met and satisfied by both Sydney Metro and contractors.
- Provision of process for monitoring implementation, reporting, and auditing of biodiversity related management and compliance related issues.
- Commitment to meeting the requirements of *AS/NZS ISO 14001:2016 Environmental Management Systems*, including the need for continual improvement.
- Provision of a process to be implemented for the management of complaints, for stakeholder engagement, and for the management of emerging environmental issues as they arise.
- Provision of a system including procedures, plans and documentation for implementation by Sydney Metro personnel and contractors to enable Project completion in accordance with the environmental requirements.
- Consistency with the WSI airport CEMPs.

Effective implementation of this plan will assist Sydney Metro and relevant contractors to achieve compliance with necessary environmental regulatory and policy requirements in a systematic manner with an outcome of continual environmental management performance.

## 1.5. Consistency

A major requirement of these plans is for Sydney Metro to maintain consistency with the already approved WSA CEMPs. This consistency requirement results in SM not needing to undertake consultation as is the requirement of WSA for their plans.

SM approached the development of these plans to meet the requirements of the Airport Plan, ensure compliance with Tables 8-1, 8-2 and 8-3 of the EPBC 2019/8541 and remain consistent with the WSA CEMPs.

SM have achieved this consistency through the following:

- Consistent format;
- Consistent language;
- Consistent existing environment with the addition of the RCIZ existing environment;
- Consistent aspects and impacts but removing those not applicable and adding specific SM – WSA aspects and impacts;
- Consistent risk assessment but removing those not applicable and adding specific SM – WSA risks;
- Consistent mitigation measures but removing those not applicable and adding SM – WSA specific mitigation measures;
- Consistent monitoring with the addition of any SM – WSA specific monitoring requirements
- Consistent auditing and reporting; and
- References to SEMF replaced with consistent CEMF requirements.

## 1.6. Sydney Metro environmental management system overview

Sydney Metro operates in general accordance with *AS/NZS ISO 14001 – Environmental management systems*. A copy of the Sydney Metro environmental policy is provided in Appendix A of the CEMF. The Project will be undertaken in accordance with the Construction (Rail) Plan including the CEMF and the associated CEMPs (including this Plan).

The CEMF is the overarching environmental plan for the implementation of the nine CEMPs. It provides a structured and systematic approach to environmental management and provides an expectation and guidance with regards to environmental management for the overall construction of the Project.

The structure of the environmental management system for the Project is shown in Figure 1-2.

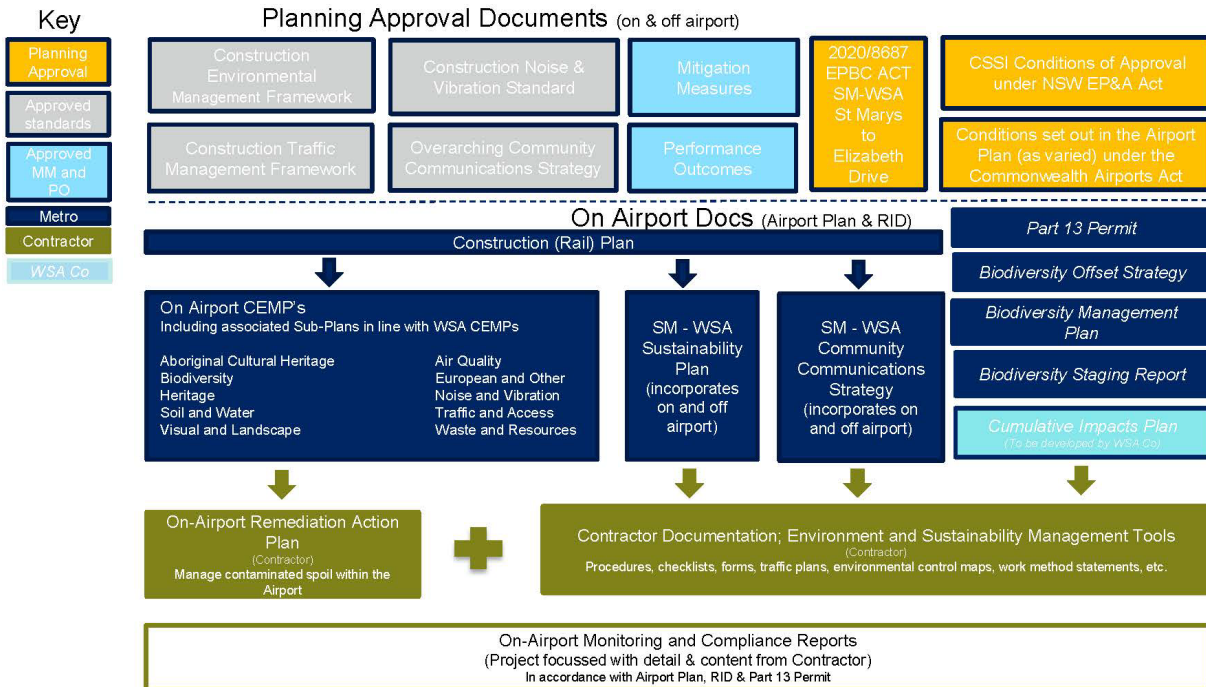


Figure 1-3 SM - WSA Construction Environmental Management System and CEMP context

### 1.7. Consultation requirements of this plan

There is no direct consultation condition requirement for the Project under the Airport Plan and as such, there has been no direct consultation completed during the development of this CEMP. However, WSA completed consultation during the development of the latest WSA BCEMP (Revision 0) and subsequently during the review and update of Revision 3 of their document.

SM-WSA will continue to consult with WSA in the development of these plans and as required with relevant stakeholders prior to seeking approval for these plans including wildlife hazard management requirements.

WSA consultation will continue with agencies, councils and other relevant stakeholders throughout the Project where there is a change to a WSA CEMP. Where the outcomes of this consultation impact on the scope of the Project, to maintain consistency, the change will be documented in subsequent revisions of the relevant CEMPs, with details of such consultation included in the applicable document.

### 1.8. Certification and approval

This BCEMP has been reviewed and approved for issue by the SM - WSA Environment Manager prior to submission to the Infrastructure Department.

### 1.9. Distribution

All Sydney Metro personnel and contractors will have access to this BCEMP via the project document control management system. Unless otherwise agreed by the Approver, the Approved Plan must be published on Sydney Metro’s website within one month of being approved and be available until the end of the Construction Period. An electronic copy can be found on the Project website.



This document is uncontrolled when printed. One controlled hard copy will be maintained by the quality manager at the project office.

## 2. Scope of works

### 2.1. Overall Project scope

The Sydney Metro Construction Plan details the construction staging of the Airport Railway Development.

The delivery of the Project will be through a packaging strategy with a wide variety of package sizes, risk profiles and contracting entities. Each package will have different levels of environmental risk and environmental obligations, depending on the scope of works, location of works and sensitivity of the receiving environment and cultural heritage issues and relevant statutory requirements and obligations.

The packages have been divided into:

- AEW – Advanced and Enabling Works;
- SCAW – Surface and Civil Alignment Works;
- SBT – Station Boxes and Tunnelling Works; and
- SSTOM – Stations, Systems, Trains, Operations and Maintenance.

The On-Airport Railway Development of the Project comprises the following key features as described in the Sydney Metro Construction (Rail) Plan (which is consistent with the Airport Plan and EIA Chapter 4):

- Around two kilometres of surface rail alignment within Western Sydney International (SCAW);
- Around 3.3 kilometres of twin rail tunnels (including tunnel portal) within Western Sydney International (SBT);
- Around three kilometres of twin rail tunnels between Western Sydney International and the Aerotropolis Station (SBT);
- Two new metro stations, Airport Business Park Station and Airport Terminal Station (STOM);
- All operational systems and infrastructure (SSTOM);
- A rail segment factory comprising a concrete batch plant and stockpile area (SBT and SCAW); and
- Spoil stockpile areas (SBT and SCAW).

Details of the Project construction activities, staging and programming including the phases of works is described in the Sydney Metro Construction (Rail) Plan (2021) as required by the Airport Plan Variation.

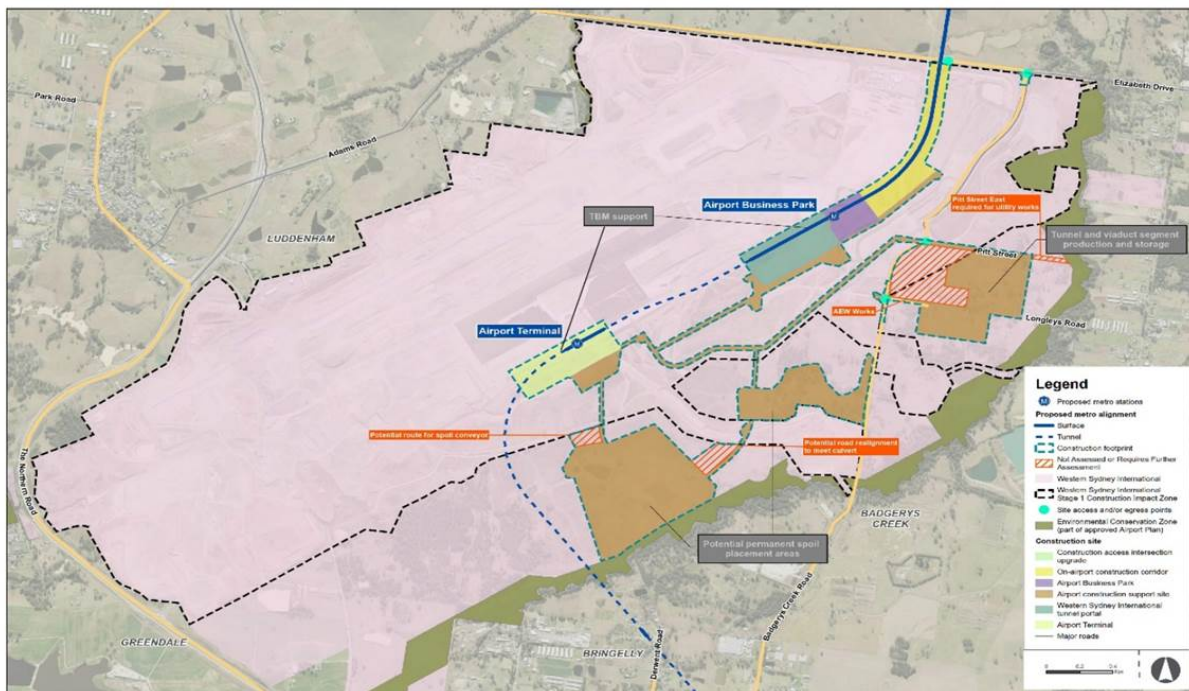
The proposed construction activities that would be undertaken for the Project include:

- preparatory activities (AEW);
- main construction works including;
  - tunnelling and associated works (SBT);
  - corridor and associated works (SCAW);

- stations and associated works (SSTOM);
- rail systems fitout (SSTOM);
- activities required for tunnel and viaduct segment manufacture and storage and temporary haulage roads (SBT and SCAW); and
- finishing works and testing and commissioning (FAW).

The Project would also include the potential permanent placement of spoil at two sites to support the development of future stages of the airport.

The Rail Construction Impact Zone (CIZ) including the construction footprint and key construction sites proposed for use during the construction of the Project are shown in Figure 2-1. This figure also indicates the Western Sydney International Stage 1 CIZ and the Environmental Conservation Zone within Western Sydney International.



**Figure 2-1 Construction footprint and key construction sites**

It is anticipated that the Project construction works would commence in 2021 and take about five years to complete, subject to planning approval. The Operational Sydney Metro opening is anticipated to align with the opening of passenger services for Western Sydney International in 2026. An indicative main construction program for the project is shown in Figure 2-2.



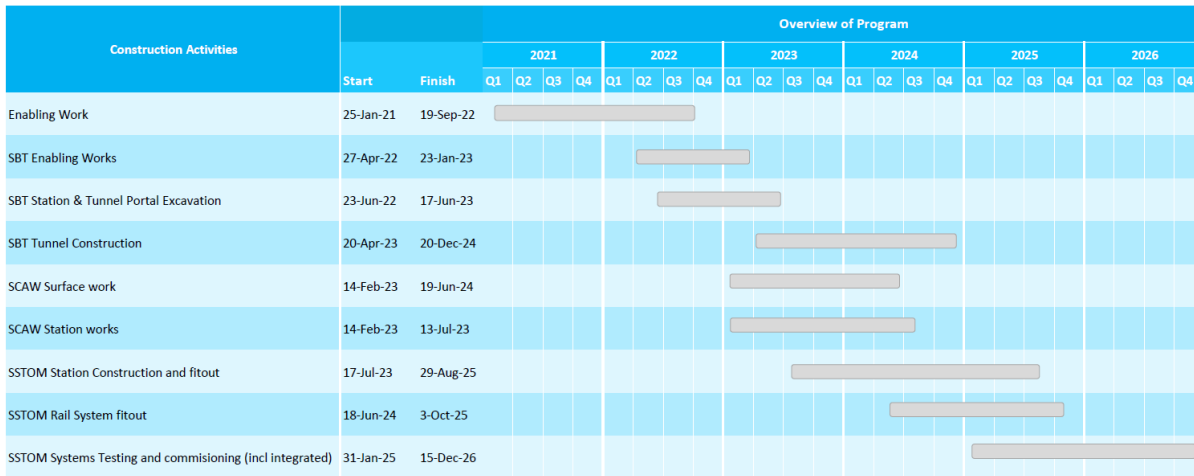


Figure 2-2 Indicative main construction program for the project

## 2.2. Preparatory activities

Preparatory activities for the proposed action are required to establish key construction sites and facilitate construction activities.

The majority of the preparatory activities are expected to commence in advance of main construction works, such as tunnelling and station excavation, while some preparatory activities would continue concurrently with the main construction works. Preparatory activities would include:

- detailed site investigations and subsequent clearance works;
- provision of construction haul roads;
- relocating, adjusting and protecting utilities and services affected by the proposed action;
- supplying power, water and other utilities to construction sites and other areas within the construction footprint;
- vegetation clearance (as required); and
- establishment of construction sites.

## 2.3. Construction sites

The Project’s construction activities will be carried out within and to the south-west of the WSI airport Stage 1 CIZ. The indicative works at proposed construction sites required for the construction of the Project are shown in Figure 2-3. The use of these sites will be confirmed by the construction contractor(s) (when appointed) in consultation with Western Sydney Airport.



Location	Preparatory activities	TBM launch	TBM support	TBM retrieval	Spoil handling and removal	Roadheader launch/support	Ancillary facility construction	Stabling and maintenance facility construction	Major earthworks	Bridge and viaduct construction	General civil works	Concrete batch plant	Equipment and material laydown	Rail system fitout	Site offices and worker amenities	Water treatment plant	Potential acoustic shed	Vehicle parking
<b>On-airport</b>																		
On-airport construction corridor	✓				✓		✓		✓	✓	✓		✓	✓	✓			✓
Airport Business Park	✓				✓		✓		✓		✓		✓	✓	✓			✓
Western Sydney International tunnel portal	✓	✓	✓		✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓
Airport Terminal	✓		✓		✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓
Airport construction support site	✓				✓				✓		✓	✓	✓	✓	✓			✓

Note: TBM retrieval would occur outside the Project at the Aerotropolis Station

Figure 2-3 Indicative construction activities at the Project construction site



### 3. Objectives and targets

#### 3.1. Objectives

The key objective of this Biodiversity CEMP is to ensure that native flora and fauna, including threatened species and endangered ecological communities are protected during construction of the Project and that any potential biodiversity impacts will be minimised and managed. The key objectives are to:

- minimise impacts on flora and fauna;
- retain and enhance existing flora and fauna habitat wherever possible;
- appropriately manage the spread of weeds and plant pathogens;
- design waterway modifications and crossings to incorporate best practice principles; and
- detail all fauna and flora management objectives whilst being consistent with the WSA BCEMP, including all appendices to the WSA BCEMP.

To achieve this objective, the following will be undertaken:

- Ensure adverse effects on biodiversity by construction activities is limited to those predicted within the Biodiversity Development Assessment Report (BDAR) of the SM - WSA EIA and those identified in Section 5 of the WSA EIS and Section 11 biodiversity assessment.
- Ensure appropriate controls are implemented to address the mitigation measures detailed in Table 7 of the WSA BCEMP and Tables 8-1, 8-2 and 8-3 of the SM - WSA EIA.
- Ensure appropriate controls are implemented to comply with all relevant legislation and other requirements as described in Section 4 of this Plan.

#### 3.2. Targets and performance objectives

Targets and performance criteria have been established for the management of biodiversity impacts during the construction phase of the works which have been, in part, derived from the performance criteria identified in the WSA EIS, Table 28-4 and the SM - WSA CEMF as presented in Table 3-1.

Table 3-1 Biodiversity objectives and targets

Objective	Target	Document Reference
<b>Minimising disturbance to terrestrial and aquatic flora and fauna in the construction footprint during construction</b>	Negligible disturbance to native terrestrial and aquatic flora and fauna in the construction footprint	<ul style="list-style-type: none"> <li>• Pre-clearing Permits</li> <li>• Pre-Clearing Hold Points</li> <li>• Environmental inspection checklist</li> <li>• Site Diary/ Pre-starts</li> </ul>
<b>Minimising adverse effects on terrestrial fauna by construction activities</b>	Minimise adverse effects on terrestrial fauna by construction activities.	<ul style="list-style-type: none"> <li>• Pre-clearing Permits</li> <li>• Pre-Clearing Hold Points</li> <li>• Environmental inspection checklist</li> <li>• Site Diary/ Pre-starts</li> </ul>

Objective	Target	Document Reference
<b>Minimise or where possible avoid impacts on threatened flora and fauna species, and TECs)</b>	Minimise adverse effects on terrestrial fauna by construction activities.	<ul style="list-style-type: none"> <li>• Pre-clearing Permits</li> <li>• Pre-Clearing Hold Points</li> <li>• Environmental inspection checklist</li> <li>• Site Diary/ Pre-starts</li> </ul>
<b>Impacts on threatened ecological communities and threatened species are offset in accordance with the requirements of the NSW Biodiversity Assessment Method (OEH, 2018)</b>	A Biodiversity Offset Strategy has been developed and credits will be purchased and retired to ensure offset against TEC and TS.	<ul style="list-style-type: none"> <li>• Biodiversity Offset Strategy</li> </ul>
<b>Protecting areas outside the construction footprint that contain a listed Threatened Ecological Community or provide an important habitat for a listed threatened species during clearing activities</b>	Ensure all areas outside the construction footprint that contain a listed threatened ecological community or provide important habitat for a listed threatened species are protected.	<ul style="list-style-type: none"> <li>• Pre-clearing Permits</li> <li>• Pre-Clearing Hold Points</li> <li>• Environmental inspection checklist</li> <li>• Site Diary / Pre-starts</li> </ul>
<b>Managing weed, pest species and plant pathogens spread</b>	No introduction of weed, pest species and plant pathogens. No inadvertent spread of existing weed, pest species and pathogens	<ul style="list-style-type: none"> <li>• Pre-clearing Permits</li> <li>• Pre-Clearing Hold Points</li> <li>• Environmental inspection checklist</li> <li>• Site Diary / Pre-starts</li> <li>• Material Hygiene Certificates</li> </ul>

The above targets in Table 3-1 have been set to provide a benchmark performance objective to which Sydney Metro will endeavour to achieve. Failure to achieve the targets will not be considered a non-conformance, however, will prompt internal review of environmental management (as detailed further in environmental control measures in Table 7-1) and assessment of potential improvement opportunities.

## 4. Legal and other requirements

Relevant environmental legislation and other requirements are identified below.

### 4.1. Relevant legislation and guidelines

As the SM - WSA is to be developed under the 2021 Variation to the Airport Plan determined under the Airports Act 1996 (The Act), some state laws will not be applicable to the Project (s112 of the Act). Where state law is applicable, this plan will set out the relevant applicable state legislation and requirements and demonstrate how compliance with those laws, including obtaining relevant permits, will be achieved. Where state laws are not applicable, there may nonetheless be a requirement to have regard to those laws, for example, through mitigation measures to be incorporated in CEMPs to satisfy conditions under the Airport Plan.

### 4.2. Legislation

The relevance of legislation and regulations to biodiversity and this Plan are summarised in Table 4-1.

**Table 4-1 Principal legislation and relevance**

Legislation or regulation	Relevance	CEMP compliance provisions
<b>Commonwealth</b>		
<b>Airports Act 1996 (Airports Act)</b>	<p>The Act and Airports Regulations set out the framework for the regulation and management of activities at airports that could have potential to cause environmental harm. This includes offences related to environmental harm, environmental management standards, monitoring and incident response requirements.</p> <p>The Airport Plan prepared under the Act covers a number of environmental matters and, in particular, details specific measures to be carried out for the purposes of preventing, controlling or reducing the environmental impact associated with the airport. Criminal offences are applicable if these measures are not complied with.</p>	<p>This CEMP forms part of the overall EMS which has as a target, full compliance with the Airport Plan.</p> <p>Relevant mechanisms within this CEMP that will contribute to this include but are not limited to:</p> <ul style="list-style-type: none"> <li>• Section 3.1 – Objectives</li> <li>• Section 4.5 – Part 13 Permit Conditions</li> <li>• Section 4.6 – Airport Plan Conditions</li> <li>• Section 4.7.1 – Environmental Impact Statement Requirements</li> <li>• Section 6.2 – Ecological impact</li> <li>• Section 6.3 – Environmental risks</li> <li>• Section 7 – Environmental Control Measures</li> <li>• Section 8 – Biodiversity Management</li> <li>• Section 9 – Roles and Responsibilities</li> <li>• Section 10 – Environmental Inspection, Monitoring and Auditing</li> <li>• Section 11 – Environmental Incidents, Non-conformance and improvement opportunities</li> <li>• Section 12 – Review and improvement</li> </ul>

Legislation or regulation	Relevance	CEMP compliance provisions
<b>Airports (Environment Protection) Regulations 1997 (AEPR)</b>	Imposes a general duty to prevent or minimise environmental pollution and preserve habitat. Promotes improved environmental management practices at airports.	Refer to commentary on Airport Plan above.
<b>Airports (Building Control) Regulations 1996</b>	Any conditions imposed on the ABC and ALC on their consents must be satisfied by the applicant. These conditions are additional to any requirements identified under the CEMPs	Section 7 – Environmental Control Measures Section 10 – Environmental Inspection, Monitoring and Auditing
<b>Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)</b>	National environment law that provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, defined in the Act as matters of national environmental significance.	Section 7 – Environmental Control Measures Section 8 – Biodiversity Management Section 10 – Environmental Inspection, Monitoring and Auditing
<b>Environment Protection and Biodiversity Conservation Regulation 2000 (as amended) (EPBC Regulation)</b>	Provides for the protection of world heritage sites (including the Gondwana Rainforests) and wetlands of international importance (i.e. Ramsar sites).	Section 7 – Environmental Control Measures European and Other Heritage CEMP
<b>Work Health and Safety Act 2011 (NSW)</b> <b>Work Health and Safety Act 2011 (Cth)</b>	Provides a general overview of how to make workplaces safe and healthy. The Act outlines SM - WSA's legal responsibilities and duties as an employer and business owner with regards to work health and safety.	Section 10 – Section 10 – Environmental Inspection, Monitoring and Auditing WSA RAP 2019
<b>Work Health and Safety Regulations 2017 (NSW)</b> <b>Work Health and Safety Regulations 2011 (Cth)</b>	The Regulations set out the standards that SM - WSA need to meet for specific hazards and risks, such as noise, machinery, and manual handling. The Regulations also set out the licenses that may be required for specific activities, the records you need to keep, and the reports you need to make.	Section 10 – Environmental Inspection, Monitoring and Auditing WSA RAP 2019
<b>NSW</b> <b>As SM - WSA is to be developed under the Airport Plan Variation determined under the Airports Act, 1996 (Cth), some state laws will not be applicable to the Project (see for example S 112 of that Act). Where state laws are not applicable, it is still intended to have regards to relevant laws for example through inclusion of mitigations measures incorporated into this CEMP. These laws are identified below.</b>		



Legislation or regulation	Relevance	CEMP compliance provisions
<p><b>Environmental Planning and Assessment Act 1979 (EPA Act)</b></p>	<p>Objects of the Act include encouragement of proper management and conservation of natural and artificial resources and the promotion of the orderly and economic use and development of land in NSW. The EP&amp;A Act also provides for the making of environmental planning instruments including State Environmental Planning Policies (SEPPs) and Local Environmental Plans (LEPs), which include land use controls, such as development standards applicable to the land within the area covered by each instrument.</p>	<p>This Project has been authorised under the Airports Act; however, a range of matters arising from the EP&amp;A Act have been considered.</p> <p>Section 7 – Environmental Control Measures Section 8 – Biodiversity Management</p>
<p><b>State Environmental Planning Policy No 19 – Bushland in Urban Areas (SEPP 19)</b></p>	<p>The purpose of SEPP 19 is to protect and preserve bushland within urban areas due to its inherent aesthetic, community and natural heritage values.</p> <p>Note: An explanation of intended effect for a new Environment SEPP was on exhibition between 31 October 2017 and 31 January 2018. If/when adopted, this new SEPP would consolidate SEPP 19 with 6 other existing environment SEPPs.</p>	<p>Section 7 – Environmental Control Measures Section 8 – Biodiversity Management</p>
<p><b>Protection of the Environment Operations Act 1997 (PEO Act) and the Protection of the Environment Operations (General) Regulation 2009</b></p>	<p>The objectives of the Protection of the Environment Operations Act are to protect, restore and enhance the quality of the environment, in recognition of the need to maintain ecological sustainable development.</p>	<p>Section 7 – Environmental Control Measures Section 8 – Biodiversity Management</p>
<p><b>Protection of the Environment Operations (Waste) Regulation 2014</b></p>	<p>Establishes the process for issuing environmental protection licences (EPL) for certain scheduled activities - For the works covered by this CEMP (as detailed in Table 5), the need to obtain an EPL has not been identified, however, it may apply to future works.</p> <p>Places responsibility on the part of developers to prevent water pollution while also controlling waste during construction.</p>	<p>Section 7 – Environmental Control Measures</p>
<p><b>Work Health and Safety Act 2011 &amp; Work Health and Safety Regulation 2017.</b></p>	<p>The Work Health and Safety Act 2011 (NSW) (the Act) provides a framework to protect the health, safety and welfare of all workers and others in relation to NSW workplaces and work activities.</p> <p>The Work Health and Safety Regulation 2017 set out specific requirements for particular hazards and risks, such as noise, machinery, and manual handling.</p>	<p>This document.</p>

Legislation or regulation	Relevance	CEMP compliance provisions
<b>Draft State Environmental Planning Policy for Strategic Conservation Planning (Applicable to off airport land only)</b>	An Explanation of Intended Effect was on exhibition between 26 August 2020 and 2 November 2020. The purpose of the SEPP is to meet requirements for	Section 7 – Environmental Control Measures Section 8 – Biodiversity Management
<b>State Environmental Planning Policy (Western Sydney Aerotropolis) 2020 (Aerotropolis SEPP)</b>	The Aerotropolis SEPP was made in accordance with division 3.3 of the EP&A Act and provides planning controls for development within the Western Sydney Aerotropolis. The Aerotropolis SEPP overrides any LEP provisions that apply to that land.	Section 7 – Environmental Control Measures Section 8 – Biodiversity Management
<b>Liverpool Local Environmental Plan 2008 (Liverpool LEP)</b>	The Liverpool LEP provides local environmental planning controls and standards for land in the Liverpool LGA in accordance with the relevant standard environmental planning instrument under section 33A section 3.20 of the EPA Act.	Section 7 – Environmental Control Measures Section 8 – Biodiversity Management
<b>Penrith Local Environmental Plan 2010 (Penrith LEP)</b>	The Penrith LEP provides local environmental planning controls and standards for land in the Penrith LGA in accordance with the relevant standard environmental planning instrument under section 33A3.20 of the EPA Act.	Section 7 – Environmental Control Measures Section 8 – Biodiversity Management
<b>Protection of the Environment Operations Act 1997 (PEO Act)</b>	The objectives of the Protection of the Environment Operations Act are to protect, restore and enhance the quality of the environment, in recognition of the need to maintain ecological sustainable development.	Section 7 – Environmental Control Measures Section 8 – Biodiversity Management
<b>Biodiversity Conservation Act 2016 (BC Act)</b>	The purpose of this Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development.	Section 7 – Environmental Control Measures Section 8 – Biodiversity Management
<b>Fisheries Management Act 1994 (FM Act)</b>	The FM Act aims to conserve, develop and share the fishery resources of NSW for the benefit of present and future generations, including conserving fish stocks and fish habitat and promoting ecologically sustainable development.	Section 7 – Environmental Control Measures Section 8 – Biodiversity Management
<b>Water Act 1912 (Water Act)</b>	Provides for the protection of groundwater in the few areas in NSW where water-sharing plans have not come into effect.	Section 7 – Environmental Control Measures Soil and Water CEMP





Legislation or regulation	Relevance	CEMP compliance provisions
<b>Biosecurity Act 2015</b>	The Biosecurity Act outlines biosecurity risks and impacts including impacts associated with weeds. The Act introduces the concept of Priority Weeds that should be prevented, managed, controlled or eradicated within particular regions.	Section 7 – Environmental Control Measures Section 8 – Biodiversity Management

### 4.3. Guidelines and standards

Guidelines and standards that are relevant to biodiversity management and this plan are summarised in Table 4-2.

**Table 4-2 Relevant guidelines and standards**

Guidelines and standards
National Standards for the Practice of Ecological Restoration in Australia (Society for Ecological Restoration Australasia, 2016)
Guidelines for the Translocation of Threatened Plants (Vallee et al, 2004)
Cumberland Plain Recovery Plan (DECCW, 2011)
NSW Department of Primary Industries, Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings, Fairfull and Witheridge, 2003
Fishnote – Policy and Guidelines for Fish Friendly Waterway Crossings – November 2003
NSW National Parks & Wildlife Service. 2001. Policy for the Translocation of Threatened Fauna in NSW: Policy and Procedure Statement No. 9 Threatened Species Unit, Hurstville NSW
Australian Network for Plant Conservation. 2004. Guidelines for the Translocation of Threatened Plants in Australia, 2nd Edition
Hygiene protocol for the control of disease in frogs (DECCW, 2008)
Cumberland Plains Recovery Plan (Department for Planning, Industry and Environment. 2011)
Survey guidelines for Australia’s threatened mammals: Guidelines for detecting mammals listed as threatened under the EPBC Act (SEWPaC 2011),
Survey guidelines for Australia’s threatened birds: Guidelines for detecting birds listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999 (DEWHA 2010)
Survey guidelines for Australia’s threatened frogs: Guidelines for detecting frogs listed as threatened under the EPBC Act (DEWHA 2010)
Survey guidelines for Australia’s threatened reptiles: Guidelines for detecting reptiles listed as threatened under the EPBC Act 1999 (SEWPaC 2011)
Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (DEC 2004a),
Environmental impact assessment guidelines: Cumberland Plain Large Land Snail (NPWS 2000)
Environmental impact assessment guidelines: <i>Cynanchum elegans</i> (NPWS 2002)
Environmental impact assessment guidelines: <i>Dillwynia tenuifolia</i> (NPWS 2002)
Environmental impact assessment guidelines: <i>Grevillea juniperina subsp.</i> (NPWS 2002)
Environmental impact assessment guidelines: <i>Pultenaea parviflora</i> (NPWS 2002)



Guidelines and standards
Environmental impact assessment guidelines: <i>Grevillea parviflora subsp.</i> (NPWS 2002)
Environmental impact assessment guidelines: <i>Acacia pubescens</i> (NPWS 2003)
National Recovery Plan for Grey-headed Flying-fox ( <i>Pteropus poliocephalus</i> ) (DECCW 2009)
EPBC Act referral guidelines for the vulnerable Koala (DoE 2014)
Western Sydney Aerotropolis Development Control Plan 2020 Phase 1

#### 4.4. Approvals and other specifications

- Functional Specifications
- EPBC Act Part 13 Permit E2017-0138 and E2021-0187 (Appendix E of this BCEMP)
- Bushfire Management Plan (included as Appendix D of this BCEMP)
- Sydney Metro Western Sydney Airport Plan
- Sydney Metro Western Sydney Airport Environmental Impact Statement
- Sydney Metro Sustainability Plan
- Sydney Metro Community Communications Strategy
- Sydney Metro Construction (Rail) Plan.

#### 4.5. Part 13 Permit conditions

The Part 13 Permit is a requirement under the EPBC Act for activities that may kill, injure, take, trade, keep or move a member of a listed threatened species or ecological community, a member of a listed migratory species, or a member of a listed marine in or on a Commonwealth area. As a condition of this Part 13 Permit SM - WSA is required to stay within prescribed area or species number limits for the clearing/removal/impact of nominated threatened species or communities. Processes, procedures and protocols with this Biodiversity CEMP define mitigation measures to ensure ongoing compliance with the conditions of the Part 13 Permit as noted below.

A Part 13 Permit (E2017-0138) was provided to WSA for the Stage 1 works and SM - WSA was granted Part 13 Permit (E2021-0187) on August 11 2021. Part 13 Permit E2017-0138 Conditions of Approval applicable to Stage 1 are provided in Table 4-3.

Part 13 Permit E2021-0187 Conditions of Approval applicable to SM - WSA support sites are provided in Table 4-4.

Table 4-3 Conditions of approval attached to part 13 Permit E2017-0138 relating to WSA Stage 1 works

Condition No	Condition	Timing	Responsibility
1.	In accordance with the Airport Plan, the permit holder is authorised to: Clear up to 160 hectares of Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest; Clear habitat of, or kill, injure, take, trade, keep or move members of, the listed threatened, migratory and / or marine species specified in Part 13 Permit Table 1 (Attachment A), up to the specified maximum quantity.	NA	WSA
2.	The permit holder may give to another person written authority to take, for or on behalf of the holder, any activity authorised by the permit. When an authority is given to another person, the condition requirements also apply. The giving of an authority to another person does not prevent the permit holder from undertaking the authorised activity. The permit holder who gives an authority to another person must inform the Department of Environment and Energy in writing within fourteen (14) days after giving the authority. The permit holder may only give an authority to another person who has sufficient experience and competence in the activities of this permit.	Prior to clearing	WSA (Permit Holder) Contractor
<b>Administrative conditions</b>			
3.	Within seven (7) days after the commencement of the action, the permit holder must advise the Minister in writing of the actual date of commencement of the action.	Within 7 days of starting action	WSA
4.	The permit holder must maintain accurate records substantiating all activities associated with or relevant to these permit conditions and make them available to the Department of Environment and Energy upon request. Such records may be subject to audit by the Department of Environment and Energy, or an independent auditor in accordance with section 458 of the EPBC Act or used to assess or verify compliance with the permit conditions. Summaries of audits may be published on the Department's website. The results of audit may also be publicised through the general media.	Ongoing	WSA
5.	Unless otherwise agreed to in writing by the Minister, within three (3) months of every 12-month anniversary of the commencement of the action, the permit holder must publish a report on their website addressing compliance with these permit conditions over the previous 12 months. Non-compliance with any of the permit conditions must be reported to the Department at the same time as the compliance report is published. Reports must remain published for the life of the permit. Reports must continue to be published until such time as advised by the Minister in writing.	Annually	WSA

Condition No	Condition	Timing	Responsibility
6.	<p>The permit holder will be taken to comply with the requirement to publish compliance reports under permit condition 5, in relation to a 12 month or other period referred to in condition 39 of the Airport Plan, if information about compliance or non-compliance with these permit conditions, over that period, is included or is to be included in a report published by the permit holder under condition 39 of the Airport Plan.</p> <p>If a report published by the permit holder under condition 39 of the Airport Plan includes or is to include information about compliance with these permit conditions over a 12 month or other period, a compliance report published by the permit holder under permit condition 5 does not need to address compliance with these permit conditions over any part of the same period.</p>	Annually	WSA
7.	If, after 10 years from the date of this permit, the permit holder has not commenced the action, then the permit holder must not commence the action or continue taking the action without the written agreement of the Minister.	N/A	N/A

Note: Commonwealth Department of Environment and Energy referred to in this table is now called the Department of Agriculture, Water and the Environment (DAWE).

**Table 4-4 Conditions of approval attached to part 13 Permit E2021-0187 relating to the SM-WSA support sites in the RCIZ**

Condition No	Condition	Timing	Responsibility
1.	The permit holder is authorised to <b>clear</b> up to 3.49 hectares of <b>Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest</b> threatened ecological community within the study area.	Ongoing	SM - WSA
2.	The permit holder is authorised to clear up to 1.62 hectares of River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria threatened ecological community within the study area.	Ongoing	SM - WSA
3.	To manage and mitigate impacts to Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest and River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria, the action must be undertaken in accordance with Sydney Metro's Construction Environmental Management Framework.	Ongoing	SM - WSA
4.	The permit holder must offset residual impacts to Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest and River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria in accordance with the NSW Biodiversity Assessment Method and the NSW Biodiversity Offsets Scheme.	Prior to clearing	SM - WSA

Condition No	Condition	Timing	Responsibility
5.	The permit holder must provide the <b>Department</b> with a report on compliance with these permit conditions within six (6) months from the date of expiry of the permit, by email to EPBCMonitoring@environment.gov.au or an address as stipulated by the Department.	Within six (6) months from the date of expiry of the permit	SM - WSA
6.	The <b>permit holder</b> may give to another person written authority to take, for or on behalf of the holder, any activity authorised by the permit. When an authority is given to another person, the condition requirements also apply. The giving of an authority to another person does not prevent the <b>permit holder</b> from undertaking the authorised activity. The <b>permit holder</b> who gives an authority to another person must inform the <b>Department</b> in writing within ten <b>business days</b> after giving the authority. The <b>permit holder</b> may only give an authority to another person who has sufficient experience and competence in the activities of this permit.	Ongoing	SM - WSA
<b>Definitions</b>	<p>Business days means a day that is not a Saturday, a Sunday or a public holiday in the state of New South Wales.</p> <p>Clear means the cutting down, felling, thinning, logging, removing, killing, destroying, poisoning, ringbarking, uprooting or burning of vegetation (but not including weeds – see the Australian weeds strategy 2017 to 2027 for further guidance).</p> <p>Cumberland Plain Woodlands and Shale-Gravel Transition Forest means the ecological community of the same name listed as critically endangered under the EPBC Act.</p> <p>Department means the Australian Government Department of Agriculture, Water and the Environment or any other agency responsible for administering the EPBC Act.</p> <p>EPBC Act means the Commonwealth Environment Protection and Biodiversity Conservation Act 1999.</p> <p>NSW Biodiversity Assessment Method means the biodiversity assessment method established under the <i>Biodiversity Conservation Act 2016 (NSW)</i>.</p> <p>NSW Biodiversity Offset Scheme means the biodiversity offset scheme established under the <i>Biodiversity Conservation Act 2016 (NSW)</i>.</p> <p>Permit holder means the person to whom the permit is granted.</p> <p>Study area means the areas marked by a green dashed outline labelled ‘study area’ and located within the Western Sydney (Nancy-Bird Walton) International Airport marked by pink shading labelled ‘Western Sydney International’, in the map at Annexure 1.</p> <p>River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria means the ecological community of the same name listed as critically endangered under the EPBC Act.</p>	N/A	N/A

## 4.6. Airport Plan conditions

Conditions of Approval relevant to biodiversity management during construction are provided in Table 4-5. Compliance with the Airport Plan (September 2021) conditions is a statutory requirement and as such, failure to comply may constitute a criminal offence liable to criminal prosecution under the Airports Act.

Table 4-5 Airport Plan Conditions of approval relevant to biodiversity management

Condition no.	Condition	Timing	Responsibility	Reference within this CEMP
39.1	The Rail Authority must not: (a) commence Rail Construction Works until each and all of the Rail CEMPs specified in paragraph (2) have been prepared and approved in accordance with this condition; or (b) carry out any Rail Development inconsistently with any of the approved Rail CEMPs.	Prior to Main Construction Works	Sydney Metro	CEMP Sections 6, 7, 8, 9 and 10
39.2	The Rail Authority must prepare and submit to an Approver for approval; (b) a Biodiversity CEMP; in relation to the carrying out of the Rail development.	Prior to Main Construction Works	Sydney Metro	This document (Biodiversity CEMP)
39.3	The criteria for approval of each of the Rail CEMPs are that an Approver is satisfied that: (a) the CEMP complies with the mitigation measures and other requirements set out in Table 8-1 and Table 8-3 of the EIA which are relevant to that CEMP; (b) the Rail Authority, in preparing the CEMP has taken into account any performance outcomes specified in Table 8-2 of the EIA which are relevant to that CEMP; and (c) the CEMP is otherwise appropriate.	Prior to Main Construction Works	Sydney Metro All Contractors	This document (Biodiversity CEMP) Table 4.6
39.4	The Rail Authority must ensure that: (a) a Rail CEMP is to the extent possible, consistent with a CEMP of the Site Occupier; and (b) no Rail CEMP is inconsistent with the approved Construction (Rail) Plan.	CEMP preparation	Sydney Metro	This document Section 1.3 Section 4.7 Section 7
40.1	The Rail Authority must not: (a) commence Rail Construction Works until a Community Communications Strategy has been prepared and approved in accordance with this condition; or (b) carry out any Rail Development inconsistently with the approved Community Communications Strategy.	Prior to construction	Sydney Metro	Not referenced. Community Communications Strategy



## Sydney Metro – Integrated Management System (IMS)

(Uncontrolled when printed)



Condition no.	Condition	Timing	Responsibility	Reference within this CEMP
41.1	The Rail Authority must not: (a) commence Rail Construction Works until a Sustainability Plan has been prepared and approved in accordance with this condition; or (b) carry out any Rail Development inconsistently with the Approved Sustainability Plan.	Prior to construction	Sydney Metro	Not referenced. Sustainability Plan
42.1	The Rail Authority must not commence Rail Construction Works until a Cumulative Impacts Plan has been approved in accordance with this condition.	Prior to construction	WSA	Section 7 Table 7-1.
42.2	The ALC must: (a) prepare; and (b) submit to an Approver for approval; a Cumulative Impacts Plan in relation to cumulative impacts arising from the concurrent construction of the Airport Stage 1 Development and the Rail Development.	Prior to construction	WSA	Section 7 Table 7-1.
42.4	Each of the Rail Authority and the ALC must not act inconsistently with the approved Cumulative Impacts Plan.	Prior to construction	WSA	Section 7 Table 7-1.
43.1	The Rail Authority must not commence Rail Construction Works until the Staging Report has been submitted in accordance with sub conditions (3) and (4), and the Rail Biodiversity Offset Strategy has been approved in accordance with sub conditions (5), (6) and (7).	Prior to construction	Sydney Metro	Staging Report Biodiversity Offset Strategy has been approved by DAWE – See Section 1.3 and 3.1

Condition no.	Condition	Timing	Responsibility	Reference within this CEMP
43.2	Clearing of plant community types, threatened ecological communities, or threatened species must not exceed the amounts specified in the Biodiversity Development Assessment Report at Appendix C of the EIA.	Construction	Sydney Metro AEW Contractor SCAW Contractor SBT Contractor	Section 7
43.3	The Rail Authority must: (a) prepare; and (b) submit to an Approver for information; a Staging Report in relation carrying out the Rail Development.	Prior to construction	Sydney Metro	Staging Report Section 1.3
43.4	The Staging Report must set out: (a) how construction of the Rail Development will be staged, including details of vegetation clearing and other activities to be carried out in each stage; (b) mapping and delineation of the spatial location of each stage; and (c) the general timing of when construction of each stage will commence and finish.	Prior to construction	Sydney Metro	Staging Report Section 1.3
43.5	The Rail Authority must: (a) prepare; and (b) submit to an Approver for approval; a Rail Biodiversity Offset Strategy in relation to carrying out the Rail Development.	Prior to construction	Sydney Metro	Biodiversity Offset Strategy Section 8.8
43.6	The Rail Biodiversity Offset Strategy must: (a) be prepared by a suitably qualified expert; (b) be based on and informed by the Biodiversity Development Assessment Report at Appendix C of the EIA; and (c) be prepared in accordance with the Biodiversity Assessment Methodology.	Prior to construction	Sydney Metro	Biodiversity Offset Strategy Section 8.8

Condition no.	Condition	Timing	Responsibility	Reference within this CEMP
43.7	<p>(7) The criteria for approval of the Rail Biodiversity Offset Strategy are that an Approver is satisfied the Rail Biodiversity Offset Strategy:</p> <p>(a) sets out:</p> <p>(i) the maximum number and class of biodiversity credits that may be required to offset the impacts of the Rail Development on biodiversity values, consistent with the quantum identified in the Biodiversity Development Assessment Report at Appendix C of the EIA;</p> <p>(ii) a process for quantifying the impacts to biodiversity based on the final design of the Rail Development and quantifying the final number and class of biodiversity credits required to offset the impacts of Rail Development on biodiversity values;</p> <p>(iii) details of how the credit requirement related to each stage of construction defined in the Staging Report will be determined and reported; and</p> <p>(iv) how the offset requirement will be satisfied, including the timing to secure offsets in relation to each stage of construction defined the Staging Report; and</p> <p>(b) is consistent with the offsetting strategy included in the Biodiversity Development Assessment Report at Appendix C of the EIA and the principles of the EPBC Act Environmental Offsets Policy.</p>	Prior to construction	Sydney Metro	Biodiversity Offset Strategy Section 8.8
43.8	The Rail Authority must implement the approved Rail Biodiversity Offset Strategy.	Prior to construction	Sydney Metro	Biodiversity Offset Strategy Section 8.8
43.9	<p>The Rail Authority must:</p> <p>(a) prepare; and</p> <p>(b) submit to an Approver for information;</p> <p>a Completion Report in relation to the Rail Development no later than 6 months after the end of the Rail Construction Period, or by a later time agreed in writing by an Approver.</p>	6 months after the end of the Rail Construction Period.	Sydney Metro	See Section 8.9

Condition no.	Condition	Timing	Responsibility	Reference within this CEMP
43.10	<p>The Completion Report must set out:</p> <p>(a) shapefiles of the Rail Construction Impact Zone shown in the EIA and Biodiversity Development Assessment Report at Appendix C of the EIA with a comparison to the refined construction footprint;</p> <p>(b) final quantification of the biodiversity offset requirements, determined in accordance with sub condition (7)(a)(ii);</p> <p>(c) details of how the biodiversity offset requirements, determined in accordance with sub condition (7)(a)(iv), have been satisfied; and</p> <p>(d) evidence of the legal security mechanism used to secure an offset.</p>	6 months after the end of the Rail Construction Period.	Sydney Metro	See Section 8.9
43.11	<p>If the Approver believes on reasonable grounds that:</p> <p>(a) this condition has been contravened; and</p> <p>(b) a variation or a request from the Rail Authority for a specified variation (as the case may be) will address the contravention;</p> <p>the Approver may:</p> <p>(c) vary an approved Rail Biodiversity Offset Strategy; or</p> <p>(d) request in writing that the Rail Authority prepare and seek approval for a specified variation of an approved Rail Biodiversity Offset Strategy in accordance with condition 49.</p>	Prior to construction	Sydney Metro	Biodiversity Offset Strategy Section 8.8
45.3	<p>The Rail Authority must take reasonable steps to ensure that:</p> <p>(a) each person involved in carrying out a development which is part of the Rail Development:</p> <p>(i) is informed of the conditions that are relevant to the carrying out of the Rail Development; and</p> <p>(ii) in carrying out the Rail Development, complies with those conditions as if they applied to the person in the same way as they apply to the Rail Authority; and</p> <p>(b) each person involved in operating a development described in section 3.10 of Part 3 of the Airport Plan:</p> <p>(i) is informed of the conditions that are relevant to the operation of the development; and</p> <p>(ii) in operating the development, complies with those conditions as if they applied to the person in the same way as they apply to the Rail Authority.</p>	Prior to construction	Sydney Metro	Section 10.6

## Sydney Metro – Integrated Management System (IMS)

(Uncontrolled when printed)



Condition no.	Condition	Timing	Responsibility	Reference within this CEMP
46	Site Occupier and Plan Owner to maintain records about compliance with conditions Each Site Occupier, the Rail Authority and each Plan Owner must maintain accurate records which demonstrate its compliance with the conditions, including measures taken to implement the Approved Plans, and must make the records available upon request to the Infrastructure Department.	During construction	Sydney Metro	Section 10.5 Section 10.4
47.4	Unless otherwise agreed in writing by an Approver, the Rail Authority must prepare a report addressing its compliance with each condition set out in section 3.11.6, including implementation of any Approved Plan, in respect of: (a) the 12-month period commencing with the commencement of Rail Construction Works; (b) each subsequent 12-month period until the end of the Rail Construction Period; and (c) any period between the commencement of Rail Construction Works and the end of the Rail Construction Period that is not covered by paragraph (a) or (b).	During construction	Sydney Metro	Section 10.4
47.5	Unless otherwise agreed in writing by an Approver, the Rail Authority must publish each report prepared under sub condition (4) on its website within three months of the end of the period in respect of which the report was prepared. Documentary evidence providing proof of the date of publication must be provided to the Infrastructure Department at the same time as each report is published (with a copy to be provided to the Environment Department). Each report must remain on the Rail Authority's website for a minimum of 12 months (beginning on the date of publication).	During construction	Sydney Metro	Section 10.4
48.4	The Rail Authority must ensure that an independent audit of its compliance with the conditions set out in section 3.11.6 (except condition 44) is conducted in respect of the 12-month period commencing with the commencement of Rail Construction Works.	During construction	Sydney Metro	Section 10.4
48.5	The Rail Authority must ensure that an independent audit of its compliance with condition 46 is conducted in respect of the 12-month period from commencement of Rail Operations.	During construction	Sydney Metro	Section 10.4

Condition no.	Condition	Timing	Responsibility	Reference within this CEMP
48.6	The Rail Authority must submit the report of each audit conducted under sub condition (4) or (5) to an Approver (with a copy to the Environment Department) within six months of the end of the period in respect of which the audit was conducted. For each audit, the independent auditor must be approved by an Approver prior to the commencement of the audit. Audit criteria must be agreed by an Approver and the report of the audit must address the criteria to the satisfaction of an Approver.	During construction	Sydney Metro	Section 10.4
49.1	The Plan Owner may seek approval for a variation of an Approved Plan by submitting to an Approver a version of the plan with the proposed variation clearly marked in it (varied plan).	During construction	Sydney Metro	Section 12.2
49.2	The criteria for approval of the varied plan are the same as those in the Approval Condition, but only to the extent that they are relevant to the proposed variation.	During construction	Sydney Metro	Section 12.2
49.3	If an Approver approves a varied plan prepared under sub condition (1) or paragraph (5)(b), or the Infrastructure Minister varies an Approved Plan under paragraph (5)(a), then, from the date when it is approved or varied (as the case may be), the plan as varied is taken to be the Approved Plan for the purposes of the conditions.	During construction	Sydney Metro	Section 12.2
49.4	The ALC must review each Approved Plan for which it is the Plan Owner every five years to ensure that the Approved Plan continues to meet the approval criteria for that plan. The ALC must provide a report on the review (which may be included in an annual report required under condition 47). If the plan does not continue to meet the approval criteria, within three months of the provision of the report, the ALC must prepare and submit for approval under sub condition (1) a variation to the Approved Plan to ensure it continues to meet the approval criteria.	During construction	Sydney Metro	Section 12.2
49.5	Despite sub condition (4), the ALC must review the Cumulative Impacts Plan every 12 months in consultation with the Rail Authority to ensure that the Plan continues to meet the approval criteria. The ALC must provide a report on the review (which may be included in an annual report required under condition 47). If the plan does not continue to meet the approval criteria, within three months of the provision of the report, the ALC in consultation with the Rail Authority must prepare and submit for approval under sub condition (1) a variation to ensure it continues to meet the approval criteria.	During construction	Sydney Metro	Section 12.2

Condition no.	Condition	Timing	Responsibility	Reference within this CEMP
49.6	The Infrastructure Minister may: (a) vary an Approved Plan; or (b) request in writing that the Plan Owner prepare and seek approval for a specified variation of an Approved Plan in accordance with sub condition (1), if the Infrastructure Minister believes on reasonable grounds that: (c) a condition has been contravened and the nature of the contravention is relevant to the subject matter of the Approved Plan; and (d) the variation or the request for a specified variation (as the case may be) will address the contravention.	During construction	Sydney Metro	Section 12.2
49.7	The Plan Owner must comply with a request made by the Infrastructure Minister in accordance with sub condition (6) within three months of the date of the request.	During construction	Sydney Metro	Section 12.2
49.9	Within two months of the grant of an Airport Lease, the ALC must prepare and submit for approval, in accordance with sub condition (1), a variation of each plan that was approved under a condition before the lease was granted, and for which the ALC is the Plan Owner, to reflect the change in Site Occupier resulting from the grant of the Airport Lease.	During construction	Sydney Metro	Section 12.2
50.1	(1) Unless otherwise agreed in writing by an Approver, the Plan Owner must publish all Approved Plans on its website.	During construction	Sydney Metro	Section 11.2
50.2	Each Approved Plan must be published on the Plan Owner's website within one month of being approved and remain so published: (a) for Rail CEMPs – until the end of the Airport Construction Period or Rail Construction Period as relevant;  (d) the Community Communications Strategy – on commencement and each time there is a variation to the Strategy; and (e) for all other plans – until there is a Master plan for the Airport.	During construction	Sydney Metro	Section 11.2

## 4.7. WSA Environmental impact requirements

### 4.7.1. WSA EIS requirements

The requirements of biodiversity management to be taken into account and addressed during the construction phase of the Railway Development on the Stage 1 area are included in the WSA EIS, specifically Table 28-4. In line with the requirement of the SM - WSA CEMPs to be consistent with the WSA CEMPs, Sydney Metro have ensured that the implementation, risk assessment, management measures, monitoring, auditing, reporting and responsibility for biodiversity management by the Project is aligned with the requirements of the WSA.

### 4.7.2. SM - WSA EIA requirements

The requirements of biodiversity management to be taken into account and addressed during the construction phase of the Project are included in Section 8 of the SM - WSA EIA, in particular Tables 8-1, CEMF 6 and Table 8-2. A summary of these requirements and how they have been addressed in this Biodiversity CEMP is presented in Table 4-6. The further requirements of Table 8-3 of the EIS are the Revised Environmental Mitigation Measures which are included in Section 7, Table 7-1 of this BCEMP.



Table 4-6 Summary of biodiversity management requirements from the SM - WSA EIA

SM - WSA EIA Reference	Topic	Summary	Where referenced
<b>Table 8-1 CEMF 6</b>	Framework requirements.	<p>The on-airport Biodiversity CEMP would detail Sydney Metro – Western Sydney Airport fauna and flora management objectives, including:</p> <ul style="list-style-type: none"> <li>• minimise impacts on flora and fauna;</li> <li>• design waterway modifications and crossings to incorporate best practice principles;</li> <li>• retain and enhance existing flora and fauna habitat wherever possible; and appropriately manage the spread of weeds and plant pathogens.</li> </ul>	Section 7 - Environmental control measures
<b>Table 8-1 CEMF 6</b>	Framework requirements.	<p>The on-airport Biodiversity CEMP would be consistent with the Western Sydney Airport Biodiversity CEMP, including all appendices (sub plans) to the Biodiversity CEMP. The plan would include as a minimum:</p>	
		<ul style="list-style-type: none"> <li>• procedures for the clearing of vegetation and the relocation of flora and fauna;</li> </ul>	Section 7 - Environmental control measures Appendix A - Vegetation Management Plan
		<ul style="list-style-type: none"> <li>• details on the locations, monitoring program and use of nest boxes by fauna;</li> </ul>	Appendix B – Nest box strategy Section 7 - Environmental control measures
		<ul style="list-style-type: none"> <li>• procedures for the demarcation and protection of retained vegetation, including all vegetation outside and adjacent to the construction footprint, and the protection of retained vegetation within the environmental conservation zone on the airport site;</li> </ul>	Section 7 - Environmental control measures Appendix A - Vegetation Management Plan
		<ul style="list-style-type: none"> <li>• plans for impacted and adjoining areas showing vegetation communities; important flora and fauna habitat areas; locations where threatened species, populations or ecological communities have been recorded;</li> </ul>	Section 7 - Environmental control measures Appendix A - Vegetation Management Plan
		<ul style="list-style-type: none"> <li>• vegetation management plan(s) for sites where native vegetation is proposed to be retained;</li> </ul>	Section 7 - Environmental control measures
		<ul style="list-style-type: none"> <li>• identification of measures to reduce disturbance to sensitive fauna;</li> </ul>	Appendix B - Biodiversity Management Protocols

SM - WSA EIA Reference	Topic	Summary	Where referenced
		<ul style="list-style-type: none"> <li>rehabilitation details, including identification of flora species and sources, and measures for the management and maintenance of rehabilitated areas (including duration of the implementation of such measures);</li> </ul>	Section 7 - Environmental control measures
		<ul style="list-style-type: none"> <li>weed and disease management measures focusing on early identification of invasive weeds and diseases and protocols to address the effective management of these risks;</li> </ul>	Section 7 - Environmental control measures Appendix C Weed and Disease Management Plan
		<ul style="list-style-type: none"> <li>a procedure for dealing with unexpected threatened species identified during construction. The procedure shall define how appropriate mitigation measures (including relevant relocation measures) and updating of ecological monitoring or offset requirements;</li> </ul>	Section 7 - Environmental control measures Appendix B - Biodiversity Management Protocols
		<ul style="list-style-type: none"> <li>ecological monitoring requirements;</li> </ul>	Section 10 – Environmental inspection, monitoring and auditing
		<ul style="list-style-type: none"> <li>compliance record generation and, including:</li> <li>records of pre-clearing inspections undertaken;</li> <li>records of the release of the pre-clearing hold point; and</li> <li>records of ecological inspections undertaken.</li> </ul>	Section 7 - Environmental control measures Appendix B
		<ul style="list-style-type: none"> <li>the following ecological monitoring will be undertaken as a minimum:                             <ul style="list-style-type: none"> <li>a pre-clearing inspection will be undertaken prior to any native vegetation clearing by a suitable qualified ecologist and the Contractor’s Environmental Manager (or delegate). The pre-clearing inspection will include, as a minimum:                                     <ul style="list-style-type: none"> <li>identification of hollow bearing trees or other habitat features;</li> <li>identification of any threatened flora and fauna;</li> <li>a check on the physical demarcation of the limit of clearing;</li> <li>an approved erosion and sediment control plan for the worksite; and</li> <li>the completion of any other pre-clearing requirements required by any project approvals, permits or licences.</li> </ul> </li> </ul> </li> </ul>	Section 7 - Environmental control measures Appendix A - Vegetation Management Plan Section 7 - Environmental control measures Section 7 - Environmental control measures

SM - WSA EIA Reference	Topic	Summary	Where referenced
		<ul style="list-style-type: none"> <li>the completion of the pre-clearing inspection will form a HOLD POINT requiring sign-off from the Contractor's Environmental Manager (or delegate) and a qualified ecologist; and</li> </ul>	
		<ul style="list-style-type: none"> <li>a post clearance report, including any relevant Geographical Information System files, will be produced that validates the type and area of vegetation cleared including confirmation of the number of hollows impacted and the corresponding nest box requirements to offset these impacts</li> </ul>	
		<p>The on-airport Biodiversity CEMP would include the following flora and fauna mitigation measures:</p>	Section 7 - Environmental control measures
		<ul style="list-style-type: none"> <li>areas to be retained and adjacent habitat areas will be fenced off prior to works to prevent damage or accidental over clearing</li> </ul>	Section 7 - Environmental control measures
		<ul style="list-style-type: none"> <li>weed management is to be undertaken in areas affected by construction prior to any clearing works. On-airport weed management will also be undertaken in accordance with the NSW Noxious Weeds Act 1993 and the NSW Biosecurity Act 2015, which is consistent with the approach adopted in the Weed and Disease Management Plan (Appendix C of the Western Sydney Airport Biodiversity CEMP).</li> </ul>	Section 7 - Environmental control measures
<p><b>Table 8-2, Performance outcome</b></p>	<p>Biodiversity</p>	<p>Minimise or where possible avoid impacts on threatened flora and fauna species, and ecological communities listed under the <i>Biodiversity Conservation Act 2016 (NSW)</i> and <i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i></p>	<p>Section 3 – Objectives and targets Section 7 - Environmental control measures Appendix A - Vegetation Management Plan</p>
		<p>Impacts on threatened ecological communities and threatened species are offset in accordance with the requirements of the <i>NSW Biodiversity Assessment Method</i> (OEH, 2018)</p>	Section 7- Environmental control measures

SM - WSA EIA Reference	Topic	Summary	Where referenced
<b>Table 8-3</b>	FF1	<p>The Biodiversity Construction Environmental Management Plan (on- airport)/Flora and Fauna Management Plan (off-airport) would minimise and manage the clearing of native vegetation and habitat by:</p> <ul style="list-style-type: none"> <li>• seeking to locate site offices, site compounds and ancillary facilities in areas where there are limited biodiversity values (e.g. cleared land)</li> <li>• delaying the removal of vegetation until absolutely necessary</li> <li>• avoiding the removal of hollow-bearing trees, where possible</li> <li>• using a qualified surveyor and suitably qualified ecologist to mark out exclusion zones and clearing/project boundaries prior to construction</li> <li>• providing contractors with regularly updated sensitive area maps (showing clearing boundaries and exclusion zones)</li> <li>• investigating opportunities for salvage and storage of felled native trees for potential use in landscape design</li> </ul> <p>The Biodiversity Construction Environmental Management Plan (on-airport) would be implemented throughout construction</p>	Section 7- Environmental control measures
<b>Table 8-3</b>	FF2	Not required/applicable	Not required/applicable
	FF3	Works on-airport would be undertaken in consultation with Western Sydney Airport subject to the wildlife hazard management requirements	Section 7- Environmental control measures
	FF4	Not required/applicable	Not required/applicable
	FF5	Works on-airport would be managed in accordance with the Western Sydney Airport Microbat Management Plan and in consultation with Western Sydney Airport	Section 7- Environmental control measures
	FF6	During construction, shading and artificial light impacts would be minimised in areas adjoining remnant bushland that is in intact condition	Section 7- Environmental control measures
	FF7	Not required/applicable	Not required/applicable
	FF8	Not required/applicable	Not required/applicable

SM - WSA EIA Reference	Topic	Summary	Where referenced
<b>Table 8-3</b>	FF9	A Dewatering Plan would be prepared and implemented for the dewatering of rural dams which are impacted as a result of the construction of the project. This would include measures to manage the transfer of native aquatic fauna, if required, prior to dewatering and removing of dams. The plan would be consistent with the Western Sydney Airport Biodiversity Construction Environmental Management Plan (on-airport).	Section 7- Environmental control measures Appendix B3 Aquatic flora and fauna Management Plan
	FF10	<p>The impact of Key Threatening Processes as a result of the project would be managed and minimised where possible through:</p> <ul style="list-style-type: none"> <li>• implementation of weed management measures to prevent the introduction and spread of weeds including exotic vines and scramblers, <i>Olea europaea</i> (African Olive), <i>Chrysanthemoides monilifera</i>, <i>Lantana camara</i>, and exotic perennial grasses</li> <li>• implementation of pathogen management measures to prevent the introduction and spread of pathogens including amphibian chytrid, <i>Phytophthora</i> implementa, and Exotic Rust Fungi of the order Pucciniales</li> <li>• implementation of management measures to protect the riparian zone to ensure fish passage and protect fish habitat in accordance with the Policy and Guidelines for Fish Habitat Conservation and Management (DPI (Fisheries NSW), 2013), and minimisation of vegetation removal within the riparian zone where possible</li> </ul>	Section 7- Environmental control measures Appendix C Weed and Disease management plan (Appendix C) outlines the biosecurity hygiene protocol steps required to minimise the spread of weeds and pathogens.
	FF11	A native vegetation seed collection and salvage program would be developed prior to the commencement of construction and implemented during construction. The seed collection and salvage program would target native species prioritising the Cumberland Plain Woodland species to be utilised in landscaping for the project where possible. Opportunities for use of collected and salvaged seed outside of the project would also be investigated	Section 7- Environmental control measures

## 5. Existing environment

### 5.1. Construction activities to date

The initial earthworks phase for the construction of the Western Sydney Airport Stage 1 CIZ began in September 2018, with major earthworks starting in March 2020 and achieving the halfway point in earthworks in March 2021. In order to achieve this earthworks milestone, WSA's bulk earthwork contractors (BEC) have cleared virtually the entire site of all vegetation and reconfigured the entire CIZ site such that all pre-existing landforms are now an engineered bulk earthworks landform.

As such, the SM - WSA Rail Construction Impact Zone (RCIZ) sites within the WSA CIZ will not result in any direct biodiversity impacts. However, the baseline has been included for completeness and in order to address any unexpected biodiversity issues in the course of completing its scope. There is also the possibility that there may be some clearing requirements in the western side of the WSA CIZ for access purposes.

The following section summarises the results of ecological assessments undertaken at the Airport Site. Most of the ecological assessment undertaken at the Airport Site was reported in the WSA EIS. Additional ecological assessments were undertaken at the Airport Site post-EIS. Further assessment was undertaken by Sydney Metro to address the on-airport SM - WSA support sites areas forming part of the RCIZ. The existing environment information outlined below is a summary of the ecological assessment undertaken at the Airport Site for all three assessments.



Figure 5-1 Major Earthworks progress on WSA CIZ

## 5.2. Ecological assessments undertaken for the WSA EIS

A range of desktop and field based ecological assessments were undertaken as part of the Project EIS. For more details of the ecological assessment undertaken for the WSA EIS, refer to Chapter 11 and Technical Paper 3 of the EIS.

## 5.3. Post- EIS ecological assessment

Post-EIS, the Commonwealth prepared a Biodiversity Assessment Report and Biodiversity Assessment Report Addendum for areas directly impacted by Railway Development works (Stage 1 Biodiversity Assessment Report (GHD 2017) and the Stage 1 Biodiversity Assessment Report Addendum (GHD 2018)). This work was undertaken as a Preparatory Activity for the following purposes:

- To refine the impact area from the indicative Construction Impact Zone (CIZ) to the approved CIZ.
- To update the ecological information from the EIS to calculate the biodiversity offsets required for impacts on plants, animals and their habitats.

The Commonwealth has also undertaken ecological assessments using methodologies in accordance with the Framework for Biodiversity Assessment (FBA) on the land outside the CIZ but within the Airport Site during Preparatory Activities (Biodiversity Assessment Report for Land outside Railway Development (GHD, 2018)). This work was undertaken to comply with the requirements of the Airport Plan, which specified that management actions for areas outside of the CIZ but within the Airport Site must be informed by a Biodiversity Assessment Report that has been independently verified by an accredited person (following consultation with Department for Planning, Industry and Environment). These reports have been used to inform the below sections.

## 5.4. Endangered ecological communities

All the native woodland and forest vegetation at the Airport Site, including derived native grasslands, comprise local occurrences of endangered ecological communities listed under the BC Act. These endangered ecological communities are summarised in Table 5-1 and Figure 5-2

The critically endangered ecological communities (CEEC) listed under the EPBC Act must comply with key diagnostic characteristics and condition thresholds (such as projected foliage cover, patch size, perennial understory vegetation cover and contiguous native vegetation) as outlined in the Commonwealth Listing Advice and in EPBC Act Policy Statement 3.31 (DEWHA 2010). As such, only CEECs in good condition comply with the EPBC Act listings for the Cumberland Plain Woodland in the Western Sydney Basin Bioregion and the Shale/ Gravel Transition Forest in the Sydney Basin Bioregion. These are summarised in Table 5-2 and Figure 5-3

Refer to the Biodiversity Risk Assessment in Table 6-7 (section 6) for more information on the management of endangered ecological communities within the Airport Site.

Table 5-1 Endangered Ecological Communities within the Stage 1 Construction Impact Zone

Patch	Endangered ecological community	BC Act	EPBC Act	Good condition (ha)	Medium condition (ha)	Poor condition (ha)
<b>Grey Box – Forest Red Gum grassy woodland on flats</b>	Cumberland Plain Woodland in the Sydney Basin Bioregion	CEEC	CEEC <sup>1</sup>	104.8	6.1	113.2
<b>Grey Box – Forest Red Gum grassy woodland on hills</b>	Cumberland Plain Woodland in the Sydney Basin Bioregion	CEEC	CEEC <sup>1</sup>	35.5	-	13.2
<b>Forest Red Gum – Rough-barked Apple grassy woodland</b>	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South- East Corner bioregions	EEC	CEEC <sup>2</sup>	35.9	-	11.7
<b>Broad-leaved Ironbark – Grey Box – Melaleuca decora grassy open forest</b>	Shale/Gravel Transition Forest in the Sydney Basin Bioregion	EEC	CEEC <sup>1</sup>	5.5	-	0.4

1 - Only vegetation classed as in good condition. Also subject to patch size and condition criteria as documented in the listing advice for the community (TSSC 2008). Around 141.0 hectares of these vegetation zones comprises the EPBC Act-listed form of the community.

2 - Was not listed when the Environment Protection Biodiversity Conservation Act 1999 (EPBC Act) Part 13 Permit (E2017-0138) was issued and as such this community does not form part of this permit as a community, though is tracked as part of threatened species habitat.

Table 5-2 Vegetation communities within the SM - WSA RCIZ outside Stage 1

Patch	Endangered ecological community	BC Act	EPBC Act	Intact (ha)	Thinned/ Scattered (ha)	Low (ha)
<b>PCT 835 - Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats</b>	River-Flat Eucalypt Forest	EEC	CEEC <sup>1</sup>	1.53	0.09	10.21
<b>PCT 849 - Grey Box - Forest Red Gum grassy woodland on flats</b>	Cumberland Plain Woodland in the Sydney Basin Bioregion	CEEC	CEEC <sup>1</sup>	4.05	2.32	23.79
<b>PCT 1071 - Phragmites australis and Typha orientalis coastal freshwater wetlands</b>	Sydney Basin bioregions	Not listed		0.01	-	-

1 - Only vegetation classed as in good condition. Also subject to patch size and condition criteria as documented in the listing advice for the community (TSSC 2008). Around 141.0 hectares of these vegetation zones comprises the EPBC Act-listed form of the community.

2 - Was not listed when the Environment Protection Biodiversity Conservation Act 1999 (EPBC Act) Part 13 Permit (E2017-0138) was issued and as such this community does not form part of this permit as a community, though is tracked as part of threatened species habitat.



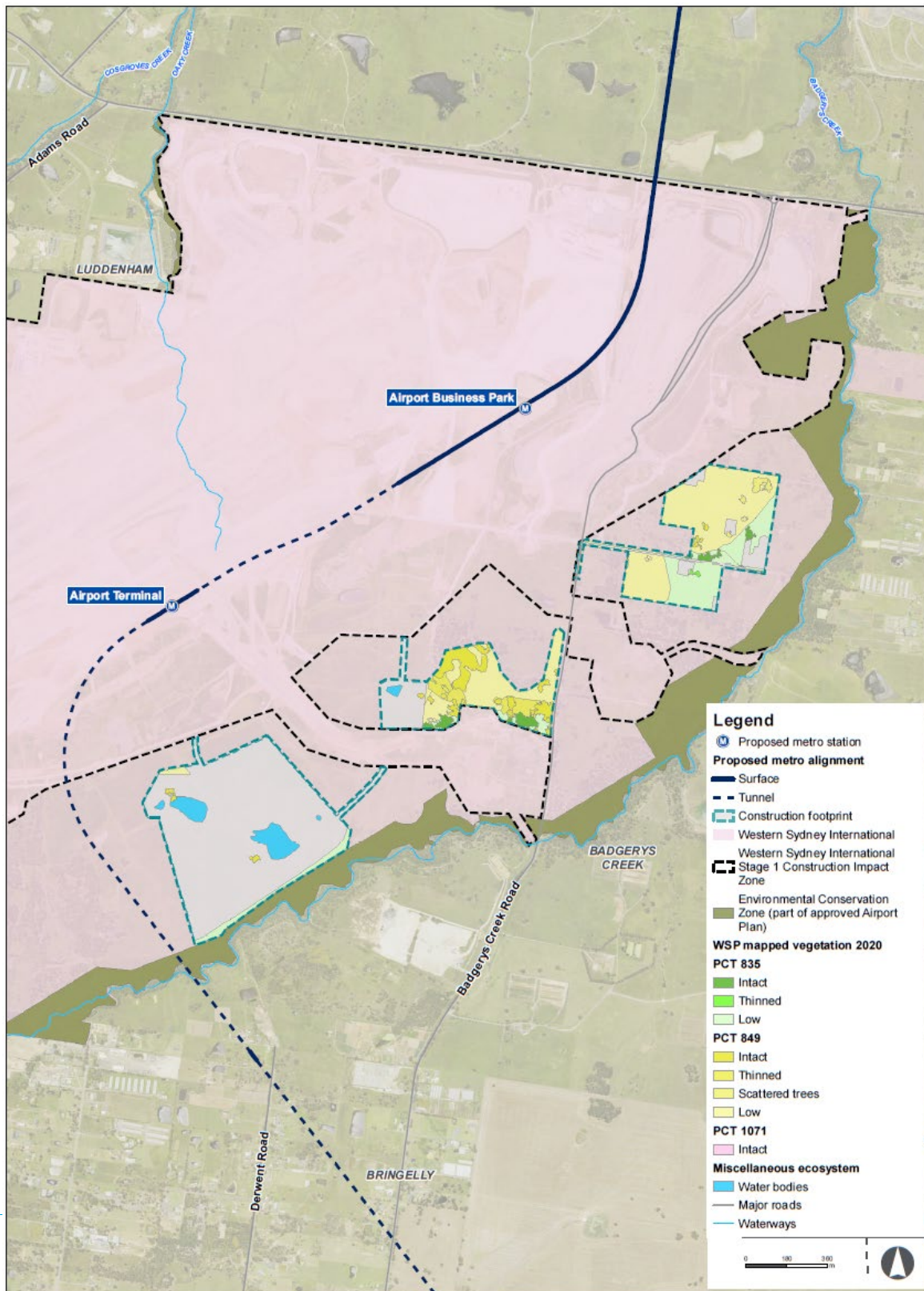
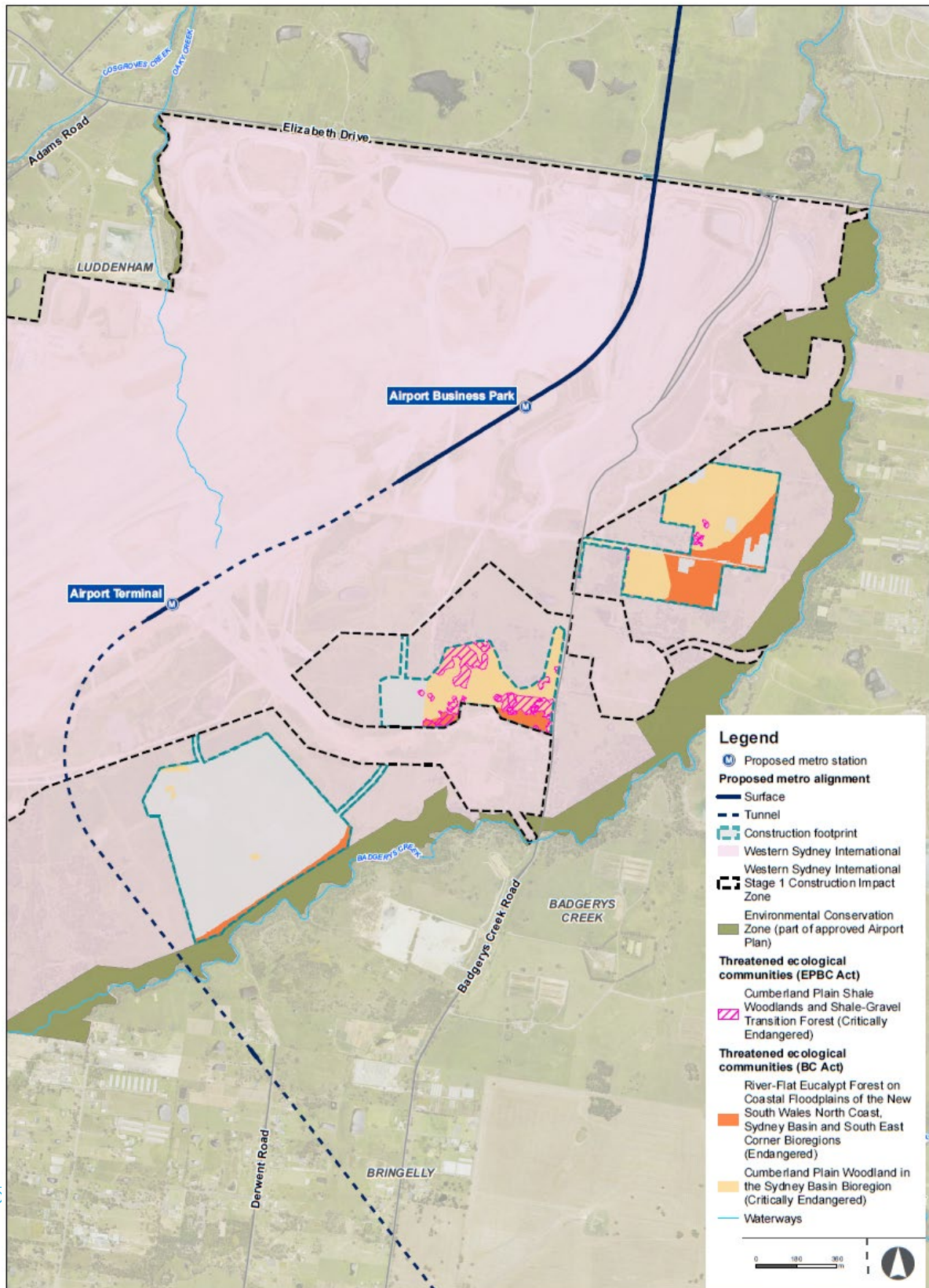




Figure 5-2 Vegetation Types (PCT) within the SM - WSA RCIZ outside Stage 1





---

Figure 5-3 Threatened Ecological Communities within the SM - WSA RCIZ outside Stage 1

## 5.5. Threatened or other significant flora species

### 5.5.1. Stage 1 CIZ

Nine species of threatened flora listed under the EPBC Act and/or BC Act have been recorded or are predicted to occur within the general locality of the Airport Site. Four species that are either threatened or part of an endangered population were recorded at the Airport Site during WSA EIS or post-EIS field surveys, while it is anticipated an additional five species may occur. The remaining species predicted to occur in the general locality of the airport site are considered unlikely to occur at the Airport Site due to a lack of suitable habitat, and therefore will not be affected by the proposed airport.

### 5.5.2. SM - WSA on-airport outside Stage 1 CIZ

A total of 12 threatened flora species were considered to have a moderate or higher likelihood of occurrence within the on-airport study area. Targeted surveys were completed for nine species and expert report was relied upon to exclude one species (refer to Table 5-3).

No threatened flora species were recorded within the on-airport study area or are considered affected by the project. No threatened flora species have been assigned to species credits for offsetting purposes.

Table 5-3 Threatened flora likely to occur within SM - WSA on-airport outside Stage 1 CIZ

Scientific name	Conservation status	
	EPBC Act	BC Act
<i>Pultenaea parviflora</i>	Vulnerable	Endangered
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i>	-	Endangered population
<i>Pimelea spicata</i>	Endangered	Endangered
<i>Dillwynia tenuifolia</i>	-	Vulnerable
<i>Cynanchum elegans</i>	Endangered	Endangered
<i>Acacia pubescens</i>	Endangered	Vulnerable
<i>Grevillea parviflora</i> subsp. <i>parviflora</i>	Vulnerable	Vulnerable
<i>Grevillea juniperina</i> subsp. <i>juniperina</i>	-	Vulnerable
<i>Thesium austral</i>	Vulnerable	Vulnerable
<i>Pomaderris brunnea</i>	Endangered	Vulnerable
<i>Pimelea curviflora</i> var. <i>curviflora</i>	Vulnerable	Vulnerable
<i>Persoonia nutans</i>	Endangered	Endangered

## 5.6. Vegetation corridors

A significant vegetation corridor occurs within the Environmental Conservation Zone (ECZ) along the eastern boundary of the Airport Site in association with Badgery's Creek riparian zone. The ECZ is predominately comprised of native grassy woodland and exotic grassland. The ECZ will be retained during the Project. The ECZ will be demarcated in the field during construction works and access will be restricted. SM – WSA will ensure no works occur within the ECZ through

buffers, fences, workforce induction and ERSED controls and other applicable mitigation measures.

Habitat augmentation and enhancement works will be undertaken in the ECZ by WSA during the life of the Project including nest box installations (Appendix B), replacing exotic vegetation with suitable native vegetation and rehabilitation of native remnant vegetation. This requirement is not applicable to SM – WSA but will support these works where required.

## 5.7. Threatened fauna

### 5.7.1. Stage 1 CIZ

One threatened fauna species listed under the EPBC Act was recorded at the Airport Site. The Grey-headed Flying-fox (*Pteropus poliocephalus*) was recorded during surveys for preparation of the EIS as well as surveys for the 1999 EIS. This species is listed as a vulnerable species under the EPBC Act and under the BC Act. There are no Grey-headed Flying-fox camps located at the Airport Site, although there are at least seven known camps within 20 kilometres. Three other threatened fauna species listed under the EPBC Act may occur at the airport site although not detected during the field surveys (refer to Table 5-4).

Table 5-4 EPBC Act Threatened species not detected during the field surveys but may be present

Threatened species	EPBC Act listing	BC Act listing	Habitat attractiveness
Swift Parrot ( <i>Lathamus discolor</i> )	Critically endangered	Endangered	Shelter or supplementary foraging resources for migrating individuals
Australasian Bittern ( <i>Botaurus poiciloptilus</i> )	Endangered	Endangered	Potential foraging and breeding habitat
Australian Painted Snipe ( <i>Rostratula australis</i> )	Endangered	Endangered	Potential foraging and breeding habitat

A further ten threatened fauna species listed under the BC Act (but not the EPBC Act) have been recorded at the Stage 1 CIZ and three species of bat were likely to be recorded (refer to Table 5.4).

Table 5-5 BC Act Threatened species not detected during the field surveys but may be present

Threatened fauna species	BC Act listing	Occurrence likelihood
Cumberland Plain Land Snail ( <i>Meridolum corneovirens</i> )	Endangered	Present
Little Eagle ( <i>Hieraaetus morphnoides</i> )	Vulnerable	Present
Little Lorikeet ( <i>Glossopsitta pusilla</i> )	Vulnerable	Present
Scarlet Robin ( <i>Petroica boodang</i> )	Vulnerable	Present
Varied Sittella ( <i>Daphoenositta cryoptera</i> )	Vulnerable	Present
Black Bittern ( <i>Ixobrychus flavicollis</i> )	Vulnerable	Present
Blue-billed Duck ( <i>Oxyura australis</i> )	Vulnerable	Present

Threatened fauna species	BC Act listing	Occurrence likelihood
Eastern Freetail-bat ( <i>Mormopterus norfolkensis</i> )	Vulnerable	Present
Eastern False Pipistrelle ( <i>Falsistrellus tasmaniensis</i> )	Vulnerable	Present
Eastern Bentwing Bat ( <i>Miniopterus schreibersii oceanensis</i> )	Vulnerable	Present
Large-footed Myotis ( <i>Myotis macropus</i> )	Vulnerable	Probably recorded (anabat)
Greater Broad-nosed Bat ( <i>Scoteanax rueppellii</i> )	Vulnerable	Probably recorded (anabat)
Eastern Cave Bat ( <i>Vespadelus troughtoni</i> )	Vulnerable	Probably recorded (anabat)

The Green and Golden Bell Frog (*Litoria aurea*) was considered to have a low likelihood of occurrence in the Stage 1 CIZ. No Green and Golden Bell Frog were recorded during the targeted searches for the WSA EIS (GHD 2016) despite the presence of suitable habitat at the airport site. Similarly, none were recorded in previous studies at the airport site. If Green and Golden Bell Frog were present, it is expected they would have been recorded, and as such appear to have become locally extinct. This species is listed as vulnerable under the EPBC Act and endangered under the BC Act.

Pre clearing ecological surveys were undertaken by the WSA project ecologist prior to clearing works being undertaken for the Bulk Earthworks Contract. Neither the Grey-headed Flying Fox nor the Green and Golden Bell Frog were detected during these surveys.

Whilst all clearing in the CIZ is now complete, an Unexpected Finds Procedure remains current should there be an incidental interaction with a Threatened Species. All WSA relevant Threatened Species are listed in an attachment to the Unexpected Finds Procedure. In the circumstance of a change in species listing this attachment will be updated accordingly so as to ensure currency.

### 5.7.2. SM-WSA support sites in the RCIZ outside Stage 1 CIZ

A total of two threatened fauna species, Cumberland Plain Land Snail and Southern Myotis, were recorded or assumed present within the on-airport study area and have been assigned to species credit calculations for offsetting purposes. The location of potential habitat (species polygons) for these species is illustrated in Figure 5-4.

The Southern Myotis is assumed to be present within suitable habitat within the SM - WSA on-airport outside Stage 1 CIZ. The Southern Myotis was recorded on-airport by Department of Infrastructure and Regional Development (2016e) at Badgerys Creek. Foraging habitat is present within several farms dams across the study area. Some potential roosting or breeding habitat is present in dead trees, but this species is most likely to use larger, under-road structures such as concrete culverts and bridges.

The Cumberland Plain Land Snail was recorded by Department of Infrastructure and Regional Development (2016e) within woodland vegetation in the study area, however not within the SM - WSA on-airport outside Stage 1 CIZ. A conservative approach has been taken for the Cumberland Plain Land Snail as the expert report for the Cumberland Plain Assessment Report predicts the species would potentially be found in any intact remnant especially if there is a well-developed leaf litter layer, plenty of woody debris on the ground and few exotic /

invasive species (Clarke, 2018). The species has therefore been assumed present within intact areas of PCT 849 and PCT 835 in the study area.

An additional threatened fauna species recorded during the field surveys included the Eastern False Pipistrelle (*Falsistrellus tasmanianesis*) which is listed as Vulnerable under the BC Act and was considered as an ecosystem credit species.



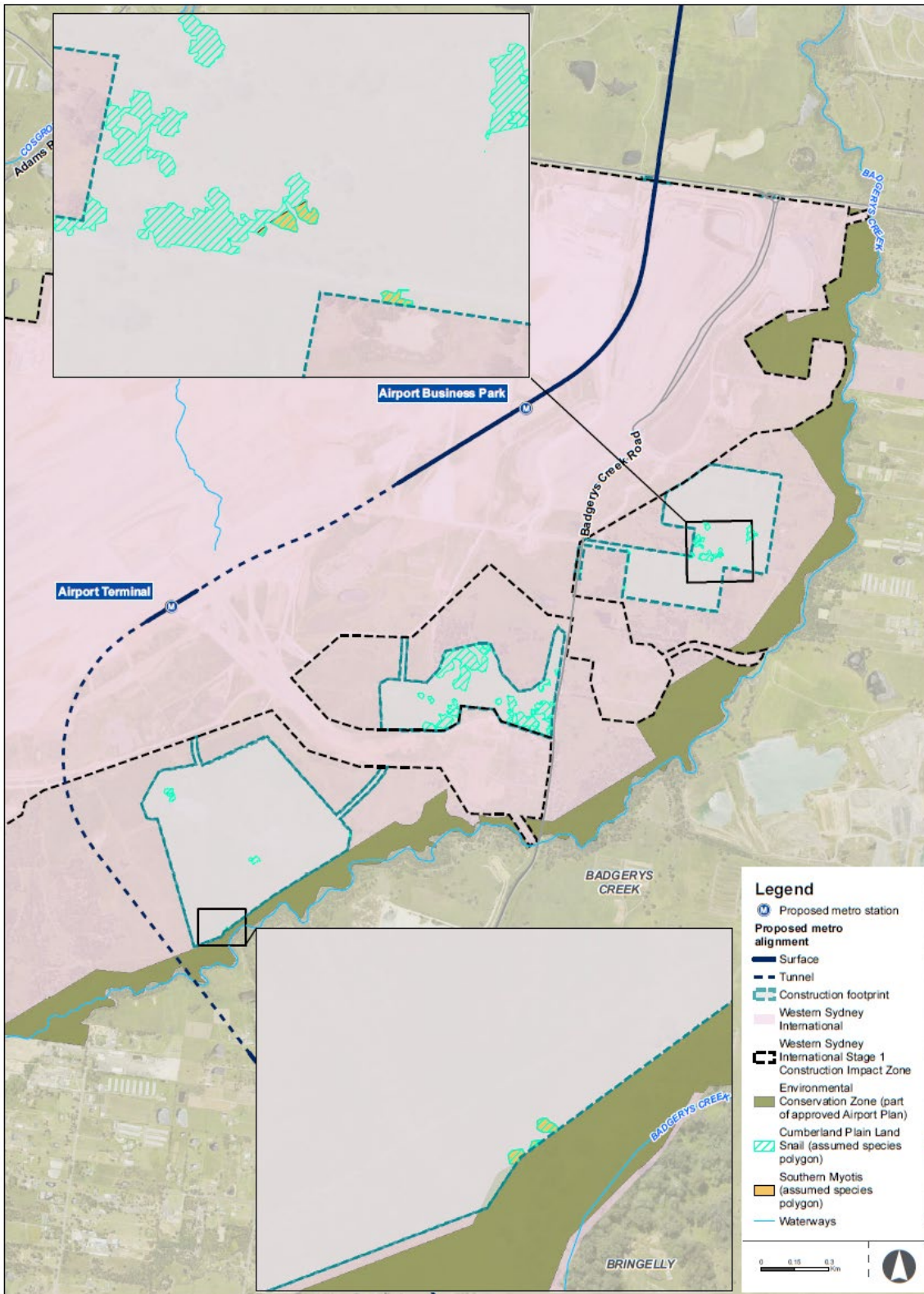


Figure 5-4 Threatened fauna species habitat within SM-WSA support sites in the RCIZ on-airport outside Stage 1 CIZ

## 5.8. Migratory species

### 5.8.1. Stage 1 CIZ

A total of three migratory species listed under the EPBC Act were recorded at the Airport Site during ecological assessments for the WSA EIS. These species are listed in Table 5-6.

### 5.8.2. SM-WSA support sites in the RCIZ outside Stage 1 CIZ

Migratory species within the on-airport study area is consistent with the off-airport study area with regards to searches of the Protected Matters Search Tool. In addition, Latham's Snipe was recorded in a large, vegetated farm dam within the on-airport lands (but not within the study area for the biodiversity assessment) (Department of Infrastructure and Regional Development, 2016e).

Table 5-6 Migratory species listed under the EPBC Act known to occur within the Airport site

Migratory species	EPBC Act listing	Occurrence likelihood
Latham's snipe ( <i>Gallinago hardwickii</i> )	Vulnerable; Marine; Migratory (Bonn, JAMBA, ROKAMBA)	Present
White-throated needletail ( <i>Hirundapus caudacutus</i> )	Marine; Migratory (CAMBA, JAMBA, ROKAMBA)	Present
Rufous fantail ( <i>Rhipidura rufifrons</i> )	Marine; Migratory (Bonn)	Present

## 5.9. Aquatic fauna

### 5.9.1. Stage 1 CIZ

No threatened fish species listed under the EPBC Act and/or the FM Act that were identified in the database searches as potentially occurring in the locality were collected during the EIS surveys. No suitable habitat for these species was observed during the EIS site visits.

### 5.9.2. SM-WSA support sites in the RCIZ outside Stage 1 CIZ

The fish communities within on-airport land and in upstream and downstream habitats are indicative of disturbed habitats. Eight fish species were caught during surveys (Department of Infrastructure and Regional Development, 2016e). Five native fish species – Long-finned Eel, Firetail Gudgeon, Western Carp Gudgeon, an unidentified Gudgeon species and Australian Smelt – were recorded, along with exotic species including Goldfish, Common Carp, and Eastern Gambusia.

Given these results the macroinvertebrate and fish communities are likely to be similar to those assessed for the Western Sydney Airport Environmental Impact Statement, Biodiversity Assessment.

## 5.10. Aquatic flora

Thirteen aquatic plant species were recorded within the waterbodies (wetlands and creeks) sampled at the Airport Site and in the locality. Most of the aquatic flora were all native while two declared noxious weeds were recorded during surveys, namely Salvinia (*Salvinia molesta*) and Water Hyacinth (*Eichhornia crassipes*). Where exotic or priority weed species were found, they tended to dominate the waterbody.

## 6. Biodiversity aspects and impacts

The potential for biodiversity impacts was considered in Chapter 16 of the WSA EIS and Chapter 11 of the SM - WSA EIA, with further ecological assessment undertaken at the Airport Site post-EIS. The findings are summarised in the following sections.

### 6.1. Construction activities

Construction activities with the potential to impact terrestrial and aquatic biodiversity include:

- Clearing of native vegetation (including habitat)
- Works around watercourses
- Dewatering on-farm dams
- Disturbance of soils, consequential erosion and the mobilisation of sediment; and
- Use of chemicals / fuels (potential for spills).
- Revegetation, planting and soft landscaping upon construction completion
- Hard landscaping elements, including carpark asphalt, pavements upon construction completion
- Station development
- Surface Rail infrastructure construction

The risk assessment and management process for the Project are detailed in Section 6.3 of this CEMP. The following information has been used in the risk assessment. Risks will be reviewed, and the risk register updated periodically.

### 6.2. Ecological impacts

The general assumption for the SM - WSA Final Environmental Impact Assessment is that all vegetation within the Western Sydney International Stage 1 Construction Impact Zone will already be cleared as part of the Stage 1 airport development. However, where this is not the case, the following information for the Stage 1 footprint will still apply.

#### 6.2.1. SM - WSA direct impacts

Construction of the Project within the on-airport support site area outside Stage 1 CIZ will result in the removal of approximately 42 hectares of native vegetation.

The main impacts on biodiversity during the construction phase would be:

- clearing of native vegetation
- clearing of TECs
- removal of threatened species and/or their habitat.

No threatened fish species listed under the FM Act or EPBC Act were recorded or considered likely to occur within the study area (both off-airport and on-airport) and as such the proposed action is unlikely to significantly impact any threatened aquatic species or their habitats.

### 6.2.1.1. Native vegetation

Direct clearing impacts on native vegetation for on-airport works (outside of the Western Sydney International Stage 1 Construction Impact Zone) are presented in Table 6-1 Direct impact to native vegetation within the Airport Site

Table 6-1 Direct impact to native vegetation within the Airport Site

Plant community type	Condition	Area (Ha)
PCT 835 - Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Intact	1.53
	Thinned	0.09
	Low	10.21
PCT 849 - Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	Intact	4.05
	Scattered Trees	2.32
	Low	23.79
PCT 1071 - <i>Phragmites australis</i> and <i>Typha orientalis</i> coastal freshwater wetlands of the Sydney Basin Bioregion	Intact	0.01
<b>Total</b>		<b>42.00</b>

### 6.2.1.2. Threatened ecological communities

Direct impacts on threatened ecological communities listed under the BC Act and EPBC Act for on-airport works are presented in Table 6-2.

The potential impacts of the proposed action on the Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest TEC is based on a worst-case scenario. Opportunities throughout design development and construction management would aim to further minimise these impacts. The proposed action would not create new areas of fragmentation to the TEC. The proposed action is considered unlikely to cause a substantial change in the species composition of the TEC or exacerbate invasive species such that it would substantially reduce the quality or integrity of the TEC occurrence.

Table 6-2 Direct impact to TECs listed under the BC Act and EPBC within the Airport Site

Threatened Ecological Community	Conservation status <sup>1</sup>	Area (Ha)
<b>BC Act</b>		
Cumberland Plain Woodland in the Sydney Basin Bioregion	Critically endangered	30.16
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Endangered	11.83
<b>Total</b>		<b>41.99</b>
<b>EPBC Act<sup>2</sup></b>		
Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest	CE	3.94

Threatened Ecological Community	Conservation status <sup>1</sup>	Area (Ha)
<b>Total</b>		<b>3.94</b>

E = Endangered, CE = Critically Endangered under the BC Act and EPBC Act  
EPBC Act vegetation also forms part of the BC listed vegetation

### 6.2.1.3. Threatened species

Direct impacts on threatened species and/or their habitats listed under the BC Act and EPBC Act for on-airport works are presented in Table 6-3.

Table 6-3 Direct impact to threatened species within the Airport Site

Scientific Name	Common Name	BC Act <sup>1</sup>	EPBC Act <sup>2</sup>	PCT	Zone	Impact
Threatened fauna						
<i>Meridolum corneovirens</i>	Cumberland Plain Land Snail	E	-	835, 849	Intact and scattered trees	5.57 ha
<i>Myotis macropus</i>	Southern Myotis	V	-	835	Intact	0.05 ha

E = Endangered, V = Vulnerable under the BC Act  
EPBC Act vegetation also forms part of the BC listed vegetation

### 6.2.2. Direct impacts

Potential direct impacts associated with construction of the Project include:

- Vegetation clearing;
- Habitat destruction;
- Altered surface water hydrology (addressed in the Soil and Water CEMP);
- Dam dewatering;
- Altered groundwater\*;
- Erosion, sedimentation and contamination\*;
- Light, noise and vibration;
- Mobilisation of legacy contaminated soils;
- Spread of pests and pathogens; and
- Fire.

### 6.2.3. Indirect impacts

Potential indirect impacts associated with construction of the Project include:

- Habitat fragmentation;
- Potential fauna displacement, injury or mortality;
- Edge effects;

- Altered surface water hydrology (addressed in the Soil and Water CEMP);
- Altered groundwater (addressed in the Soil and Water CEMP);
- Erosion, sedimentation and contamination (addressed in the Soil and Water CEMP);
- Dust (addressed in the Air Quality CEMP);
- Light, noise and vibration;
- Mobilisation of legacy contaminated soils;
- Spread of pests and pathogens; and
- Fire.

#### 6.2.4. Indirect impacts on-airport outside stage 1

As well as those presented above, potential indirect biodiversity impacts for on-airport works (outside of the Western Sydney International Stage 1 Construction Impact Zone and within the construction footprint) are summarised below. Further detail is provided in the EPBC EIA BDAR.

- Inadvertent impacts on adjacent habitat or vegetation;
- Reduced viability of adjacent habitat due to edge effects;
- Reduced viability of adjacent habitat due to noise, dust or light spill;
- Transport of weeds and pathogens from the site to adjacent vegetation;
- Increased risk of starvation, exposure and loss of shade or shelter;
- Loss of breeding habitats; and
- Impacts on groundwater dependent ecosystems.

### 6.3. Environmental Risk Assessment

A risk assessment has been undertaken as part of the review and development of this CEMP and in accordance with the WSA BCEMP. The parts of the overall risk assessment relevant to biodiversity have been extracted and summarised in Table 6-7 applying to all phases of works that the Construction (Rail) Plan authorises.

The identification of construction activities and associated impacts that could eventuate during construction of the Project is central to the selection of appropriate environmental safeguards.

The risk management process involved an assessment of all specific Project WSA and potential SM - WSA activities/aspects in or near environmentally sensitive areas and resulted in the development of a list of environmental risks (effects and impacts) and a corresponding risk mitigation strategy and risk ranking.

The identification of risks included a review of the works, and review of the environmental risks identified by the WSA BCEMP. The mitigations in the risk assessment are in line with the WSA BCEMP as well as the SM - WSA risk assessment in Chapter 26.

All contractors will be expected to develop their own risk assessments for their scope of work.

The identification of construction activities and associated impacts that could eventuate during construction of the Project is central to the selection of appropriate environmental safeguards.

The risk management process involved an assessment of all specific Project activities/aspects in or near environmentally sensitive areas and resulted in the development of a list of environmental risks (effects and impacts) and a corresponding risk mitigation strategy and risk ranking. Each environmental risk was categorised, based on the following:

- The environmental aspect;
- Relative scale of the potential impact;
- Type of potential impact; and
- Likelihood of occurrence.

The identification of risks included a review of the works, and review of the environmental risks identified by the EIS. The mitigations in the risk assessment are in line with the EIS mitigation measures in Section 7.

The following risk assessment process has been implemented, together with a review of proposed activities and known risks based on past Project experience.

### 6.3.1. Risk Assessment process

The following tables outline the risk assessment process using 3 steps to identify the appropriate management measures required.

Table 6-4 is used to determine the likelihood that the aspect will have an impact on the environment. Table 6-5 is used to determine the potential consequence rating of the risk identified.

From these two tables, a risk rating can then be assigned using Figure 6-1 to determine the potential severity of the risk and the appropriate management response as per Table 6-6.

**Table 6-4 Likelihood descriptor**

Rating	Likelihood	Description
<b>A</b>	Rare / improbable	<ul style="list-style-type: none"> <li>• The event may only occur in exceptional circumstances.</li> </ul>
<b>B</b>	Unlikely / remote	<ul style="list-style-type: none"> <li>• The event may occur at some time (about once every five years).</li> </ul>
<b>C</b>	Possible	<ul style="list-style-type: none"> <li>• The event is likely to occur at some time (about once every year).</li> </ul>
<b>D</b>	Likely	<ul style="list-style-type: none"> <li>• The event will probably occur in most circumstances (at least once every six months).</li> </ul>
<b>E</b>	Almost certain	<ul style="list-style-type: none"> <li>• The event is expected to occur in most circumstances (at least once every month).</li> </ul>

**Table 6-5 Consequence descriptor**

Rating	Consequence (impact)	Description
<b>1</b>	Insignificant/negligible (1-3)	<ul style="list-style-type: none"> <li>• Short-term disturbance with minor environmental release or damage that is non-reportable.</li> <li>• No impact outside site boundary.</li> <li>• No community complaints or media reports.</li> </ul>



Rating	Consequence (impact)	Description
2	Minor/low (4-10)	<ul style="list-style-type: none"> <li>Minor violation of regulation or guideline with minimal damage to the environment and small clean-up.</li> <li>Immediately contained on site.</li> <li>Local government action, minor community complaints.</li> <li>Potential or actual breach of legislation.</li> </ul>
3	Moderate (11-15)	<ul style="list-style-type: none"> <li>Violation of regulation or guideline with moderate temporary damage to the environment and significant clean-up costs.</li> <li>Release of pollution off site.</li> <li>Detrimental media reports, community concerns and complaints.</li> </ul>
4	Major / High (16-22)	<ul style="list-style-type: none"> <li>Major environmental damage with potentially permanent consequences.</li> <li>Release of pollution off site. Significant loss of environmental resources.</li> <li>Detrimental media reports in the national or state media, organised community concern.</li> <li>High likelihood of fine or court action.</li> </ul>
5	Catastrophic / Priority (23-25)	<ul style="list-style-type: none"> <li>Long-term environmental harm.</li> <li>Permanent irreparable damage to the environment.</li> <li>Sustained detrimental state and national media reports. Sustained community outrage.</li> <li>Penalty Infringement Notice/court action.</li> </ul>

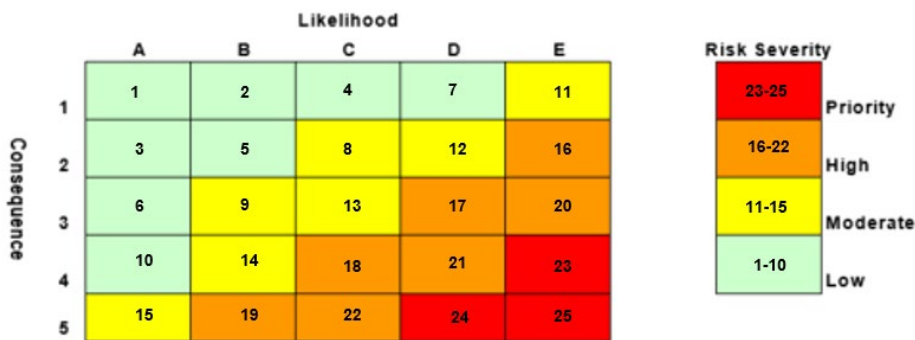


Figure 6-1 Risk severity ranking

Table 6-6 Risk severity and management response

Risk severity	Management response
Priority	<ul style="list-style-type: none"> <li>Immediate and detailed management action required. (e.g. stop or change activity)</li> </ul>
High	<ul style="list-style-type: none"> <li>Priority management action warranted</li> </ul>
Moderate	<ul style="list-style-type: none"> <li>Management action warranted</li> </ul>
Low	<ul style="list-style-type: none"> <li>Management action should be considered, particularly for low-level impacts that nevertheless occur on a continual basis</li> </ul>



Table 6-7 Biodiversity Risk Assessment

Ref	Activity	Construction Aspect	Environmental Aspect	Potential Impact	Risk level <sup>2</sup> pre-mitigation	Mitigation measure <sup>1</sup>	Risk level <sup>2</sup> post-mitigation	Management tools
1	Site Compound establishment	Spraying weeds	Damage to flora (including threatened species/communities)	Use or accidental release of chemicals resulting in substantially stunted growth of native vegetation	Med (13)	B04 B11	Low (9)	<ul style="list-style-type: none"> <li>Biodiversity CEMP (including sub-plans)</li> <li>Air Quality CEMP</li> <li>EWMS</li> <li>Soil and Water CEMP</li> <li>Complaints Procedure</li> <li>Induction</li> <li>Environmental Control Map (ECM)</li> </ul>
2	Site Compound establishment	Clearing for footprint of compound, Pre-fabrication yard and permanent spoil stockpile	Damage to flora (including threatened species / communities)	Over clearing	Med (13)	B02 B07 B10 B11	Low (10)	<ul style="list-style-type: none"> <li>Biodiversity CEMP (including sub-plans)</li> <li>Air Quality CEMP</li> <li>EWMS</li> <li>Soil and Water CEMP</li> <li>Complaints Procedure</li> <li>Induction</li> <li>ESCPs</li> <li>ECM</li> <li>Exclusion fencing protocol</li> <li>Pre clearing site walks with machinery operators</li> </ul>

Sydney Metro – Integrated Management System (IMS)

(Uncontrolled when printed)



Ref	Activity	Construction Aspect	Environmental Aspect	Potential Impact	Risk level <sup>2</sup> pre-mitigation	Mitigation measure <sup>1</sup>	Risk level <sup>2</sup> post-mitigation	Management tools
3	Site Compound establishment	Importation of base layer materials	Damage to flora and fauna (including Threatened species/communities)	Incorrect stockpiling location	Low(9)	B02 B07 B10 B11	Low(6)	<ul style="list-style-type: none"> <li>Air Quality CEMP</li> <li>Biodiversity CEMP (including sub-plans)</li> <li>EWMS</li> <li>Soil and Water CEMP</li> <li>Complaints Procedure</li> <li>Induction</li> <li>ESCPs</li> <li>ECM</li> <li>Exclusion fencing protocol</li> <li>Pre clearing site walks with machinery operators</li> </ul>
4	Construction of haul roads and work areas	Minor clearing and grading	Damage to flora and fauna	Improper material management damaging vegetation	Low(5)	B02 B07 B10 B11	Very Low (3)	<ul style="list-style-type: none"> <li>Air Quality CEMP</li> <li>Biodiversity CEMP (including sub-plans)</li> <li>EWMS</li> <li>Soil and Water CEMP</li> <li>Complaints Procedure</li> <li>Induction</li> <li>ESCPs</li> <li>ECM</li> <li>Exclusion fencing protocol</li> <li>Pre clearing site walks with machinery operators</li> </ul>



Ref	Activity	Construction Aspect	Environmental Aspect	Potential Impact	Risk level <sup>2</sup> pre-mitigation	Mitigation measure <sup>1</sup>	Risk level <sup>2</sup> post-mitigation	Management tools
5	Construction of haul roads and work areas	Minor clearing and grading	Damage to flora and fauna	Over clearing	Low(5)	B02 B07 B10 B11	Very Low(3)	<ul style="list-style-type: none"> <li>Biodiversity CEMP (including sub-plans)</li> <li>Air Quality CEMP</li> <li>EWMS</li> <li>Soil and Water CEMP</li> <li>Complaints Procedure</li> <li>Induction</li> <li>ESCPs</li> <li>ECM</li> <li>Exclusion fencing protocol</li> <li>Pre clearing site walks with machinery operators</li> </ul>
6	Construction of haul roads and work areas	Minor clearing and grading	Damage to environmental conservation zone	Over clearing / incorrect stockpiling locations	Low(5)	B03 B11	Very Low(3)	<ul style="list-style-type: none"> <li>Biodiversity CEMP (including sub-plans)</li> <li>Air Quality CEMP</li> <li>EWMS</li> <li>Soil and Water CEMP</li> <li>Complaints Procedure</li> <li>Induction</li> <li>ESCPs</li> <li>ECM</li> <li>Exclusion fencing protocol</li> <li>Pre clearing site walks with machinery operators</li> </ul>

Sydney Metro – Integrated Management System (IMS)

(Uncontrolled when printed)



Ref	Activity	Construction Aspect	Environmental Aspect	Potential Impact	Risk level <sup>2</sup> pre-mitigation	Mitigation measure <sup>1</sup>	Risk level <sup>2</sup> post-mitigation	Management tools
7	Clearing and grubbing	Habitat removal	Damage to flora and fauna	Damage to retained vegetation and improper use of habitat resources	Med (14)	B02 B03 B07 B10 B11	Low (10)	<ul style="list-style-type: none"> <li>Biodiversity CEMP (including sub-plans)</li> <li>Air Quality CEMP</li> <li>EWMS</li> <li>Soil and Water CEMP</li> <li>Complaints Procedure</li> <li>Induction</li> <li>ESCPs</li> <li>ECM</li> </ul>
8	Clearing and grubbing	Stockpiling mulch	Damage to flora and fauna	Damage to retained vegetation and improper use of resources	Med (14)	B02 B03 B07 B10 B11	Low (10)	<ul style="list-style-type: none"> <li>Biodiversity CEMP (including sub-plans)</li> <li>Air Quality CEMP</li> <li>EWMS</li> <li>Soil and Water CEMP</li> <li>Complaints Procedure</li> <li>Induction</li> <li>ESCPs</li> <li>ECM</li> </ul>
9	Clearing and grubbing	Stockpiling trees	Damage to flora and fauna	Damage to retained vegetation and improper use of resources	Med (14)	B02 B03 B07 B10 B11	Low (10)	<ul style="list-style-type: none"> <li>Biodiversity CEMP (including sub-plans)</li> <li>Air Quality CEMP</li> <li>EWMS</li> <li>Soil and Water CEMP</li> <li>Complaints Procedure</li> <li>Induction</li> </ul>

Sydney Metro – Integrated Management System (IMS)

(Uncontrolled when printed)



Ref	Activity	Construction Aspect	Environmental Aspect	Potential Impact	Risk level <sup>2</sup> pre-mitigation	Mitigation measure <sup>1</sup>	Risk level <sup>2</sup> post-mitigation	Management tools
								<ul style="list-style-type: none"> <li>• ESCPs</li> <li>• ECM</li> </ul>
10	Clearing and grubbing	Stockpiling topsoil and spoil	Damage to flora and fauna	Damage to retained vegetation and improper stockpiling location	Med (14)	B02 B03 B07 B10 B11	Low (10)	<ul style="list-style-type: none"> <li>• Biodiversity CEMP (including sub-plans)</li> <li>• Air Quality CEMP</li> <li>• EWMS</li> <li>• Soil and Water CEMP</li> <li>• Complaints Procedure</li> <li>• Induction</li> <li>• ESCPs</li> <li>• ECM</li> </ul>
11	Construction of environmental controls	Sediment basin construction	Endangerment to fauna from dam decommissioning	Aquatic wildlife fatality	Med (14)	B05	Low (10)	<ul style="list-style-type: none"> <li>• Biodiversity CEMP (including sub-plans)</li> <li>• Air Quality CEMP</li> <li>• EWMS</li> <li>• Soil and Water CEMP</li> <li>• Complaints Procedure</li> <li>• Induction</li> <li>• ESCPs</li> <li>• ECM</li> <li>• Targeted surveys as per Biodiversity</li> <li>• CEMP requirements</li> <li>• Dam decommissioning protocol</li> </ul>

Sydney Metro – Integrated Management System (IMS)

(Uncontrolled when printed)



Ref	Activity	Construction Aspect	Environmental Aspect	Potential Impact	Risk level <sup>2</sup> pre-mitigation	Mitigation measure <sup>1</sup>	Risk level <sup>2</sup> post-mitigation	Management tools
12	Construction of environmental controls	Installation of sediment fences	Damage to flora	Damage to retained vegetation on periphery of site	Med (14)	B02 B03 B07 B10 B11	Low (10)	<ul style="list-style-type: none"> <li>Biodiversity CEMP (including sub-plans)</li> <li>Air Quality CEMP</li> <li>EWMS</li> <li>Soil and Water CEMP</li> <li>Complaints Procedure</li> <li>Induction</li> <li>ESCPs</li> <li>ECM</li> </ul>
13	Utility works (Gas, water, power)	Potholing and trenching	Damage to flora	Damage to sensitive areas	Low (5)	B02 B03 B07 B10 B11	Very Low (3)	<ul style="list-style-type: none"> <li>Biodiversity CEMP (including sub-plans)</li> <li>Air Quality CEMP</li> <li>EWMS</li> <li>Soil and Water CEMP</li> <li>Complaints Procedure</li> <li>Induction</li> <li>ESCPs</li> <li>ECM</li> </ul>
14	Utility works (Gas, water, power)	Earthworks near waterways	Water degradation	Contamination to waterways from silt, materials due to improper controls	High (21)	B01	Med (17)	<ul style="list-style-type: none"> <li>Biodiversity CEMP (including sub-plans)</li> <li>Air Quality CEMP</li> <li>EWMS</li> <li>Soil and Water CEMP</li> <li>Complaints Procedure</li> <li>Induction</li> </ul>

Sydney Metro – Integrated Management System (IMS)

(Uncontrolled when printed)



Ref	Activity	Construction Aspect	Environmental Aspect	Potential Impact	Risk level <sup>2</sup> pre-mitigation	Mitigation measure <sup>1</sup>	Risk level <sup>2</sup> post-mitigation	Management tools
								<ul style="list-style-type: none"> <li>• ESCPs</li> <li>• ECM</li> </ul>
15	Utility works (Gas, water, power)	Embankment creation and stabilisation	Damage to fauna	Potential for fauna to relocate to excavations / other areas on site	Low (9)	B01 B09 B11	Low (6)	<ul style="list-style-type: none"> <li>• Biodiversity CEMP (including sub-plans)</li> <li>• EWMS</li> <li>• Soil and Water CEMP</li> <li>• Induction</li> <li>• ESCPs</li> <li>• ECM</li> </ul>
16	Infrastructure works (track formation and installation, culverts, bridges)	Culvert construction SCAW formation works	Damage to flora and fauna	Potential for over clearing	Low (9)	B07 B10 B11	Low (6)	<ul style="list-style-type: none"> <li>• Biodiversity CEMP (including sub-plans)</li> <li>• Air Quality CEMP</li> <li>• EWMS</li> <li>• Soil and Water CEMP</li> <li>• Complaints Procedure</li> <li>• Induction</li> <li>• ESCPs</li> <li>• ECM</li> </ul>
17	Roadworks and Conveyor construction	Excavation, compaction, asphalt works on Elizabeth Drive Pitt Road Longleys Road Link Road Connection of roads from station	Damage to flora Damage to fauna Weeds	Damage to flora and fauna spread of weeds	Low(5)	B04 B07 B10 B11	Very Low (3)	<ul style="list-style-type: none"> <li>• Biodiversity CEMP (including sub-plans)</li> <li>• Air Quality CEMP</li> <li>• EWMS</li> <li>• Soil and Water CEMP</li> <li>• Complaints Procedure</li> <li>• Induction</li> </ul>



Sydney Metro – Integrated Management System (IMS)

(Uncontrolled when printed)



Ref	Activity	Construction Aspect	Environmental Aspect	Potential Impact	Risk level <sup>2</sup> pre-mitigation	Mitigation measure <sup>1</sup>	Risk level <sup>2</sup> post-mitigation	Management tools
		precincts to Permanent spoil stockpile location						<ul style="list-style-type: none"> <li>• ESCPs</li> <li>• ECM</li> </ul>
18	Tunnelling	Portal Construction TBM launch dive Excavation to tunnel depth Cross Passage works Stub Tunnel Excavation	GDE	Groundwater extraction to affect GDE	Low (9)	B09 B10 B12 B13	Low (6)	<ul style="list-style-type: none"> <li>• Biodiversity CEMP (including sub-plans)</li> <li>• EWMS</li> <li>• Soil and Water CEMP</li> <li>• Complaints Procedure</li> <li>• Induction</li> <li>• ECM</li> </ul>
19	Tunnelling	Discharge of intercepted water	Pollution of waterways Sedimentation	Impact on surface water quality	Low (9)	B02 B05 B07	Low (6)	<ul style="list-style-type: none"> <li>• Biodiversity CEMP (including sub-plans)</li> <li>• EWMS</li> <li>• Soil and Water CEMP</li> <li>• Complaints Procedure</li> <li>• Induction</li> <li>• ESCPs</li> <li>• ECM</li> </ul>
20	Tunnelling	Spoil transport from tunnel to permanent spoil placement Conveyor	Fauna deaths	Fauna being caught in conveyor	Low (9)	B03 B08 B09	Low (6)	<ul style="list-style-type: none"> <li>• Biodiversity CEMP (including sub-plans)</li> <li>• EWMS</li> <li>• Induction</li> <li>• ECM</li> </ul>

Sydney Metro – Integrated Management System (IMS)

(Uncontrolled when printed)



Ref	Activity	Construction Aspect	Environmental Aspect	Potential Impact	Risk level <sup>2</sup> pre-mitigation	Mitigation measure <sup>1</sup>	Risk level <sup>2</sup> post-mitigation	Management tools
21	Permanent Stockpile management	Long-term storage of excavated material	Pollution of waterways Sedimentation	Erosion and sedimentation / dust and associated biodiversity impacts Mass movement of the stockpile Weed growth	Low (9)	B03 B08 B09 B10	Low (6)	<ul style="list-style-type: none"> <li>Biodiversity CEMP (including sub-plans)</li> <li>EWMS</li> <li>Soil and Water CEMP</li> <li>Complaints Procedure</li> <li>Induction</li> <li>ESCPs</li> <li>ECM</li> </ul>

1 - Refer to Table 7-1 for mitigation measures and controls

2 - Derived from the Environmental Aspects, Impact and Risk procedure detailed in the SM - WSA CEMF

## 7. Environmental Control Measures

Mitigation and management measures that will be implemented during construction are detailed in Table 7-1 and are consistent with those provided in Table 15 of the WSA BCEMP, as well as Tables 8-1, 8-2 and 8-3 of the SM - WSA EPBC Act Final EIA of on-airport proposed action (EPBC 2019/8541). The relevant control measures will be included in the site-specific Environmental Work Method Statement (EWMS) and Environmental Control Map (ECM) – refer to Section 3.6 of the CEMF for further detail.

Table 7-1 Environmental mitigation and management measures

Ref	Measure/ Requirement	When to Implement	How to Implement	Responsibility for Implementation	Reference
<b>B01</b>	New waterway crossings or upgrades of existing crossings, if required on the Airport Site, will be designed and constructed to minimise potential impacts on watercourse functionality, in particular impacts on riparian and aquatic habitats and fish passage.	Pre-construction Construction	All works are constructed as per the approved design and in accordance with best practice management for fish passage.	SCAW	WSA EIS Table 28-5 SM - WSA EIA Table-8-3, FF5,
<b>Pre-clearance surveys for threatened species</b>					
<b>B02</b>	<p>Pre-clearance surveys for threatened species will be undertaken by a qualified ecologist. Pre-clearance surveys will take into account suitable survey conditions for the threatened species present and / or potential within the Airport Site. Specific management plans will manage impacts on each threatened flora and fauna species. These plans will include:</p> <ul style="list-style-type: none"> <li>Additional targeted searches of the construction impact zone for the Green and Golden Bell Frog (in suitable conditions) to confirm that they are not present at the site. Should this species be located during targeted surveys, this species would be managed in accordance with the Green and Golden Bell Frog Management Plan (GGBFMP). Frog collection and relocation would need to be conducted by appropriately experienced ecologists. If weather conditions are not suitable for completing pre-clearance surveys (surveys should be undertaken during warm and windless conditions following rainfall as outlined in EPBC Act Policy Statement 3.19 (DEWHA, 2009)) vegetation removal works should be supervised by a suitably qualified ecologist in suitable habitat for the Green and Gold Bell Frog, such as during dam dewatering and vegetation removal around farm dams (as appropriate);</li> </ul>	Pre-construction Construction	<p>Pre-clearance surveys will be undertaken as Preparatory Activities before any works commence on the Project.</p> <p>Additional specific management plans will be developed in line with the survey findings by an ecologist.</p> <p>Following the completion of the pre-clearing surveys, a report or brief letter will be submitted to SM - WSA within five working days detailing works undertaken. The report will be a hold point requiring sign-off from the Contractor's Environmental Manager (or delegate) and a qualified ecologist prior to clearing commencing.</p> <p>Appendix B – Biodiversity Management Protocols - CPLSMP/ GGBFMP/</p> <p>Generate compliance records of:</p> <ul style="list-style-type: none"> <li>pre-clearing inspections undertaken;</li> </ul>	AEW SCAW SBT SSTOM	WSA EIS Table 28-5 SM - WSA EIA Table 8-3, FF1, FF5

Ref	Measure/ Requirement	When to Implement	How to Implement	Responsibility for Implementation	Reference
	<ul style="list-style-type: none"> <li>Targeted searches of the CIZ for the Cumberland Plain Land Snail (in suitable conditions) and salvage and relocation of any snails and/or suitable shelter sites that are detected. A management plan (CPLSMP) would provide more detail on Cumberland Plain Land Snail relocation and habitat management if snails are identified. Snails and/or suitable shelter sites would be relocated to appropriate land on or near the Airport Site. Snail collection and relocation would need to be conducted by appropriately experienced ecologists;</li> <li>Searches for roosting bats at any bridges or culverts that need removal;</li> <li>Pre-clearing surveys for larger birds' nests, particularly the White-bellied Sea-Eagle and Little Eagle; and</li> <li>Targeted searches for threatened flora species in areas of appropriate habitat with particular attention to the vicinity of known populations of <i>Marsdenia viridiflora subsp. viridiflora</i> and <i>Pultenaea parviflora</i>.</li> </ul> <p>Any unexpected finds would be communicated to the Infrastructure Department and addressed in the translocation plan and/or Offset Delivery Plan as appropriate.</p>		<ul style="list-style-type: none"> <li>release of the pre-clearing hold point; and</li> <li>ecological inspections undertaken.</li> </ul> <p>Consideration will be given to the local rainfall conditions and likelihood of finding some species, for example roosting bats.</p>		
<b>Habitat clearing and fauna removal plan</b>					
<b>B03</b>	<p>A Habitat Management Sub-plan will be developed by a suitably qualified ecologist or suitably qualified environmental officer for the management of impacts on fauna species during clearing activities. The plan will include the following measures:</p> <ul style="list-style-type: none"> <li>Preparation of a nest box strategy, including provisions for the:</li> </ul>	Pre-construction Construction	The Habitat Clearing and Fauna Management Protocol outlined in the Habitat Management Sub-plan is to be followed during all habitat clearing and outlines the required measures to minimise impact to fauna. See Appendix B - Biodiversity Management Protocols	AEW SCAW SBT SSTOM	WSA EIS Table 28-5  SM - WSA EIA Table 8-3 FF1 FF3

## Sydney Metro – Integrated Management System (IMS)

(Uncontrolled when printed)



Ref	Measure/ Requirement	When to Implement	How to Implement	Responsibility for Implementation	Reference
	<ul style="list-style-type: none"> <li>○ Installation of nest-boxes within the ECZ prior to clearing areas of native vegetation on the Airport Site. This would provide a safe location for hollow-dwelling fauna to be transferred to during clearing operations;</li> <li>○ Reuse of hollows and fallen debris within conservation areas; and</li> <li>○ Salvage of native fauna from existing nest boxes in the construction impact zone prior to their removal and translocation.</li> </ul> <p>Providing for pre-clearing surveys to be undertaken by a suitably qualified ecologist to mark and map hollow-bearing trees, logs and existing nest boxes that would require fauna management during removal;</p> <ul style="list-style-type: none"> <li>• Establishing protocols for the staged clearing of vegetation and safe tree felling and log removal to reduce the risk of fauna mortality;</li> <li>• Measures outlined in the threatened species translocation plan;</li> <li>• Establishing protocols for the capture and relocation of less mobile fauna (such as nesting birds and nocturnal fauna) by a trained fauna handler; and</li> <li>• Establishing protocols for the appropriate management of injured or deceased individuals</li> <li>• Establishing protocols for seed collection and salvage program prior to the commencement of construction and implemented during construction.</li> </ul>		<p>The Habitat Clearing and Fauna Management Protocol outlined in the Habitat Management Sub-plan is to be followed if wildlife is discovered within the Project footprint during site construction activities, including clearing that may harm, or has resulted in harm, to the animal or poses a risk to site personnel.</p> <p>The Habitat Clearing and Fauna Management Protocol outlined in the Habitat Management Subplan the required measures for the safe handling of native fauna to minimise stress and/or remove the risk of further injury.</p> <p>Appendix B6. Seed collection and salvage program</p>		FF5
<b>Weed management plan</b>					
<b>B04</b>	A weed management plan will be developed by a suitably qualified ecologist or environmental officer and will include the following measures:	Pre-construction Construction	Section 8.3 (Weed and Disease Management) addresses weed management.	AEW SCAW	WSA EIS Table 28-5

## Sydney Metro – Integrated Management System (IMS)

(Uncontrolled when printed)



Ref	Measure/ Requirement	When to Implement	How to Implement	Responsibility for Implementation	Reference
	<ul style="list-style-type: none"> <li>Implementing soil erosion and sediment control measures;</li> <li>Mapping of weed infestations;</li> <li>Removing and controlling priority weed species;</li> <li>Appropriate disposal of weed and weed-infested soils;</li> <li>Stabilising disturbed areas following clearing to prevent weed spread;</li> <li>Monitoring and adaptive management of weeds; and</li> <li>Reporting on the extent, composition and severity of weed infestations and adaptive management measures.</li> </ul>		<p>Appendix C Sections 5 and 6 of the Weed and Disease management plan outlines the biosecurity hygiene protocol steps required to minimise the spread of weeds and pathogens. Section 6.3 of the Weed and Pathogen management plan details the weed management actions to be undertaken prior to clearing, during construction and post construction within the Project area. It also includes recommended treatment methods for Priority weeds and environmental weeds known to occur within the Airport Site.</p> <p>Appendix B includes information on the ongoing management of weeds in the study area</p>	SBT SSTOM	SM - WSA EIA Table 8-3 FF10
<b>B04b</b>	<p>The contribution to the operation of Key Threatening Processes would be managed and minimised where possible through:</p> <ul style="list-style-type: none"> <li>implementation of weed management measures to prevent the introduction and spread of weeds including exotic vines and scramblers, <i>Olea europaea</i> (African Olive), <i>Chrysanthemoides monilifera</i>, <i>Lantana camara</i>, and exotic perennial grasses</li> <li>implementation of management measures to protect the riparian zone to ensure fish passage and protect fish habitat in accordance with the Policy and Guidelines for Fish Habitat Conservation and Management (DPI (Fisheries NSW,) 2013), and minimisation of vegetation removal within the riparian zone where possible.</li> </ul>	Pre-construction Construction	<p>Section 8.3 (Weed and Disease Management) addresses weed management.</p> <p>Appendix C Sections 5.25 and 6 of the Weed and Disease management plan (Appendix C) outlines the biosecurity hygiene protocol steps required to minimise the spread of weeds and pathogens.</p>	AEW SCAW SBT SSTOM	SM - WSA EIA Table 8-3 FF10

Ref	Measure/ Requirement	When to Implement	How to Implement	Responsibility for Implementation	Reference
<b>Dam decommissioning and repurposing protocol</b>					
<b>B05</b>	<p>A protocol for the decommissioning of dams, or repurposing of dams for storage and use of water during construction, will be developed by a suitably qualified ecologist or environmental officer, in consultation with relevant agencies.</p> <p>The measures to be implemented through the protocol include:</p> <p>Any requirements of a Green and Golden Bell Frog management plan;</p> <ul style="list-style-type: none"> <li>Progressively emptying dams over a number of days to allow fauna to relocate;</li> <li>• Avoiding the nesting season of waterbirds, where possible. A pre-removal survey would be conducted to identify bird breeding locations;</li> <li>• Salvaging and relocating aquatic vertebrate fauna, including frogs, turtles and eels, to areas of suitable habitat retained at the Airport Site or nearby habitats, with regard to numbers and identification of suitable release sites;</li> <li>• Preventing the release of Eastern Gambusia (<i>Gambusia holbrooki</i>) and other noxious fish into local waterways as a result of draining of farm dams. Eastern Gambusia will be eradicated from dams using humane methods; and</li> <li>• Establishing protocols for the humane euthanasia of aquatic fauna, including fish.</li> </ul>	Pre-construction Construction	A protocol for the decommissioning of dams has been developed and is included in Appendix B - Biodiversity Management Protocols - Aquatic Flora and Fauna Management.	AEW SCAW SBT SSTOM	WSA EIS Table 28-5  SM - WSA EIA Table 8-3 FF9
<b>Bushfire management</b>					
<b>B06</b>	As part of ongoing site management activities, the Infrastructure Department has prepared and implemented a bushfire management plan for the Commonwealth owned land at Badgerys Creek.	Pre-construction Construction	The Bushfire Management Plan has been reviewed and updated to be applicable to this scope in line with	AEW SCAW SBT	WSA EIS Table 28-5



Ref	Measure/ Requirement	When to Implement	How to Implement	Responsibility for Implementation	Reference
	<p>This plan addresses current bushfire risk and identifies response actions. The existing bushfire management plan has been reviewed and updated in consultation with NSW Rural Fire Service to minimise the risk of bushfire and associated impacts on adjoining areas of native vegetation during construction and operation of the proposed airport and metro, including the proposed environmental conservation area. This would include:</p> <ul style="list-style-type: none"> <li>Identifying activities likely to generate sparks and putting in place appropriate restrictions based on the forecast fire danger;</li> <li>Preparing pre-planned fire response action plans. The action plans would be issued as part of the site induction for all site personnel;</li> <li>Developing limitations on relevant construction procedures which would be applied during the fire season based on specific fire danger ratings. An example of such restrictions would include the halting of all construction works during extreme or catastrophic fire danger days;</li> <li>Managing the Airport and rail support site to maintain a low overall fuel hazard. Measures to achieve this would include a combination of herbicide application, slashing, low intensity burning and hand removal; and</li> <li>Ensuring that fuel-reduction measures are appropriate to biodiversity values in each area, e.g. low intensity burns rather than slashing would be used in native woodland and forest.</li> </ul>		the WSA Bushfire MP for WSA Controlled Land 2020-2022 with regards to the SM - WSA scope.	SSTOM	SM - WSA EIA Table 8-3 HR2 HR6
<b>Clearance minimisation</b>					
<b>B07</b>	The detailed design and construction planning will demonstrate when reasonable and feasible that it has sought	Hold Points	Hold Points	AEW SCAW	Good Practice

Ref	Measure/ Requirement	When to Implement	How to Implement	Responsibility for Implementation	Reference
	to minimise the extent of vegetation clearing within the Project boundary.			SBT SSTOM	SM - WSA EIA Table 8-3 FF1
<b>Threatened flora translocation plan</b>					
<b>B08</b>	<p>A threatened flora salvage and translocation plan will be developed by a suitably qualified ecologist or environmental officer, in consultation with relevant agencies and the Australia Botanic Garden at Mount Annan and with consideration of the Guidelines for the Translocation of Threatened Plants (Vallee et al 2004).</p> <p>The threatened flora translocation plan will specify measures for the salvage and translocation of threatened flora species in accordance with condition 33 of the Airport Plan. In particular, it will include:</p> <ul style="list-style-type: none"> <li>• The salvage and propagation or transplanting of the known local populations of               <ul style="list-style-type: none"> <li>○ <i>Pultenaea parviflora</i>; and</li> <li>○ <i>Marsdenia viridiflora</i>; and</li> <li>○ any other threatened flora detected at the Airport Site; and</li> </ul> </li> <li>• Consideration of the suitability of sites within the Environmental Conservation Zone in order to maintain populations of these species as close to their original location as possible.</li> </ul>	Prior to the commencement of works with potential to impact threatened species.	Threatened species management plans are to be developed, works to be overseen by an ecologist.	AEW SCAW SBT SSTOM	WSA EIS Table 28-5  SM - WSA EIA Table 8-3 FF1 FF5
<b>Threatened species management plans</b>					
<b>B09</b>	Threatened species management plans will be prepared by a suitably qualified ecologist or environmental officer to reduce the potential for impacts on threatened species known to occur on the Airport Site, both inside and outside of the Construction Impact Zone. These plans will include:	Prior to the commencement of works with potential to impact	Threatened species management plans have been developed, works to be overseen by an ecologist, see Appendix B - Biodiversity Management Protocols.	AEW SCAW SBT SSTOM	WSA EIS Table 28-5  SM - WSA EIA

Ref	Measure/ Requirement	When to Implement	How to Implement	Responsibility for Implementation	Reference
	<ul style="list-style-type: none"> <li>Maps identifying locations of threatened species;</li> <li>The scope and requirements for targeted surveys and pre-clearing surveys; including an unexpected finds protocol;</li> <li>Vegetation and habitat clearing protocols;</li> <li>Reporting and adaptive management measures; and</li> <li>Unexpected finds protocol, detailing measures to be undertaken if threatened flora and fauna not previously recorded on site are detected during clearing or construction, and if additional occurrences of threatened species previously recorded in the broader area, but not previously recorded at a specific location, are recorded during clearing or construction activities.</li> </ul>	threatened species			Table 8-3 FF1 FF5
<b>Vegetation clearance and habitat loss</b>					
<b>B10</b>	<p>The following measures will be taken to reduce the potential for adverse impacts on ecologically sensitive areas due to vegetation clearance and habitat loss:</p> <ul style="list-style-type: none"> <li>Deferring vegetation removal until necessary;</li> <li>Locating site offices and stockpiles in already cleared and disturbed areas where possible, to avoid further unnecessary removal or disturbance of native vegetation and hollow-bearing trees;</li> <li>Providing maps to construction staff engaged in Main Construction Works clearly showing vegetation clearing boundaries and exclusion/no-go zones;</li> <li>Engaging a suitably qualified ecologist or environmental officer prior to any clearing works that form part of Main Construction Works to clearly demarcate vegetation protection areas; and</li> </ul>	Construction	<p>Vegetation removal will be undertaken when construction works are to be undertaken. Vegetation removal will be staged and deferred until necessary. Offices and stockpiles are planned for cleared areas. Environmental control maps to be given to all workers on Project. An ecologist is to be present during all clearing works with unexpected finds protocols in place.</p> <p>Unexpected Finds Protocols Procedure.</p>	AEW SCAW SBT SSTOM	<p>WSA EIS Table 28-5</p> <p>SM - WSA EIA Table 8-3 FF1 FF5</p>

## Sydney Metro – Integrated Management System (IMS)

(Uncontrolled when printed)



Ref	Measure/ Requirement	When to Implement	How to Implement	Responsibility for Implementation	Reference
	<ul style="list-style-type: none"> <li>Establishing an unexpected finds protocol to detail measures to be undertaken if threatened flora and fauna not previously recorded at the Airport Site are detected during Main Construction Works.</li> </ul>				
<b>Exclusion zones</b>					
<b>B11</b>	Sensitive areas must be delineated on environmental constraints plans and EWMSs. These areas will be temporarily fenced. No materials storage or machinery entry or operation will be permitted within these areas, to ensure they are not subject to disturbance during construction. The ECZ will be demarcated in the field and access will be restricted.	Construction	Environmental Control Maps to be prepared and tool boxed with site personnel.	AEW SCAW SBT SSTOM	Good Practice  SM - WSA EIA Table 8-3 FF1
<b>Disease management protocol</b>					
<b>B12</b>	A disease management protocol will be developed by a suitably qualified ecologist or environmental officer to minimise the potential for the spread of disease. The protocol will include procedures for the management of plant diseases (such as Phytophthora, Myrtle Rust and Chytrid fungus), as well as any other likely diseases.	Pre-construction Construction	A disease management protocol is to be developed, works to be overseen by an ecologist.	AEW SCAW SBT SSTOM	WSA EIS Table 28-5
<b>B12b</b>	The contribution to the operation of Key Threatening Processes would be managed and minimised where possible through: <ul style="list-style-type: none"> <li>implementation of pathogen management measures to prevent the introduction and spread of pathogens including amphibian chytrid, Phytophthora implementa, and Exotic Rust Fungi of the order Pucciniales</li> <li>implementation of management measures to protect the riparian zone to ensure fish passage and protect fish habitat in accordance with the Policy and</li> </ul>	Pre-construction Construction	Dewatering Protocols Weed Management (Appendix C)	AEW SCAW SBT SSTOM	SM - WSA EIA Table 8-3 FF7B

Ref	Measure/ Requirement	When to Implement	How to Implement	Responsibility for Implementation	Reference
	Guidelines for Fish Habitat Conservation and Management (DPI (Fisheries NSW,) 2013), and minimisation of vegetation removal within the riparian zone where possible				
<b>Management of vegetation areas outside CIZ and within RCIZ</b>					
<b>B13</b>	<p>A vegetation management plan will be developed by a suitably qualified ecologist or environmental officer to guide the activities for managing areas of endemic vegetation outside the Stage 1 construction impact zone.</p> <p>The plan will identify how environment protection objectives for the Environmental Conservation Zone shown in the Land Use Plan in the Airport Plan will be met.</p> <p>The plan will detail specific measures to:</p> <ul style="list-style-type: none"> <li>• Avoid unnecessary disturbance in nearby areas of retained vegetation outside of the construction impact zone such as avoiding unnecessary light spill and shading;</li> <li>• Replace exotic grasslands with suitable native vegetation in the Environmental Conservation Zones;</li> <li>• Rehabilitate existing remnant and native vegetation within the Environmental Conservation Zones; and</li> <li>• Provide ongoing protection of the biodiversity and environmental values within the Environmental Conservation Zone.</li> </ul> <p>As required by condition 7 (5) of the Airport Plan.</p>	Pre-construction Construction Post SM - WSA temporary construction	<p>A vegetation management plan has been developed, works to be overseen by an ecologist, see Appendix A.</p> <p>Additional measures will include:</p> <p>Light used for night works will be positioned to avoid light spill into vegetation. This will be included in inductions and inspected during night works.</p> <p>Construction activities will be designed so as to avoid shading of intact vegetation where possible.</p>	WSA	<p>SWA EIS Table 28-5</p> <p>SM - WSA EIA Table 8-3 FF1 FF5 FF6</p>
<b>Landscaping</b>					
<b>B14</b>	Landscaping on the Airport Site will utilise predominantly native vegetation endemic to the region, sourced from the local area where possible. This will include:	Post-Construction	To be included into detailed design as per condition B14.	SSTOM	WSA EIS Table 28-5

## Sydney Metro – Integrated Management System (IMS)

(Uncontrolled when printed)



Ref	Measure/ Requirement	When to Implement	How to Implement	Responsibility for Implementation	Reference
	<ul style="list-style-type: none"> <li>Planting of native grasses in open areas around airport infrastructure; and</li> <li>The use of native vegetation in decorative gardens and plant screenings used to minimise visual impacts.</li> </ul>				
<b>Worker inductions</b>					
<b>B15</b>	All workers are to be provided with an environmental induction prior to starting construction activities on site. This would include information on the ecological values of the Airport Site and protection measures to be implemented to protect biodiversity during construction.	Pre-construction Construction	To be included as part of site inductions.	AEW SCAW SBT SSTOM	WSA EIS Table 28-4
<b>Cumulative impacts - construction</b>					
<b>B16</b>	<p>A Cumulative Construction Impacts Management Plan would be developed and would detail co-ordination and consultation requirements with the following stakeholders (as relevant) to manage the interface of projects under construction at the same time:</p> <ul style="list-style-type: none"> <li>Western Sydney Airport;</li> <li>Transport for NSW;</li> <li>Western Parkland City Authority;</li> <li>Sydney Water;</li> <li>Emergency service providers; and</li> <li>Utility providers.</li> </ul> <p>Co-ordination and consultation requirements with these stakeholders would be detailed in the plan to include:</p> <ul style="list-style-type: none"> <li>provision of regular updates to the detailed construction program, construction sites and haul routes;</li> </ul>	Pre-construction Construction		Sydney Metro	SM - WSA EIA Table 8-3 CL1

Sydney Metro – Integrated Management System (IMS)

(Uncontrolled when printed)



Ref	Measure/ Requirement	When to Implement	How to Implement	Responsibility for Implementation	Reference
	identification of key interfaces with other construction projects; and <ul style="list-style-type: none"> <li>development of mitigation strategies to manage cumulative impacts associated with these interfaces.</li> </ul>				

## 8. Biodiversity Management

A series of protocols and plans are included as appendices of this Biodiversity CEMP. These are protocols and plans which have been developed by SM - WSA for Contractors. They are required to ensure compliance with project approvals. These sub-plans and protocols provide controls and actions required to manage the retained ecological features within the Airport Site (see Figure 8-1). The SM - WSA Contractors are to develop these documents as required in accordance with the SM - WSA CEMF.

The preclearance survey report and annual reporting will be used to indicate where potential improvements can be made and where improvements are possible, measures will be implemented as part of an ongoing adaptive management strategy for the Project (as appropriate).

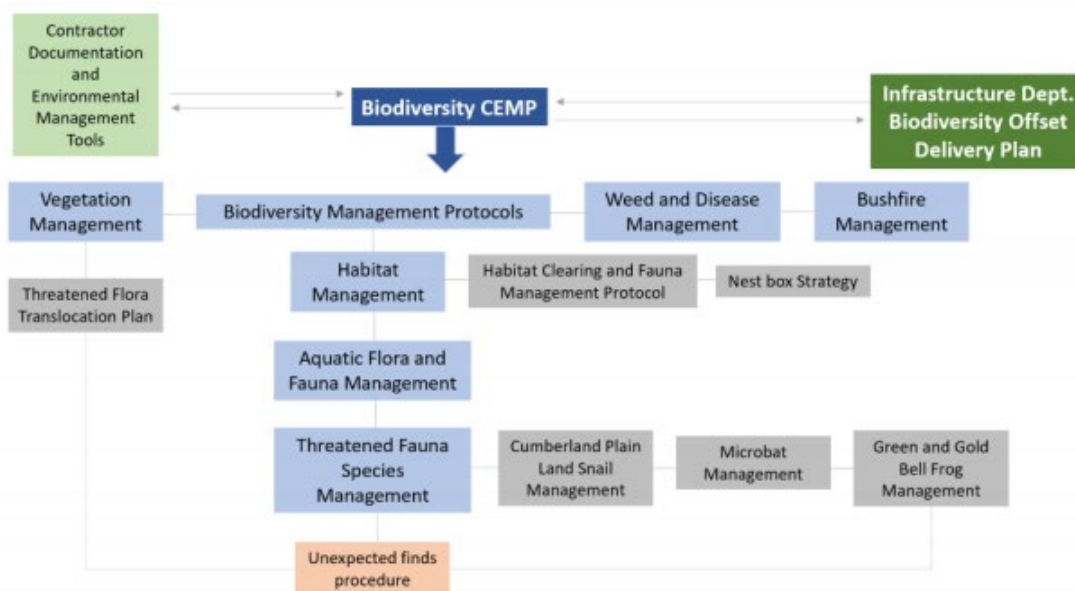


Figure 8-1 Indicative Biodiversity Protocols

### 8.1. Vegetation management

Impacts within the Airport Site (including areas outside the CIZ and within the RCIZ) will be managed in accordance with the Vegetation Management Plan (VMP) (Appendix A). The following measures are included in the VMP:

- deferring vegetation removal until necessary;
- locating site offices and stockpiles in already cleared and disturbed areas where possible, to avoid further unnecessary removal or disturbance of native vegetation and hollow-bearing trees;
- requirement for providing maps to construction staff engaged in Main Construction Works clearly showing vegetation clearing boundaries and exclusion/no-go zones;
- requirement for the earthworks contractors to engage a suitably qualified ecologist or environmental officer prior to any clearing works that form part of Main Construction Works to clearly demarcate vegetation protection areas;



- implementing an unexpected finds protocol which details measures to be undertaken if threatened flora and fauna not previously recorded at the airport site are detected during Construction Works;
- requirement to avoid unnecessary disturbance in nearby areas of retained vegetation outside of the CIZ such as avoiding unnecessary light spill and noise.

## 8.2. Biodiversity management protocols

### 8.2.1. Habitat management

Impact within the Airport Site (including areas outside the CIZ and within the RCIZ) will be managed in accordance with the Habitat Management Plan (HMP) (refer to Appendix B - Biodiversity Management Protocols). The following is included in the plan:

- Strategies to achieve connectivity throughout the landscape and minimise the effects of habitat fragmentation and associated edge effects;
- Nest box Management Strategy, detailing:
  - Data to show hollow-bearing trees proposed to be removed and the number of hollows associated with each tree
  - Reuse of hollows and fallen debris within conservation areas
  - The number of nest boxes to be installed, commensurate with the number of hollows proposed to be removed
  - Provisions for salvage of native fauna from existing nest boxes in the CIZ prior to their removal and translocation
  - A guide on the installation of nest boxes and the appropriate design specifications
  - A monitoring program for the monitoring of the nest boxes.
- Pre-clearance surveys to be conducted by a suitably qualified ecologist to mark and map hollow-bearing trees, logs and existing nest boxes that would require fauna management during removal;
- establishing protocols for the staged clearing of vegetation and safe tree felling and log removal to reduce the risk of fauna mortality;
- threatened species translocation requirements;
- protocols for the capture and relocation of less mobile fauna (such as nestling birds and nocturnal fauna) by a trained fauna handler;
- protocols for the appropriate management of injured or deceased individuals;
- landscaping on the Airport site will utilise predominantly native vegetation endemic to the region, sourced from the local area where possible. This will include:
  - planting of native grasses in open areas around airport infrastructure; and
  - the use of native vegetation in decorative gardens and plant screenings used to minimise visual impacts.

### 8.2.2. Aquatic flora and fauna management

Where required, impacts within the RCIZ will be managed in accordance with the recommendations in the Aquatic Flora and Fauna Management (AFFM) Subplan (refer to Appendix B - Biodiversity Management Protocols). The following is addressed:

- Protocol for dam decommissioning/dewatering;
- Any management requirements for the Green and Golden Bell Frog (GGBF)
- Requirement to progressively emptying dams over a number of days to allow fauna to relocate
- Requirement to avoid the nesting season of waterbirds, where possible. A pre-removal survey would be conducted to identify bird breeding locations;
- Requirement to salvage and relocate aquatic vertebrate fauna, including frogs, turtles and eels, to areas of suitable habitat retained at the airport site or nearby habitats, with regard to numbers and identification of suitable release sites;
- Management measures to prevent the release of Eastern Gambusia (*Gambusia holbrooki*) and other noxious fish into local waterways as a result of the draining of farm dams. Eastern Gambusia will be eradicated from dams using humane methods; and
- Establishing protocols for the humane euthanasia of aquatic fauna, including fish.
- Identification of potential risks and mitigation measures for watercourse functionality, riparian and aquatic habitat and fish passage as a result of the design and construction of waterway crossings; and
- schedules for inspection, monitoring, management and corrective actions.

The existing tributaries are highly modified (high levels of eutrophication as a result of runoff from nearby urbanisation and domination by environmental and priority weeds) and in poor condition as a result of historical and current land uses. The current aquatic fauna assemblage within these creeks is indicative of its poor quality. Water quality parameters and background levels are documented in the Soil and Water CEMP.

Badgerys Creek will be retained within an environmental conservation zone, as outlined in the Airport Plan.

### 8.2.3. Threatened species management

Threatened species management protocols are to be developed which detail the requirements for Microbat; Cumberland Plain Land Snail (CPLS); and GGBF (refer to Appendix B - Biodiversity Management Protocols).

Targeted surveys (in suitable conditions) will be undertaken by a suitably qualified ecologist as part of the preclearance surveys to determine the presence of threatened microbats, CPLS and GGBF within the RCIZ. If present or likely to be present, the following will be addressed in the respective Management Protocols:

- Maps identifying locations of threatened species;
- the scope and requirements for targeted surveys and pre-clearing surveys (including an unexpected finds protocol);

- relocation to suitable habitat on or near the Airport site;
- searches for roosting bats at any bridges or culverts that need removal;
- pre-clearing surveys for larger birds' nests, particularly the White-bellied Sea-Eagle, and Little Eagle;
- targeted searches for threatened flora species in areas of appropriate habitat with particular attention to the vicinity of known populations of *Marsdenia viridiflora subsp. viridiflora* and *Pultenaea parviflora*;
- vegetation and habitat clearing protocols; and
- reporting and adaptive management measures.

### 8.3. Unexpected Finds Protocol

All Contractors will be responsible for implementing an Unexpected Finds Protocol which details measures to be undertaken if flora and fauna not previously recorded at the airport site are detected during Main Construction Works.

### 8.4. Weed and disease management

Impacts within the Airport site will be managed in accordance with a Weed and Disease Management Plan (WDMP) in Appendix C. The following is addressed in the WDMP:

- requirement for implementing soil erosion and sediment control measures;
- mapping of weed infestations;
- removing and controlling noxious weed species;
- requirement for the appropriate disposal of weeds and weed-infested soils;
- stabilising disturbed areas following clearing to prevent weed spread;
- monitoring and adaptive management of weeds; and
- reporting on the extent, composition and severity of weed infestations and adaptive management measures.

### 8.5. Bushfire management

Impacts within the Airport Site (including areas outside the CIZ and within the RCIZ) will be managed in accordance with the Bushfire Management Plan (BMP) (Appendix D).

### 8.6. Biodiversity Offsets Strategy

This Biodiversity Offset Strategy (BOS) outlines how biodiversity offsets can be provided for the on-airport component of the project and ensure compliance with condition 43 of the varied Airport Plan. The overall objective of the BOS is to detail the residual biodiversity impacts that will result from the on-airport component of the project and how these impacts will be offset in accordance with State and Commonwealth requirements.

The Project is to be compliant with the requirements of the Rail BOS and the Airport Plan Biodiversity Staging Report as outlined in Section 1.3.1 and 1.3.2 until a Completion Report is presented to the Commonwealth.

## 8.7. Completion Report

The Completion Report is a requirement under the Airport Plan which is to be developed and provided to the Commonwealth when the Project has completed all allowed clearing and completed its offset obligations.

The Completion Report is to include Shapefiles of the Rail Construction Impact Zone shown in the Environmental Impact Assessment and Biodiversity Development Assessment Report with a comparison to the refined construction footprint and a final quantification of biodiversity offset requirements as determined in accordance with the Airport Plan.

The Rail Authority must implement the approved Rail Biodiversity Offset Strategy until a completion report is provided to the Approver. This BOS must implement the approved Rail Biodiversity Offset Strategy until a completion report is provided to the Commonwealth.

## 9. Environmental roles and responsibilities

The key environmental management roles and responsibilities for the construction phase of the work are detailed in Section 3.15 of the CEMF.

Sydney Metro will ensure sufficient resources are allocated on an ongoing basis to ensure effective implementation by both Sydney Metro and the responsible contractors.

### 9.1. Ecologist

The role of the appointed ecologist will be to undertake ecology surveys, advise and undertake translocation (if required), install and monitor nest boxes and supervise dam dewatering in accordance with the Biodiversity CEMP. Ecology surveys will be undertaken for threatened species and ahead of vegetation clearing, recording all instances of noxious weeds and threatened species.

The collection, handling and storing of aquatic fauna will be undertaken by experienced aquatic ecologists and operate under an approved Animal Research Authority scientific collection permit issued by the Secretary NSW Department of Industry.

## 10. Environmental, inspection, monitoring and auditing

Monitoring, inspection and auditing will be undertaken to measure effectiveness and facilitate continuous improvement of biodiversity management. General environmental monitoring, inspection and auditing requirements are summarised in section 3.16 of the CEMF.

A summary of the environmental inspection, monitoring and auditing requirements is provided below, with details of how they apply to biodiversity management where applicable.

### 10.1. Environmental inspections

#### 10.1.1. Sydney Metro environmental inspections

Environmental site inspections at active, exposed work sites will be undertaken by the Sydney Metro Environment Manager (or delegate) and the AEO at a frequency to be agreed with the Principal Contractor, based on the risk of activity but as a minimum monthly, to evaluate the effectiveness of environmental controls implemented by the contractor. Issue specific environmental monitoring will be undertaken as required or as additionally required by any approval, permit or licence conditions.

Environmental inspections are to include a visual check of all biodiversity management control measures including but not limited to the following:

- Surveillance of environmental mitigation measures by the Site Foreman;
- Periodic inspections by the Principal Contractor's Environmental Manager (or delegate) to verify the adequacy of all environmental mitigation measures. This will be documented in a formal inspection record.

The findings of the Sydney Metro site environmental inspection will be recorded on a Sydney Metro Site Environmental Inspection Checklist with an accompanying photographic style inspection report.

#### 10.1.2. Contractor environmental inspections

The Contractor's Environmental Manager and/or Environmental Coordinators will undertake regular site inspections in accordance with the CEMF to monitor compliance with this plan at active, exposed work sites.

Inspection results will be recorded, and the inspection log made available upon request. Any improvement opportunities or non-conformances will be reported in the monthly report and discussed at the weekly Environmental Coordination meeting.

More frequent site inspections by the site environmental coordinator will be conducted onsite when activities include high risk biodiversity impacts, such as clearing or dam draining.

If any maintenance and/or deficiencies in environmental controls or in the standard of environmental performance are observed, they will be recorded on the checklist form. Records will also include details of any maintenance required, the nature of the deficiency, any actions required and an implementation priority.

#### 10.1.3. Pre-start inspection

Prior to the commencement of works on each shift, an informal inspection will be carried out by the relevant contractor and will include a check of relevant environmental controls, and

allocate resources required to ensure effective operation and maintenance. This is to include an inspection of relevant biodiversity management mitigation measures and controls, where applicable. Works are not to commence unless inspections are found to be satisfactory.

The foreman will undertake the pre-works inspection and record daily observations.

## 10.2. Biodiversity monitoring

Issue specific environmental monitoring will be undertaken as required or as additionally required by any approval, permit or licence conditions. General environmental monitoring requirements on-airport are set out in the AEPR (Airport Environment Protection Regulations 1997) which will include the following:

- Monitoring must take place under the direction of an appropriately qualified person; and
- The results of the monitoring must be kept in a written record.

Specific biodiversity monitoring requirements, including timing and responsibilities, are included in Table 10-1 as well as embedded in the Biodiversity Management Protocols (Appendix B). The results of any monitoring undertaken as a requirement of a license or permit that is required to be published will be published on the Sydney Metro project specific website within 14 days of obtaining the results.

**Table 10-1 Biodiversity monitoring requirements**

Reference	Requirement	Timing	Responsibility
<b>B_M_01</b>	Vegetation retention and restoration monitoring (refer to VMP for detail)	Prior to vegetation removal and establishment of no-go zones AND Ongoing post vegetation removal through to site operation.	SBT Contractor To be undertaken under the direction of an appropriately qualified person
<b>B_M_02</b>	Monitoring of Weeds (details to be in Weed Management)	Prior to implementation of control measures AND Ongoing post weed control through to site operation.	SBT Contractor
<b>B_M_03</b>	Monitoring of vegetation clearing (refer to VMP for detail)	Prior to vegetation removal and establishment of no-go zones AND Ongoing post vegetation removal through to the cessation of construction activities.	SBT Contractor
<b>B_M_04</b>	Monitoring of nest boxes – location, survival and use	Ongoing post vegetation removal through to site operation.	SBT Contractor

Where required, targeted surveys for Green and Golden Bell Frog will be completed in accordance with the requirements outlined in Table 10-2.

**Table 10-2 Proposed methodology for Green and Golden Bell Frog targeted surveys**

Species	Timing	Monitoring type	Methodology
<b>Green and Golden Bell Frog</b>	Oct-Jan after a minimum 50 mm of rainfall in seven days	Call survey, including call playback	Call playback over four consecutive nights. The methodology will follow the static call survey method with individual points predetermined and 5 minutes of the call will be broadcast followed by 5 minutes of listening. A suitably qualified ecologist will also liaise with relevant landholders to confirm the species is calling at a known reference site prior to targeted surveys.
		Nocturnal spotlighting surveys	Nocturnal spotlighting searches over four consecutive nights using a visual encounter survey with a randomise walk design. This will be conducted immediately after the call surveys detailed above.

Aquatic flora and fauna management performance measures are detailed in Table 10-3.

**Table 10-3 Aquatic flora and fauna management performance measures**

Performance indicator	Corrective actions	Responsibility
<b>Mortalities of native aquatic fauna identified during dewatering activities.</b>	Monitor levels of dissolved oxygen during draining of the dams and undertake aeration of the waterbodies as necessary.	The lead contractor is responsible for engaging suitably qualified aquatic ecologists to undertake the monitoring and suitably qualified contractors to undertake the operation of the draining of the dams.
<b>Dam bed deemed unsafe to undertake fauna salvage.</b>	Excavate sumps/pits in the dam bed and drain water to the base level of the dam bed. Project ecologist (Aquatic) is to instruct excavator operators on the correct procedures to undertake the aquatic fauna salvage using the sumps/pits.	
<b>Aquatic fauna are identified by construction personnel following dam dewatering and salvage.</b>	Contact the project ecologist (Aquatic) to provide advice or attend the site to relocate	

Weed and pathogen monitoring schedule and performance indicators are detailed in Table 10-4.



Table 10-4 Weed and pathogen monitoring schedule and performance indicators

Action	Description	Timing of action	Reporting	Responsibility	Performance Parameters / Assessment Criteria
<b>Mapping of Priority Weeds and Pathogens</b>	Priority weed mapping will occur prior to clearing works.	Prior to construction.	Any additional instances of weeds or pathogens that are identified are to be provided, with co-ordinates and species identification to ensure weed and pathogen mapping remains current.	SBT SCAW SSTOM Environment Manager	Indicators of success of the Weed Management Procedure include: <ul style="list-style-type: none"> <li>No new noxious weed and pathogen infestations within the Project footprint and in adjacent bushland as a result of the Project.</li> </ul> Assessment criteria: <ul style="list-style-type: none"> <li>No new priority weed species (in addition species list within this plan) to establish in the Project footprint.</li> </ul>
<b>Implementation of weed and pathogen management measures</b>	Weed and pathogen management measures will occur throughout the extent and duration of the project in accordance with this plan.	Prior to construction. During construction.	The project area would be monitored for weed invasion during weekly site inspections, and any other inspections or audits undertaken as part of CEMP requirements. The presence of weed infestations would be reported as part of the inspection process, and include actions to be undertaken to manage these infestations	SBT SCAW SSTOM Environment Manager	Indicators of success of the Weed Management Procedure include: <ul style="list-style-type: none"> <li>A reduction in the area of priority weed and pathogen infestations within the project footprint.</li> </ul> Assessment criteria: <ul style="list-style-type: none"> <li>A 50% reduction in identified weed infestations to be achieved in year 1 within the project footprint, with gradual improvement for the following two years.</li> </ul>
<b>Weed and pathogen management during rehabilitation</b>	Rehabilitated sites	Stabilisation of catchments	Rehabilitated sites would be monitored during inspections, with weed management to be undertaken if required to manage any new infestations.	SSTOM Environment Manager	Indicators of success of the Weed Management Procedure include: Control of weed infestation during rehabilitation of sites. Assessment criteria: No uncontrolled weed infestations.

### 10.3. Environmental auditing

Refer to Section 3.16 of the CEMF for environmental auditing requirements, including internal audits, independent audits and audits to be undertaken by contractors.

Auditing and subsequent reporting will be undertaken annually to ensure compliance with:

- this BCEMP;
- Airport Plan Conditions of Approval;
- Condition 40.4, 40.5, 40.6 Independent audits about compliance with conditions; and
- Part 13 Permit Conditions of Approval

as identified in Section 4 of this CEMP.

Sydney Metro will also undertake periodic audits of the Principal Contractor's Environment and Sustainability Management Systems (E&SMS) and compliance with the environmental aspects of contract documentation, including this BCEMP.

On-airport works approved under the Airport Plan will be subject to environmental audits and compliance audits, noting unscheduled audits may also be undertaken. The environmental audits would audit the environmental systems and on-site performance of the on-airport works of SM - WSA and be undertaken on a 6 monthly basis.

### 10.4. Environmental reporting

General environmental reporting requirements are detailed in Section 3.18 of the CEMF.

In addition, a summary of reporting requirements required under this Biodiversity CEMP (including environmental reporting requirements required under the Airport Plan specific to the Biodiversity CEMP) is provided in Table 10-5.

Table 10-5 Biodiversity management reporting

Action	Scope	Timing / Frequency	Responsibility
<b>Annual reporting</b>	<p>Unless otherwise agreed in writing by an Approver, an annual report will be prepared in relation to compliance with this Biodiversity CEMP (Condition 49). In accordance with Condition 49 (4) Sydney Metro will publish each of the annual reports on its website within three months of the end of the period in respect of which the report was prepared, with evidence providing proof of the date of publication to the Infrastructure Department with a copy to the Environment Department. The report must remain on the website for a period of at least 12 months.</p> <p>An annual report is also to be prepared and managed in accordance with section 6.03 of the AEPR.</p>	Annual	SM with contributions from the SCAW SBT SSTOM Contractor.
<b>Part 13 Report</b>	<p>Document compliance with the conditions for the Environment Protection Biodiversity Conservation Act 1999 (EPBC Act) Part 13 Permit (E2021-0187). Published on SM - WSA website.</p>	6 months after expiry of Permit	SM Environment Manager with contributions from the AEW SCAW SBT SSTOM Contractor.
<b>Reporting pollution incidents (required under the Airport Act)</b>	Report pollution incidents resulting in offsite impacts to the NSW Environment Protection Authority – refer to M-WSA Environmental Non-conformance Classification and Reporting Procedure.	As required	SM Environment Manager with contributions from the SCAW SBT SSTOM Contractor.
<b>Complaints reporting</b>	Recording of complaints and stakeholder interactions	As required	SM Environment Manager and SBT SCAW SSTOM Contractor Environment Manager in consultation with the community communications Manager
<b>Environmental Site Register (required under the 6.02(3) of the AEPR)</b>	Environmental Site Register to be kept and maintained to include written record of environmental conditions of the Airport and its environmental management generally.	As required	SM to maintain SBT SCAW SSTOM contractor to provide information if and as required

## Sydney Metro – Integrated Management System (IMS)

(Uncontrolled when printed)



Action	Scope	Timing / Frequency	Responsibility
<b>General environmental inspection</b>	Inspection of environmental management controls on site and sighting of site documentation as required by the contractor's CEMP.	Minimum monthly	AEW SBT SCAW SSTOM Contractor
<b>General environmental inspection</b>	Inspection of environmental management controls and site documentation for contractor works (as required by the contractor's CEMP).	As per Contractor environmental management system (minimum weekly)	AEW SBT SCAW SSTOM Contractor
<b>Pre-Clearance Inspections</b>	Inspection of all vegetation prior to clearing to identify all species, fauna habitat, numbers of habitat trees, TECs to inform clearing as well as the BOS	As a Hold Point prior to each clearing event.	AEW SBT SCAW SSTOM Contractor
<b>Post-clearance report</b>	Including any relevant Geographical Information System files, will be produced that validates the type and area of vegetation cleared including confirmation of the number of hollows impacted and the corresponding nest box requirements to offset these impacts. To be provided to Sydney Metro.	Within one month of the completion of clearing within each biodiversity offset area (as defined in the Airport Biodiversity Staging Report)	AEW SBT SCAW SSTOM Contractor
<b>Survey reporting</b>	Following the completion of the targeted Green and Golden Bell Frog surveys, a report or brief letter will be submitted within five working days detailing the results of the survey.	Within 5 days of targeted survey	AEW SBT SCAW SSTOM Contractor (if required)

## 10.5. Environmental compliance tracking

In accordance with Condition 46 of the Airport Plan, a Compliance Tracking Program needs to be developed by the Contractor. The Compliance Tracking Program will allow Sydney Metro to track the Contractors' compliance status with the conditions of the Airport Plan (and any other approval requirements) and will allow Sydney Metro's Contractors to demonstrate measures taken to implement the approved Airport Plan.

The Compliance Tracking Program will be used as a tool to inform the annual report (as detailed above in Table 10-5) and will be made available to the Infrastructure Department upon request as required. Refer to Section 3 of the CEMF for further details regarding the requirements of the Contractor to maintain and implement the Compliance Tracking Program.

## 11. Competence, training and awareness

To ensure this Biodiversity CEMP is effectively implemented, each level of management is responsible for ensuring that all personnel reporting to them are aware of the requirements within. The contractor will need to co-ordinate with the Sydney Metro Environment Manager who will liaise with WSA Co to ensure they receive the necessary and relevant environmental training in conjunction with other training and development activities.

All competence, training and awareness requirements will be implemented as detailed in Section 3.11 of the CEMF. A summary of these requirements is provided in the following sections.

### 11.1. Environmental Project Induction

All Project personnel working on the Stage 1 development (including sub-contractors) are required to attend a compulsory Project induction that includes an environmental component prior to commencement of works on site, which will include:

- Summary of the significance of surrounding vegetation and fauna habitat in a regional context;
- Location of mapping of environmentally sensitive areas marked as no-go zones;
- Threatened species that may be encountered on site (where applicable);
- Points of contact for personnel if threatened species are encountered;
- Descriptions or works where ecologists may be required to supervise or support personnel (where applicable);
- Overview of dam dewatering protocols (where applicable);
- Site weed and pathogen protocols; and
- Bushfire management procedures.

Short-term visitors to site for purposes such as deliveries will be required to be accompanied by inducted personnel at all times. A visitors' induction will also be undertaken for visitors onsite for short periods as agreed with the WSA Co Safety Manager.

The WSA Co Environment Manager (or delegate) will be responsible for providing the environmental component of the Project inductions, ensuring that the environmental management requirements of this plan are incorporated.

A *WSA Co Induction and Training Register* will be maintained at all times including the details of all personnel who have completed the WSA Co Project induction and any other pertinent environmental training and or awareness forums (workshops, presentations etc.).

### 11.2. Contractor specific site inductions

In addition to the WSA Co Project induction, Principal Contractors are responsible for determining the training needs of their personnel and the framework for this training as per the CEMF and their scope of works.

A record of all environment inductions is to be maintained by the contractor and provided weekly to Metro.

### 11.3. Toolbox talks, training and awareness

Environmental issues associated with biodiversity management to be considered for toolbox talks may include (but are not limited to):

- Ensuring the location of sensitive areas are conveyed and understood by all site personnel, contractors and sub-contractors;
- Compliance with designated no-go zones; and
- Observation of requirements regarding unexpected or anticipated threatened species finds and the action taken to resolve the situation.

For activities with high environmental risk (as identified through the risk assessment process undertaken as part of the CEMP), targeted environmental awareness training is to be provided.

The Principal contractor Environment Manager will establish a schedule of environmental training.

### 11.4. Daily pre-start meetings

The pre-start meeting is a tool for informing the workforce of the day's activities, safe work practices, environmental protection practices, work area restrictions, activities that may affect the works, coordination issues with other trades, hazards and other information that may be relevant to the day's work.

Specifically with regards to this Biodiversity CEMP, the daily pre-start forum can be used as an opportunity to discuss the following:

- Distribution of map of environmentally sensitive areas marked as no-go zones in immediate vicinity of works;
- Threatened species that may be encountered on site;
- Weed and pathogen management;
- Points of contact for personnel if threatened species are encountered;
- Introduction of ecologists that may be present to supervise or support personnel; and
- Overview of dam dewatering protocols.

## 12. Communications and complaints management

All communications and complaints management will be implemented and managed in accordance with Section 4 of the CEMF.

### 12.1. Complaints management

A Complaints and Enquiries Procedure, consistent with *AS 4269: Complaints Handling*, is to be developed for the work, in accordance with the requirements of the Airport Plan.

The community communications team will take the lead in responding to complainants. Attempts will be made to resolve all complaints in accordance with the Community Communications Strategy. Timeframes for initial responses to complaints will be outlined within the strategy.

The aim is to resolve any complaint at the first point of contact, by providing a solution or negotiating an agreed course of action. The complainant will be provided updates on the progress of their complaint and a written response will be provided within 10 working days if the complaint cannot be resolved by the initial or follow up verbal response.

The community contacts database will be used as a complaints register. The database will be used to record, track and respond to complaints efficiently. Information on all complaints received, the means by which they were addressed, and whether resolution was reached with or without mediation shall be included in the construction compliance reports.

The Sydney Metro Environment Manager in consultation with the relevant contractor where required, will apply an adaptive approach to ensure that corrective actions are applied in consultation with the appropriate construction staff to allow modifications and improvements in the management of any environmental issues resulting in community complaints.

### 12.2. Community and stakeholder communication

Construction of the Project will involve a number of interactions with local residents, local councils and NSW Government agencies, among others. To ensure a consistent approach with regards to community and stakeholder management, Sydney Metro has developed a Community Communications Strategy which aligns with the WSA Co. Community communications strategy to address broader stakeholder engagement objectives during construction and to coordinate engagement activities for all environmental management issues during construction. For further detail with regards to community and stakeholder engagement, refer to Section 4 of the CEMF.

### 12.3. Environmental incidents and complaints management

The management and reporting of environmental incidents shall be undertaken by the appropriate person as detailed in Sections 3.12 and 3.17 of the SMSWA CEMF.

It should be noted that the management and reporting requirements associated with major incident and emergency situations (for example a major chemical or hydrocarbon spill, fuel storage tank failure, surface fires, sediment basin failure) should be undertaken in accordance with the SM - WSA Emergency Spill Response Procedure.

All communications and complaints management will be implemented and managed in accordance with Section 4.2 and 4.3 of the CEMF and the Community Communications Strategy.



## 13. Review and improvement

### 13.1. Continuous improvement

Continuous improvement of this plan will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement. This process is detailed in Section 3.18 of the CEMF.

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance;
- Determine the cause or causes of non-conformances and deficiencies;
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies;
- Verify the effectiveness of the corrective and preventative actions;
- Document any changes in procedures resulting from process improvement; and
- Make comparisons with objectives and targets.

### 13.2. Change management

Further refinements to the Project may result from detailed design refinement or changes identified during the construction phase of the works. Any design changes or changes in scope of works will be communicated to the SM - WSA Environmental Manager.

SM - WSA would be responsible for assessing any potential inconsistencies with the Airport Plan and formally seeking approval from the Infrastructure Minister for any project modifications as required, prior to commencement of the scope of works in question.

### 13.3. Review of approved plans

Sydney Metro will review each approved plan at least every five years (from the date of approval) as required by the Airport Plan. A review will also be completed annually to ensure that it continues to meet the approval criteria. Details of the review will be included in the annual report (refer to Section 3.18 of the CEMF). If the review identifies areas where the plan does not continue to meet the approval criteria for that plan, a variation to the approved plan will be prepared and submitted for approval. Once the reviewed plan is approved by the Approver, this reviewed plan will be the Approved Plan.

Sydney Metro may initiate reviews of Approved Plans at other times in response to improvement opportunities, non-conformances, and changes to scope of work or construction methodology or alterations to legal or contractual requirements.

If there is a material change to a WSA CEMP which impacts on an area of the RCZI, then SM - WSA will review their CEMPs to reflect that change addressed by the WSA review.

Any changes identified and implemented through the variation and review process identified above will be communicated to relevant contractors through re-issue of the revised Sydney Metro Approved Plan and subsequent training and awareness (refer to Section 3.4 of the CEMF).



A formal review of the management systems by the Principal Contractor's Senior Management Team will also occur on an annual basis, as a minimum. This review shall generate actions for the continual improvement of the systems and supporting management plans.

## 14. References

Commonwealth Department of Infrastructure and Regional Development, 2016. *Airport Plan (December 2016)*

Commonwealth Department of Infrastructure and Regional Development, 2016. Western Sydney Airport Environmental Impact Statement, 2016 Standards Australia 2001. Australian and New Zealand environmental management international standard (AS/NZS ISO 14001)

Department of the Environment, Water, Heritage and the Arts, 2010. Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest EPBC Act Policy Statement 3.31. <http://www.environment.gov.au/system/files/resources/3c01d3d1-c135-4d91-a605-f5730975d78c/files/cumberland-plain-shale-woodlands.pdf>.

Department of the Environment, Water, Heritage and the Arts, 2009. Significant impact guidelines for the vulnerable green and golden bell frog (*Litoria aurea*) EPBC Act policy station 3.19. < <http://www.environment.gov.au/system/files/resources/e882f6c7-a511-4fba-9116-2f2f7ef941aa/files/litoria-aurea-policy.pdf>>.

DPI 2011. Noxious and Environmental Weed Control Handbook. A Guide to Weed Control in Non-crop, Aquatic and Bushland Situations, 5th Edition. NSW Department of Primary Industries.

Landcom Managing Urban Stormwater: Soils and Construction (2004).

McNaught, I, Thackway, R, Brown, L. and Parsons, M. (2006). A field manual for surveying and mapping nationally significant weeds. Bureau of Rural Sciences, Canberra

Department for Planning, Industry and Environment. 2011. Conservation Management Notes, Seed Collecting.

NSW Office of Environment and Heritage.

Department for Planning, Industry and Environment. 2011b. Conservation Management Notes, Managing bushland and wildlife habitat – Revegetation.

NSW Office of Environment and Heritage.

Ralph, M. 1993. Seed Collection of Australian Native Plants – For Revegetation, Tree Planting and Direct Seeding. Bushland Horticulture, Fitzroy.

Sydney Weeds Committee 2013. High Risk Weeds in the Sydney and Blue Mountains Region.

Gibbons, P and Lindenmayer, D. 1997. Conserving Hollow-dependent Fauna in Timber Production Forest. Environmental Heritage Monograph 3: 110.

Gibbons, P and Lindenmayer, D. 2002. Tree Hollows and Wildlife Conservation in Australia. CSIRO Publishing, Collingwood, Australia.

Goldingay RL. 2011. Characteristics of tree hollows used by Australian arboreal and scansorial mammals. Australian Journal of Zoology 59: 277-294.

Beyer & Goldingay. 2006. The value of nest boxes in the research and management of Australian hollow-using arboreal marsupials. Wildlife Research 33: 161-174.

Commonwealth Department of Infrastructure and Regional Development, 2016. Western Sydney Airport Environmental Impact Statement, 2016 Standards Australia 2001. Australian and New Zealand environmental management international standard (AS/NZS ISO 14001)

CPB Lend Lease Joint Venture 2018. Biodiversity Construction and Environment Management Plan. Report For WSA.

Gleeson J and Gleeson D. 2012. Reducing the Impacts of Development on Wildlife. CSIRO Publishing,

Collingwood.

Lindenmayer DB, MacGregor CI, Cunningham RB, Incoll RD, Crane M, Rawlins D, and Michael DR. 2003. The use of nest boxes by arboreal marsupials in the forests of the Central Highlands of Victoria. *Wildlife Research* 30: 259-264.

NPWS 2001. Threatened Species Management Information Circular No. 6 – Hygiene Protocol for the Control of Disease in Frogs. National Parks and Wildlife Service, Hurstville.

Phillott, A. D., R. Speare, H. B. Hines, E. Meyer, L. F. Skerratt, K. R. McDonald, S. D. Cashins, D. Mendez and L. Berger (2010). "Minimising exposure of amphibians to pathogens during field studies." *Diseases of Aquatic Organisms*.

Western Sydney Airport Environmental Impact Statement Volume 2a: Stage 1 Development, Chapter 16 – Biodiversity (DIRD 2016).

DPI 2014. Noxious and environmental weed control handbook. A guide to weed control in non-crop, aquatic and bushland situations, 6th edition, NSW Department of Primary Industries. Accessed via [http://www.dpi.nsw.gov.au/data/assets/pdf\\_file/0017/123317/noxious-and-environmental-weed-controlhandbook.pdf](http://www.dpi.nsw.gov.au/data/assets/pdf_file/0017/123317/noxious-and-environmental-weed-controlhandbook.pdf).

NSW Scientific Committee 2003a. Infection of frogs by amphibian chytrid causing the disease chytridiomycosis - key threatening process listing Final Determination.

NSW Scientific Committee 2003b. Invasion of native plant communities by exotic perennial grasses – key threatening process listing Final determination.

NSW Scientific Committee 2006a. Exotic vines and scramblers - key threatening process listing Final determination.

NSW Scientific Committee 2006b. Lantana camara - key threatening process listing Final determination.

NSW Scientific Committee 2007. Invasion and establishment of Scotch broom - key threatening process declaration Final determination.

NSW Scientific Committee 2010. Invasion of Native Plant Communities by African Olive *Olea europaea* L. subsp. *cuspidata* (Wall ex G. Don) Ciferri - key threatening process listing Final determination.

NSW Scientific Committee 1999. Invasion of Native Plant Communities by *Chrysanthemoides monilifera* – key threatening process listing Final determination.

Roads & Traffic Authority 2011. Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects.

Guide 6: Weed management and Guide 7: Pathogen Management. New South Wales Roads and Traffic Authority.

## Appendix A Vegetation Management Plan

### A1. Introduction

#### A1.1 Scope

The scope of this Vegetation Management Plan (VMP) is to develop a framework for the management of vegetation to be retained, vegetation to be removed, and the ongoing management of weeds within the airport. The VMP also outlines ongoing management actions required for successful establishment of native plants (where applicable) within the ECZ, and actions to protect the surrounding vegetation from future negative pressures.

#### A1.2. Objectives

The specific objectives for the implementation of this VMP are to:

- Outline strategies to avoid or minimise impacts on vegetation where possible;
- Outline the management requirements for any vegetation to be retained, including details on tree and vegetation protection measures e.g. establishment of no go fencing;
- Provide schedules for inspection, monitoring, management and corrective actions; and
- Describe weed management activities.

### A2. Methods

#### A2.1 Desktop Research

A review of all available design plans and reports relating to WSI and adjacent areas will be conducted, as well as relevant legislation, recent vegetation mapping and other documentation relevant including;

- Western Sydney Airport Environmental Impact Assessment (GHD 2016)
- Sydney Metro – Western Sydney Airport EPBC Act Final Environmental Impact Assessment of on-airport proposed action (EPBC 2019/8541)
- Proposed Site Plans
- The Native Vegetation of the Sydney Metropolitan Area (Department for Planning, Industry and Environment. 2013)
- NSW Scientific Committee final determinations for threatened biodiversity.
- Department of the Environment and Energy (DEE) Protected Matters Search Tool for matters protected by the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- Department for Planning, Industry and Environment. NSWBioNet, the database for the Atlas of NSW Wildlife, for matters protected under the *Biodiversity Conservation Act 2016* (BC Act).

## A2.2 Site Assessment

A pre-clearing survey of the RCIZ covered by the Biodiversity CEMP will be conducted prior to the commencement of construction works by a qualified and experienced ecologist. Investigation will involve:

- The identification of native and exotic plant species, according to Field Guide to the Native Plants of Sydney (Robinson 2003) and the Flora of NSW (Harden 1992, 1993, 2000, 2002), with reference to recent taxonomic changes;
- The identification and mapping of plant communities according to the structural definitions of Native Vegetation of the Sydney Metropolitan Area (Department for Planning, Industry and Environment.2013);
- Targeted searches for plant species of conservation significance according to the “random meander” method (Cropper 1993);
- Identifying fauna habitats, assessing their condition and assessing their value to threatened faunaspecies;;
- Observations of animal activity and searches for indirect evidence of fauna (such as scats, nests, burrows, hollows, tracks, scratches and diggings);
- An assessment of the natural resilience of the vegetation of the site;
- Identification of previous and current factors threatening the ecological function and survival of native vegetation within and adjacent to the Airport; and
- Determination of appropriate rehabilitation and bush regeneration techniques for the native vegetation of the Airport.

The conservation significance of plant species and plant communities will be determined according to:

- *Biodiversity Conservation Act 2016* (NSW) (BC Act) for significance within NSW; and
- Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) for significance within Australia.

## A2.3 Limitations

Ecological surveys provide a sampling of flora and fauna at a given time and season. There are several reasons why not all species will be detected at a site during survey, such as species dormancy, seasonal conditions, and ephemeral status of waterbodies and migration and breeding behaviours of some fauna. In many cases these factors do not present a significant limitation to assessing the overall ecological values of a site.

## A3. Existing environment

### A3.1 Vegetation communities

SM - WSA RCIZ contains five vegetation communities that were identified during EIS investigations (GHD 2016):

- Grey Box – Forest Red Gum grassy woodland on flats (HN528);
- Forest Red Gum – Rough-barked Apple grassy woodland (HN526);

- Artificial freshwater wetland;
- Exotic Grassland; and
- Cleared land or cropland.

### Grey Box - Forest Red Gum grassy woodland on flats

- The Forest Red Gum grassy woodland was found to be in moderate condition.
- The canopy consisted of *Eucalyptus moluccana* (Grey Box), *Eucalyptus tereticornis* (Forest Red Gum) and the occasional *Eucalyptus eugenioides* (Thin-leaved stringybark). The canopy provided approximately 20% cover and varied from 15–25m tall.
- The midstory consisted of a generally sparse cover 1- 26.5% of shrubs such as *Dilwynia sieberi*, *Daviesia ulicifolia*. On occasion dense patches of *Acaica decurrens* or *Acacia parramattensis* growing to 5m tall providing 50-80% cover.
- The ground cover consisted of *Themeda australis*, *Microlena stipoides* var. *stipoides*, *Aristida vagans*, *Eragrostis leptostachya* and *Lomandra filiformis* subsp. *filiformis*, occasional understory species such as peach heath *Lissanthe strigose*, herbs such as *Caesia parviflora* var. *vittata*, *Dichondra repens*, *Commelina cyanea* and *Brunoniella australis*. Locally high cover of chenopods such as climbing Saltbush *Einada nutans* subsp. *Nutans* and berry saltbush *Einadia hastata* moderate cover and species richness of scramblers such as Amulla *Eremophila debilis* and Glycine species.
- Exotic plants such as African Boxthorn *Lycium ferocissimum* and African olive *Olea europaea* subsp. *europaea* Cuspidate pasture grasses such as *Setaria parviflora*, Kikuyu *Pennisetum clandestinum* and Paspalum *Paspalum dilatatum*, African Lovegrass *Eragrostis curvula* and Panic Veldtgrass *Ehrharta erecta*, Fireweed *Senecio madagascariensis*, Dandelion *Taraxacum officinale*, Greater Beggar's Ticks *Bidens subalternans* Black-berry Nightshade *Solanum nigrum* and *Solanum sisymbriifolium* and climbers such as Moth Vine *Araujia sericifera* and Bridal Creeper *Asparagus asparagoides*.
- This species assemblage is consistent with the CEEC Cumberland Plain Woodland, listed under the BC Act and EPBC Act.

### Forest Red Gum – Rough-barked Apple grassy woodland

- The canopy consisted of Forest Red Gum *Eucalyptus tereticornis*, Cabbage Gum *Eucalyptus amplifolia* subsp. *amplifolia* with the occasional Thin-leaved stringybark *Eucalyptus eugenioides* and Grey Box *Eucalyptus moluccana*.
- The midstorey consisted of occasional dense patches of Native Blackthorn *Acaica decurrens*, Prickly-leaved Tea Tree *Melaleuca styphelioides*, Flax-leaved Paperbark *Melaleuca linariifolia*, Swamp Oak *Casuarina glauca* or *Acacia* species up to ten metres.
- Ground cover species included moderate cover of grasses such as; Weeping Grass *Microlena stipoides* var. *stipoides*, Treeawn Speargrass *Aristida vagans*, Early Spring Grass *Eriochloa pseudoacrotricha*, *Oplismenus aemulus* and Slender Rat's Tail Grass *Sporobolus creber* locally dense patches of sedges such as Slender Flat-sedge *Cyperus gracilis*, *Cyperus polystachyos* and the occasional dense patches of Native Blackthorn, Black Wattle *Acaica decurrens*. Herbs such as Indian Weed *Sigesbeckia orientalis* subsp. *Orientalis*, *Plectranthus parviflorus*, *Commelina cyanea*, Forest Nightshade *Solanum prinophyllum*, Indian Pennywort *Centella asiatica* and Blue Trumpet *Brunoniella australis*.

- High cover of Climbing Saltbush *Einada nutans* subsp. *Nutans* and *Einadia trigonos* subsp. *Trigonos*, other scramblers such as *Amulla Eremophila debilis*, Slender Tick-trefoil *Desmodium varians* and *Glycine* species. Native vines such as Headache Vine *Clematis glycinoides* are locally abundant.
- Drainage lines through the vegetation featured high species richness and cover/abundance of native aquatic herbs and ferns such as *Marsilea mutica*, *Alternanthera denticulate*, *Eleocharis cylindrostachys*, *Triglochin microtuberosa* and *Myriophyllum variifolium*.
- Exotic species such as African Boxthorn *Lycium ferocissimum*, Lantana *Lantana camara*, Green Cestrum *Cestrum parqui*, Blackberry *Solanum nigrum* and African olive *Olea europaea* subsp. *europaea*, pasture grasses such as *Setaria parviflora*, Kikuyu *Pennisetum clandestinum* and *Paspalum dilatatum*. Weedy grasses such as Panic Veldtgrass *Ehrharta erecta*, Fireweed *Senecio madagascariensis*, Maderia Winter Cherry *Solanum pseudocapsicum* and Dandelion *Taraxacum officinale*, Greater Beggar's Ticks *Bidens subalternans*, *Solanum sisymbriifolium* and Paddy's Lucerne *Sida rhombifolia*, also scramblers such as Wandering Jew *Tradescantia fluminensis*, and climbers include Moth Vine *Araujia sericifera*, Maderia Vine *Anredera cordiflora* and Bridal creeper *Asparagus asparagoides*.
- This species assemblage is consistent with the EEC and CEEC River-flat Eucalypt Forest, listed under the BC Act and EPBC Act, respectively

### Artificial freshwater wetland

- The canopy was generally absent. Occasional isolated Cabbage Gum *Melaleuca decora*, Flax-leaved Paperbark *Melaleuca linariifolia*, or Swamp Oak *Casuarina glauca*.
- The mid storey was generally absent, with occasional patches of *Melaleuca* species or Tootan *Leptospermum polygalifolium*.
- The groundcover was dense, structurally complex. Common species included Common Reed *Phragmites australis*, Cumbungi *Typha orientalis*, Spike Rush *Eleocharis palustris*, and *Schoenoplectus validus*. Other wetland species include; Water Couch *Zoysia macrantha*; floating aquatic ferns such as Nardoo *Marsilea mutica* and *Azolla* species. Emergent aquatic herbs such as Woolly Frogmouth *Phyllidrum lanuginosum*, *Perscaria* species and *Ludwigia peploides* subsp. *Montevidensis*, submerged aquatic herbs such as *Triglochin microtuberosum* and *Myriophyllum* species, *Centella asiatica* and Swamp Goodenia *Goodenia paniculata*.
- There is generally low to moderate exotic plant cover. Herbs such as *Ludwigia peruviana* and localised dense patches of exotic sedge Sharp Rush *Juncus acutus*, also included is African Love Grass *Eragrostis curvula*.

### Exotic Grassland

- Canopy was absent.
- Midstorey was generally absent apart from the occasional Native Blackthorn *Acaia decurrens*, Swamp Oak *Casuarina glauca*, Acacia species or *Dilwinia sieberi*.
- Groundcover was dominated by exotic grasses. Occasionally native species such as Peach Heath *Lissanthe strigosa*, Kangaroo grass *Themeda australis*, Spear grass *Aristida* species and Common Couch *Elymus repens* were present. Sedges such as Common Fringe-sedge *Carex crinita* and scramblers included *Glycine* species.



- Exotic species dominated, pasture grasses such as Kikuyu *Setaria parviflora* and Carpet Grass *Axonopus fissifolius*. There were extensive areas dominated by weeds such as African Love Grass *Eragrostis curvula*, Khaki Weed *Alternanthera pungens*, Blackberry *Rubus fruticosus* or Noogoora Burr *Xanthium occidentale*, Dandelion *Taraxacum officinale*, Rhodes Grass *Chloris gayana*, *Solanum sysimbrifolium*, Stinkgrass *Eragrostis cilianensis* and Lamb;s Tongue *Plantago lanceolate*.

### Cleared land or cropland

- The Canopy was absent.
- Midstorey was generally absent apart from the occasional Native Blackthorn *Acaica decurrens*, Swamp Oak *Casuarina glauca*, Acacia species or *Dilwinia sieberi*.
- Groundcover was dominated by exotic crops. Patchy and variable cover of species such as Peach Heath *Lissanthe strigose*, grasses such as Kangaroo Grass *Themeda australis*, Speargrass *Aristida* species and Common Couch *Elymus*. Sedges such as *Juncus usitatis* and scramblers such as *Glycine* species.
- The exotic groundcover was also patchy and variable. Extensive areas dominated by noxious weeds such as African Olive *Olea europaea* subsp. *Europaea*, Blackberry *Solanum nigrum*, Inkweed *Phytolacca octandra*. African Love Grass *Eragrostis curvula*, *Bidens* species. Rhodes grass, *Solanum sysimbrifolium* and Lamb's Tongues X throughout.

## A.5 Fauna Habitats

The EIA identified a range of fauna habitat features were present throughout the RCIZ. Habitat within the RCIZ provides potential foraging, breeding and nesting resources for a range of fauna. The habitat features relevant to each fauna group are identified in Table A1 below.

**Table A1 Key fauna habitat features that may occur in the CIZ**

Habitat feature	Fauna species
<b>Vegetated areas of tall open forest</b>	Arboreal mammals, microchiropteran bats and owls.
<b>Hollow bearing trees</b>	Arboreal mammals, microchiropteran bats and birds.
<b>Watercourse</b>	Habitat for amphibians and fish; foraging for birds, microbats, reptiles and marsupials.
<b>Leaf litter/woody debris</b>	Foraging resources for birds, mammals, frogs and reptiles.
<b>Pasture</b>	Birds, microchiropteran bats and reptiles

## A.6 Threatened Species Habitats

A key aim of the pre-clearance surveys is to identify and map the presence/absence of threatened biota. Additionally, the ecologist will undertake pre-clearing surveys to:

- Identify all locations of trees, habitat features (hollow bearing trees, logs and existing nest boxes) and any other plants which have been marked or otherwise identified for preservation.
- Inspect farm dams and surrounding habitat prior to dewatering for presence of aquatic fauna –including frogs, turtles and eels.

- Identify the presence or evidence of the presence (including fresh scats, scratches and remains of prey) of fauna, including threatened species.
- Identify the presence of raptor nests, particularly White-bellied Sea-Eagle *Haliaeetus leucogaster* and Little Eagle *Hieraaetus morphnoides*.
- Identify Threatened Ecological Communities (TECs), delineating areas within and outside of the RCIZ.
- Mark all hollow bearing trees, potential hollow bearing trees, logs, nest boxes, and all other fauna-containing habitat trees, including trees with nests, dreys and termitaria likely to be occupied by fauna, at least seven days prior to the commencement of clearing in a manner which clearly identifies and demarcates the trees.

Following the completion of the pre-clearing surveys, the Ecologist will submit a letter report to the SM - WSA Environment Manager within five working days detailing the management requirements and outcomes of the survey. The report will include:

- Maps identifying locations of threatened species.
- Description of the presence of threatened flora species.
- Description of the presence or evidence of fauna (including fresh scats, scratches and remains of prey), including threatened species.
- Recommended actions to avoid the potential for harm to any fauna during clearing, including protocols for staged clearing of vegetation, safe tree felling, and a two-stage tree and log removal process.
- Measures to avoid disturbance to surrounding vegetation during clearance works.
- Implementation of the Threatened Flora Translocation Plan (as applicable).

## A7 Priority and Environmental Weeds

Table A2 below, outlines the weeds listed under the *Noxious Weed Act 1993* (NSW) (NW Act) at the time of completing the EIS assessment by GHD (2016) and an updated Biosecurity Duty under the *Biosecurity Act 2015* (NSW). All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable. Weeds of National Significance (WoNS) were also recorded within the subject site and are presented in Table A2.

Table A2 Priority weeds and WoNS records within the CIZ

Scientific name	Common name	BAM	Priority weed listing	WoNS
<i>Araujia sericifera</i>	Moth Vine	HT	General Biosecurity Duty	No
<i>Eragrostis curvula</i>	African Love Grass	HT	General Biosecurity Duty	No
<i>Cestrum parqui</i>	Green Cestrum	HT	General Biosecurity Duty Regional Recommended Measure	No
<i>Lantana camara</i> *	Lantana	HT	General Biosecurity Duty Prohibition on dealings	Yes

Scientific name	Common name	BAM	Priority weed listing	WoNS
<i>Ligustrum sinense</i>	Small leaved Privet	HT	General Biosecurity Duty	No
<i>Ligustrum lucidum</i>	Broadleaved Privet	HT	General Biosecurity Duty	No
<i>Lycium ferocissimum</i>	African Box Thorn	HT	General Biosecurity Duty Prohibition on dealings	Yes
<i>Olea europaea</i>	African Olive	HT	General Biosecurity Duty Regional Recommended Measure	No
<i>Opuntia sp.</i>	Prickly Pear	HT	General Biosecurity Duty Prohibition on dealings	Yes
<i>Ricinus communis</i>	Castor Oil Plant	HT	General Biosecurity Duty	No
<i>Rubus fruticosus complex</i>	Blackberry	HT	General Biosecurity Duty Prohibition on dealings	Yes
<i>Senecio madagascariensis</i>	Fireweed	HT	General Biosecurity Duty Prohibition on dealings	Yes

## A4. Vegetation Management

This VMP provides a framework for the successive restoration activities that will be undertaken at the Airport. WSA has demonstrated a long-term commitment to biodiversity through the establishment of the Environmental Conservation Zone (ECZ) and along with SM - WSA will progressively undertake activities to enhance and protect the environmental values of this area. The ECZ will be the priority area for restoration activities, with works in this area established by applying the principles of 'retain, regenerate and revegetate'. Inherent in this approach is the need to work from areas of more resilient bushland to areas of more degraded bushland within the ECZ (Buchanan 1989; DEC 2005).

### A4.1 Site inductions

Supervisors are required to identify all potential environmental impacts and implement and maintain control measures, procedures and constraints in accordance with the Biodiversity CEMP. Site specifics include the presence of threatened species habitat and locally significant vegetation communities. The general Project induction include hygiene protocols to reduce the potential for introduction of invasive flora and fauna species or disease into the protected vegetation at the site.

### A4.2 Exclusion fencing

Exclusion fencing along the ECZ to protect the area from unauthorised entry will be progressively installed. Areas completed include where the ECZ is located adjacent to the active construction zones for early earthworks (e.g. permanent basin). Signage has been installed to notify construction teams that the area is a no-go area and a permit to enter is required. The area is documented on the ECM and tool boxed during pre-start meetings.

The remaining fencing of the ECZ that is adjacent to the WSI Stage 2 area (which includes the SM - WSA on-airport support sites) will be completed. Prior to the commencement of AEW, any remaining exclusion fencing is to be installed along the boundaries of vegetated areas (e.g.

Stage 2) to be retained. The alignment of this fencing is to be in accordance with the Australian Standard *Protection of Trees on Development Sites (AS4970-2009)* and incorporate the relevant tree protection zones for trees and vegetation to be retained.

The fencing should be constructed of, as a minimum, capped star pickets and high visibility para webbing and have appropriate signage stating that it is an environmentally sensitive area to inform and educate construction personnel. Exclusion zones are to be clearly marked and labelled on design drawings issued for construction and will be displayed in prominent places and provided in site inductions.

No storage of materials or machinery is to be undertaken within exclusion zones or retained vegetation, no preparation of chemicals or concrete to be mixed in these areas, or adjacent, and care to avoid the compaction of soils to be observed.

### **A4.3 Erosion and sediment controls**

Earthworks will not commence until sediment and erosion controls have been installed as per an Erosion and Sediment Control Plan. Erosion and sediment control will be observed and monitored in accordance with the Soil and Water CEMP.

## **A5 Rehabilitation Works**

### **A5.1 Weed management**

This proposed work has the potential to introduce and promote weeds and pathogens at the Airport as well as in the surrounding area. Environmental weeds are exotic species considered either a high risk of dispersing and becoming established in adjacent native vegetation or have the potential to cause significant ecological harm. Recommended methods for control of environmental weeds recorded on site, along with priority species, are outlined in the Appendix C Weed and Disease Management Protocol.

### **A5.2 Pest control**

Predation by native macropods, introduced herbivores (rabbits and hares), insect pests and infection caused by plant diseases/pathogens can have an adverse effect on the establishment of plantings by defoliating, damaging, removing or killing young plants. To minimise the loss of plants through predation and/or disease, all new plantings will be protected by:

- Use of black plastic rigid mesh tree guards, which would be reused on new plantings once the initial planted specimens mature.
- Temporary exclusion fencing of larger areas or where initial trials indicate that the efficacy of using individual tree guards is low.

### **A5.3 Adaptive Management**

An adaptive management approach is to be employed in respect of the works forming part of this VMP. An adaptive management approach involves an integrated process of monitoring, reviewing and then responding to the health and condition of the plantings as well as the status of the weed species to identify any alterations to the design and maintenance of works that may be required to ensure the objectives of the VMP are achieved.

It is important to note that any changes should comply with the aims of this VMP and any licensing or approval conditions issued before implementation. An Adaptive Management Statement (or similar) will be prepared by the ecologist and approved by the SM - WSA Environment Manager prior to implementation of any adaptive management actions.

#### **A5.4 Final reinstatement**

The Sydney Metro WSA RCIZ will be reinstated to a safe and stabilised landform for handover for future land use. The objective of the rehabilitation works is to ensure the lands do not pose an environmental risk at the completion and demobilisation of the Sydney Metro contractors. This includes risks associated with:

- Erosion, sedimentation and surface water quality;
- Weeds and pest;
- Contamination;
- Dust and air quality.

Any revegetation or for tree planting programs proposed will use native vegetation of local provenance.



---

## Appendix B Biodiversity Management Protocols

## B1. Habitat Management Plan

### B1.1. Scope and Objectives

The Habitat Management Plan aims to address the requirements of the Habitat Clearing and Fauna Management Protocols and Nest box Strategy through addressing the following:

- Strategies to achieve connectivity throughout the landscape and minimise the effects of habitat fragmentation and associated edge effects
- Pre-clearance surveys to be conducted by a suitably qualified ecologist to map hollow-bearing trees, logs and existing nest boxes that would require supervision during removal
- Necessary rehabilitation activities to mitigate the risk of reduced reproductive success of biota
- Designated offset sites, with additional or alternative offset sites outlined for compensatory measures e.g. nest box installation
- Schedules for inspection, monitoring, management and corrective actions.
- A Nest box Management Strategy, including:
  - Maps and data to show hollow-bearing trees proposed to be removed and the number of hollows associated with each tree
  - Provisions for the installation of nest boxes within the Environmental Conservation Zones prior to clearing areas of native vegetation on the airport site
  - Reuse of hollows and fallen debris within conservation areas
  - The number of nest boxes to be installed, commensurate with the number of hollows proposed to be removed
  - Provisions for salvage of native fauna from existing nest boxes in the construction impact zone prior to their removal and translocation
  - A guide on the installation of nest boxes and the appropriate design specifications
  - A monitoring program for the monitoring of the nest boxes.

### B1.2. Habitat management

The impacts of the construction of the Project have been specified in the project EIA. It has been acknowledged that construction, lighting, aircraft movement and traffic within the 4 kilometres by 2-kilometre Airport site would represent a significant barrier to fauna species. The operation of an international airport is not conducive to improvement of fauna habitat connectivity and, as such, is not considered further in the preparation of this habitat management plan.

### B1.3 Preclearance surveys

A key aim of the pre-clearance surveys is to identify and map the presence/absence of threatened biota. Additionally, a suitably qualified ecologist will undertake pre-clearing surveys to:

- Identify all locations of trees, habitat features (hollow bearing trees, logs and existing nest boxes) and any other plants which have been marked or otherwise identified for preservation
- Inspect farm dams and surrounding habitat prior to dewatering for presence of aquatic fauna – including frogs, turtles and eels
- Identify the presence or evidence of the presence (including fresh scats, scratches and remains of prey) of fauna, including threatened species
- Identify the presence of raptor nests, particularly White-bellied Sea-Eagle *Haliaeetus leucogaster* and Little Eagle *Hieraaetus morphnoides*
- Identify Threatened Ecological Communities (TECs), delineating areas within and outside of the RCIZ
- Mark all hollow bearing trees, potential hollow bearing trees, logs, nest boxes, and all other fauna-containing habitat trees, including trees with nests, dreys and termitaria likely to be occupied by fauna, at least seven days prior to the commencement of clearing in a manner which clearly identifies and demarcates the trees.

Following the completion of the pre-clearing surveys, a report or brief letter will be submitted to SM - WSA within five working days detailing works undertaken. The report will be a hold point requiring sign-off from the Contractor's Environmental Manager (or delegate) and a qualified ecologist prior to clearing commencing and will include:

- Description of the presence of threatened flora species
- Description of the presence or evidence of fauna (including fresh scats, scratches and remains of prey), including threatened species
- Recommended actions to avoid the potential for harm to any fauna during clearing, including protocols for staged clearing of vegetation, safe tree felling, and a two-stage tree and log removal process
- Measures to avoid disturbance to surrounding vegetation during clearance works
- Measures to avoid the spread of weeds and pathogens in accordance with the weed and disease management plans
- Locations of habitat features marked during pre-clearance surveys and the proposed locations for the reuse of hollows and fallen debris within conservation areas.



## B2. Nest Box strategy

### B2.1 Background

It is widely recognised that tree hollows are an important habitat source for a range of fauna. In NSW, terrestrial vertebrate species that are known to be reliant on tree hollows for shelter and/or nesting include at least 46 mammals, 81 birds, 31 reptiles and 16 frogs (Gibbons & Lindenmayer 1997, Gibbons & Lindenmayer 2002). However, tree hollows are often depleted in modified landscapes, particularly in eastern Australia, the rate of tree hollow loss is accelerating as a result of increasing urban development (Goldingay 2011).

Many hollow-dependant faunas will readily take to artificial hollows, most commonly as nest boxes attached to trees (Beyer & Goldingay 2006). The use of these hollows by fauna may depend on a number of factors, including hollow characteristics (diameter, height, depth), landscape position, tree health, location and the thermoregulatory capabilities of the hollows themselves (Gibbons & Lindenmayer 2002).

The Airport Site mainly consists of exotic grassland, with areas of Grey Box – Forest Red Gum grassy woodland, Forest Red Gum – Rough-barked Apple grassy woodland, Broad-leaved Ironbark – Grey Box – Melaleuca decora grassy open forest, artificial freshwater wetlands and cleared land. Within these vegetation zones there is suitable habitat (hollow-bearing trees) for a range of hollow-dependent fauna. In addition to natural tree hollows, several nest boxes have already been installed within the airport site. A portion of these nest boxes now fall within the boundaries of the current airport footprint and will be offset as part of this Nest box Strategy.

### B2.2 Existing environment

#### Landscape

The majority of the CIZ contains grassland with fenced grazing land (GHD 2016). These areas would have previously supported native woodland vegetation but have been extensively modified by previous clearing and agriculture. However, there is a relatively extensive network of drainage lines and waterbodies across the airport site, and large, hollow-bearing trees occur in high densities along these riparian corridors. These hollow-bearing trees may be removed as part of the project and will require offsetting with artificial nest boxes.

Apart from riparian corridors the airport site contains only moderate quantities of pre-European occupation trees and associated habitat resources such as tree hollows and stags. The hollow-bearing trees recorded contain hollows with a range of sizes, orientations and landscape positions, in both living and dead trees (GHD 2016).

#### Hollow-bearing tree inventory

Initial hollow-bearing tree (HBT) surveys were conducted as part of a larger fauna habitat assessment by GHD over 18 days between February to May 2015. The results of these surveys were incorporated into the EIS (GHD 2016). The methodology (below) used for recording HBTs will also be used by a suitably qualified ecologist to undertake additional HBT surveys encompassing the CIZ.

Tree hollows were only recorded if:

- The entrance could be seen from the ground
- The hollow appeared to have depth

- The hollow was at least 1 metre above the ground (basal hollows were only recorded if they continued up into the tree above 1 metre).

The location of each hollow-bearing tree was recorded with a hand-held GPS unit.

For each individual HBT, the following data was collected:

- Whether the tree was dead or alive
- The species of tree (if alive)
- Height of the tree
- Diameter at breast height (DBH) of the tree
- Approximate number of hollows
- Estimated size of hollows based upon diameter entrance.

GHD recorded approximately 50 hollow-bearing trees during the habitat assessment conducted in 2015 (GHD2016). A suitably qualified ecologist will conduct a further comprehensive hollow-bearing tree survey across the CIZ. A catalogue of the hollow-bearing trees located within the CIZ during this survey will be provided in a pre-clearance report. Each tree will be identified to species.

GHD reported that hollow-bearing trees recorded during the habitat assessment contained hollows of a range of sizes, orientations and landscape positions. A suitably qualified ecologist will record the number of hollows present in each hollow-bearing tree, as well their size and location. This information will be provided in a pre-clearance report.

### **B2.3 Nest box placement strategy**

The installation of nest-boxes in suitable habitat within the ECZ has been completed by WSA Co in response to clearing in as a compensatory mechanism for the loss of habitat trees removed from the Stage 1 CIZ.

Identification of suitable locations for additional nest boxes from the RCIZ will be determined in consultation with WSA Co with consideration to the nest box strategy included in the Western Sydney Airport Habitat Management subplan and the possible indirect impacts of installing unsuitably high densities of nestboxes within the ECZ, including the potential to increase bird strikes with the airport.

The number, type and location of nest boxes required will be determined as a result of the completion of the HBT survey by a suitably qualified ecologist, and will be based on the number, quality and size of the hollows to be removed, taking into consideration the hollow-dependent fauna species identified as inhabiting the area, or likely to inhabit it.

#### **Hollow-dependent fauna**

The hollows may provide nesting/roosting habitat for a range of fauna species. For example, large hollows may provide nesting resources for owls and cockatoos, whilst smaller hollows may provide habitat for gliders or microbats.

A suitably qualified ecologist will use the HBT catalogue to determine the hollow-dependent fauna that might be using the current hollows. This may include both threatened and common species. The Nestbox Strategy will target both common and threatened species, as providing

some boxes for common species in addition to threatened species ensures that nesting/roosting habitat for the range of species which may be displaced by the works will be provided. Additionally, targeting common as well as threatened species is considered to be beneficial due to the complex relationships between common and threatened species. For example, increasing nesting habitat for common arboreal mammals, such as Common Ringtail Possums (*Pseudocheirus peregrinus*) and Common Brushtail Possums (*Trichosurus vulpecula*), has the flow-on effect of improving the foraging value of the area for Powerful Owl (*Ninox strenua*), a threatened species.

Nevertheless, as common species tend to be less particular about nest box dimensions and locations, the hollow strategy will be targeted more towards threatened species, with the expectation that a proportion of the boxes designed for threatened species will be occupied by common species. This approach is designed to facilitate an improved overall conservation outcome.

## **B2.4 Number and type of nest boxes required**

### **Catalogue of hollow resources and existing nest boxes**

A catalogue of hollow-bearing trees and their hollow resources will be provided, as well as a description of the general locations, and conditions of these resources.

Information in the EIS (Appendix K) and information collected from field surveys will be reviewed by the Project ecologist to determine the number of nest boxes required as a result of the clearing activities. Where feasible, a 1:1 ratio of nest boxes for each hollow removed may be installed within the ECZ or as recommended by the Project Ecologist, this is based on the Biodiversity Guidelines - Guide 8 Nest Boxes (RTA 2011).

Consideration will be given to the possible indirect impacts of installing unsuitably high densities of nestboxes within the ECZ, including the potential to increase bird strikes with the airport.

Following vegetation clearing, the final number of nest boxes required (as determined by the actual number of tree hollows being removed) will be refined up or down. The final number of nest boxes and the proposed locations for the reuse of hollows and fallen debris will be recommended to WSA Environment Manager prior to installation in the ECZ. A report will be prepared once all vegetation clearing has been completed.

### **Existing nest boxes**

A suitably qualified ecologist will record the number, location and characteristics of nest boxes already present within the Airport Site. It is recommended that all nest boxes that will be impacted by construction should be relocated to suitable areas within the ECZ. It should be noted that some of these boxes may lie on the boundary of the CIZ and may not be impacted by construction. An assessment should be made during pre-clearing surveys prior to construction to determine which nest boxes require re-location.

### **Types of nest boxes required**

The number of each type of nest box required will be calculated on a proportional basis (i.e. reflecting the proportion of hollows likely to be used by each species known to occur in the area), with the final ratio determined based upon knowledge of hollow use in the locality. This stage of the assessment will also involve an appraisal once the clearing works have been completed and a final tally of the actual numbers of hollow-bearing trees and tree hollows to be removed based on the detailed design.

Following pre-clearing inspections, the final number of nest boxes required will be reported. The ratio of nest box types installed will reflect the types of hollows present as well as the home ranges of species being targeted. The distribution of nest boxes for each fauna group will be determined by the Project Ecologist based on the presence/absence of suitable habitats and the likelihood of occupancy by target species in any given area.

### Nest box specifications

This section of the nest box strategy will provide recommendations and guidance on the provision of nest boxes as a compensatory mechanism for the loss of habitat trees within the airport site, inclusive of den, roosting and nesting resources. It will also specify nest box dimensions, installation requirements, locations of nest boxes and ongoing monitoring and maintenance.

The number and type of nest boxes required will be determined as a result of the completion of pre-clearance surveys, and will be based on the number, quality and size of the hollows to be removed, taking into consideration the threatened hollow-dependent fauna species potentially inhabiting the Airport Site (detailed above).

Nest boxes will then be installed to compensate for the loss of hollow-bearing trees within the Airport Site. Installation and maintenance will be undertaken in accordance with the Guide 8: Nest Boxes of the Biodiversity Guidelines (RTA 2011). This plan will consider placement of nest boxes in adjacent habitats and Conservation areas, focusing effort on areas of naturally low abundance of hollows.

### Nest box construction and design

The design of nest boxes will be recommended according to each target species. A table will be provided showing a summary of specifications for nest boxes targeting specific species of threatened fauna groups that are known to, or considered likely to, occur in the airport site.

While recognising the different nest box dimensions, the constructed nest boxes should also include number of additional species-specific design considerations into account. For example, the thermoregulatory capabilities of the nest boxes should be considered, particularly for bats as this is considered to significantly influence roost use (Gibbons & Lindenmayer, 2002).

Furthermore, the design of the positioning and fastening mechanism should be sturdy and stable, preferably with a slight forward lean to assist with drainage whilst allowing for growth in the host tree. The preferred option for bracketing is the Habisure system (Franks & Franks 2006). This has the advantage of allowing at least one metre growth in the diameter of the host tree before adjustment is required, is non-invasive to the tree and provides the required security. However, other suitable bracketing options will also be explored and may be used for nest box installation.

### Reducing competitive interactions

Several pest species, both native and exotic, may be relevant to this plan and are known to utilise both natural hollows and nest boxes. These have been outlined in Table A3 along with measures to reduce nest occupation by these species. During monitoring of nest boxes, the ecologist will select the most appropriate measure/s for removal or deterrence of pest fauna. This may require the use of professional pest control personnel e.g. for bee hive removal, and/or the installation of a replacement box.

**Table A3: Possible measures to reduce invasion by introduced/ pest species**

Potential invading species	Measures to prevent or discourage use*
Ants	<ul style="list-style-type: none"> <li>Talcum powder applied to the entrance and edges of the nest box to deter ants.</li> <li>Talcum powder sprinkled inside of the box incites ants to leave, and lanolin grease around the edges of the box prevents them from returning.</li> </ul>



Potential invading species	Measures to prevent or discourage use*
	<ul style="list-style-type: none"> <li>• Ring of grease around trunk of smooth-skinned eucalypt encourages colony to leave the box.</li> <li>• Open bottom prevents ant infestations in bat boxes.</li> </ul>
Wasps	<ul style="list-style-type: none"> <li>• 2 cm roost spacing discourages wasp infestations in bat boxes.</li> </ul>
European Honeybee	<ul style="list-style-type: none"> <li>• Insecticide strip placed inside box kills bee colonies; however, this practice is hazardous.</li> <li>• Lining the ceiling of nest box with carpet prior to installation may thwart attachment of wax comb to ceiling.</li> <li>• A small box volume reduces incidents of hive building.</li> <li>• Greasing the underside of the lid and top of the walls with marine grease or lanolin prevents bees from attaching honeycomb.</li> <li>• 2 cm roost spacing discourages bee infestations in bat boxes.</li> </ul>
Common Myna	<ul style="list-style-type: none"> <li>• A board of ply attached to overhanging box lid and positioned approximately 10cm parallel to the front face (i.e. side including entrance hole) of the box successfully excludes the common myna, but not native species. Rosella boxes can be purchased with an anti-myna baffle attached.</li> <li>• Nest removal deters nesting but may need to be repeated several times.</li> </ul>
Common Starling	<ul style="list-style-type: none"> <li>• Starlings actively avoid nest boxes with painted white interiors.</li> </ul>

\*Adopted from Gleeson & Gleeson 2012

## B2.5 Installation of nest boxes

Nominated nest boxes should be installed prior to the proposed clearing works (preferably within two weeks of clearance of vegetation) with the objective of providing temporal refuge habitat for those hollow dependent fauna displaced during clearing operations. The remaining nest boxes should be installed following clearing. Occupancy rates of tree hollows during the clearing supervision may also facilitate the final number and types of nest boxes being installed. The Project Ecologist will be responsible for determining whether adjustment to nest box numbers or types is required, based upon the hollows recorded during pre-clearing assessment.

## A2.6 Location of nest boxes

The selected location and positioning of nest boxes is a fundamental component of this plan, given that it will ultimately determine the effectiveness of nest boxes as a mitigation tool.

As a rule, nest boxes should be installed on large mature trees (DBH > 400 mm) close to or on the main trunk. Within each of the nest box installation areas, the behavioural ecology of the target species should be considered, together with aspect, height, installation techniques and the spatial arrangement or density of nest boxes, to determine the fine-scale installation locations and specifications.

The following should be considered by the Project Ecologist when considering the fine scale locations of nest boxes.

- Studies have suggested that there is a spatial trend in the occupancy pattern of nest box use where nest boxes used for arboreal marsupials (specifically gliders) placed in a clump of four had greater occupancy rates over time (Lindenmayer et al. 2003). For this reason, it is recommended that nest boxes for glider species be installed in clumps of four boxes in some locations.



- The fine-scale position of the nest box on the host tree has also been considered, specifically in the context of predominant weather patterns and light and noise disturbances arising from the Project. It is proposed that nest boxes be installed with their entrances facing away from the lights of the traffic and from a north-west to south-easterly position on the tree trunk to provide additional shelter from the rain and wind (i.e. dominant rain is from the south-east). Where this is not possible, an alternative for some fauna groups (e.g. gliders) is to have the entrance facing the tree. This requires a gap of around 100 mm to be maintained between the nest box entrance and the tree.
- It is recommended that nest boxes be placed high off the ground (i.e. at least 2 m) to protect the occupants from predation and low enough to allow for safe monitoring and maintenance. Nest boxes should be installed by a specialist nest box contractor with appropriate tree climbing certification (i.e. Arborist Tree Climbing Certificate and Work Safely at Heights certification). Monitoring and maintenance would preferably be undertaken from the ground by ecologists using pole-mounted cameras.

## B2.7 Nest Box Monitoring and Maintenance

Monitoring and maintenance has been included to evaluate the effectiveness of the nest boxes. As such, it will be important to assign each nest box a number and ensure its location is recorded using a GPS. This section details the timing, frequency and methods for monitoring. Nest box maintenance is discussed further below.

### Timing and frequency

Bi-annual spring and autumn monitoring is recommended to be carried out from installation during Railway Development. A brief monitoring report will be produced after the completion of each monitoring survey. This report will outline the results of the monitoring and recommendations for maintenance or replacement. It is assumed that nest boxes will be effectively utilized within the allocated monitoring period; however, a review should be undertaken to determine whether further monitoring is required.

The timing of monitoring and maintenance activities is outlined in Table A4. Further detail is provided below.

Table A4: Timing of nest box management actions

Management Action	Year1	Year2	Year3	Each year until 4 years post construction	Responsibility	Documentation Requirements
Prepare Nest Box Plan	X				Principal Ecologist	This document
Construction of Nest Boxes	X				Contractor	N/A
Install Nest Boxes	X				Contractor	This document
Post-installation Inspection	X				Ecologist	Nest box post-installation report
Spring and Autumn Monitoring		X	X	X	Ecologist	Annual reporting provided to Contractor and WSA.



Maintenance of Nest Boxes		X	X	X	Contractor	N/A
---------------------------	--	---	---	---	------------	-----

**Nest box monitoring**

The number and type of nest boxes required for the Project will be provided following HBT surveys conducted by an ecologist. Once installed, twice-yearly monitoring will be required to determine the usage of nest boxes by the target species and inform any maintenance requirements.

During each monitoring event, a visual inspection of each nest box will be conducted from the ground (using cameras mounted on extension poles) to collect the following data using a field proforma:

- Inspection dates, weather conditions (i.e. rain, wind, cloud cover, ambient temperature) and time each box was inspected
- Nest box number
- Is the nest box currently occupied by native fauna? If yes, which species?

If no, are there signs of use and can the species be identified or assigned to a group (i.e. bats, birds)?

- Has the nest box been used by a pest species (i.e. European Bees, Common Myna, Termites)?
- Is there any deterioration of the nest box?
- Is there any maintenance required?
- Has the surrounding landscape changed (e.g. clearing or partial clearing)?

Visual inspection would enable the observer to perform a close inspection for signs of feathers, droppings/scats, hair, nesting material or individuals themselves. At this time some maintenance considerations/actions could be undertaken. For example, aspect of nest boxes could be changed to address more regulatory considerations.

**Nest box maintenance**

It is recommended that nest box maintenance should occur following the monitoring schedule provided in Table A5. This allows for the monitoring activities to inform the level of maintenance that is required. Factors to be considered as part of the maintenance schedule include the following.

- The need to remove exotic pest species such as Common Mynas, Common Starlings and European Bees
- Replacement of fallen, damaged or degraded nest boxes. The location of damaged boxes would need to be reported
- Repositioning, re-installation or relocation of nest boxes
- Checking that each box is not holding water or leaking
- Removing excess nesting material, which may impede access over time.





### Performance indicators and corrective actions

Determination of appropriate performance indicators will be refined following completion of clearing operations. The results of observations made of felled trees during clearing will enable final calculation of the actual number of hollows present (as opposed to the number estimated from ground-based assessments) and the number of hollows showing signs of fauna utilisation. The performance of the nest box program will be assessed against the following parameters.

- Use of nest boxes by a wide range of native fauna
- Use of nest boxes by the species they were designed for
- Low rates of exotic fauna using nest boxes
- Low maintenance requirements.

Performance Indicators and appropriate corrective actions are outlined below in Table A5.

**Table A5: Nest box performance monitoring and corrective action**

Performance indicator	Corrective actions	Responsibility
Nest boxes are being used by a wide range of native fauna, including target species.	Review the location, type and number of nest boxes used. Install additional boxes or relocate boxes if deemed necessary.	The lead contractor is responsible for engaging suitably qualified ecologists to undertake the monitoring and suitably qualified contractors to undertake the maintenance
A low rate (<20%) of occupation by exotic or invasive fauna.	Review/ change nest box design and/or placement on tree to exclude undesirable species, treat if applicable or relocate those nest boxes to another location.	
A total of <5% of nest boxes requiring maintenance over a 4-year span	Identify causes of nest box failure, modify design and construct accordingly.	

## B3. Aquatic Flora and Fauna Management Plan

### B3.1 Scope and Objectives

The Aquatic Flora and Fauna Management Plan aims to address the following:

- Protocol for dam decommissioning/dewatering
- Dewatering of dams (at the right time of year, i.e. avoid nesting season of waterbirds) to allow the relocation of fauna species
- Salvaging and relocation of aquatic vertebrate fauna, including frogs, turtles and eels, to areas of suitable habitat retained at the airport site or nearby habitats, about numbers and identification of suitable release sites
- Establishing protocols for humane euthanasia of aquatic fauna, including fish
- Identification of potential risks and mitigation measures for watercourse functionality, riparian and aquatic habitat and fish passage as a result of the design and construction of waterway crossings
- Describe weed management activities (also see Weed and Disease Management Plan)
- Provide schedules for inspection, monitoring, management and corrective actions.

This plan has been prepared in accordance with the WSA Aquatic Flora and Fauna Management Plan as presented in the WSA Biodiversity CEMP and amended for application to the RCIZ outside of the Stage 1 CIZ.

Construction in RCIZ Development would comprise of the infilling of smaller drainage lines that feed into Badgerys Creek which is currently situated within the RCIZ.

The existing tributaries are highly modified (high levels of eutrophication as a result of runoff from nearby urbanisation and domination by environmental and priority weeds) and in poor condition as a result of historical and current land uses. The current aquatic fauna assemblage within these creeks is indicative of their poor quality.

Badgerys Creek will be retained within an ECZ as outlined in the Airport Plan.

### B3.2 Protocol for dam decommissioning and dewatering

The protocols for undertaking dam dewatering and salvage of aquatic fauna have been developed with the aim of minimising harm to resident aquatic fauna, ensuring maintenance of ambient water quality and prevention of the spread of aquatic weeds.

The staging for dam decommissioning and aquatic fauna salvage will adhere to the following steps:

- Suitable recipient sites for salvaged aquatic fauna are to be determined within the locality of the Airport prior to commencement of decommissioning.
- The water quality of the recipient site is to be assessed prior to release to ensure adequacy of conditions for individuals to be released

- Implementation of the Green and Golden Bell Frog management plan requirements, as outlined in Section B12.2. This includes the implementation of appropriate hygiene practices by personnel involved decommissioning/dewatering.
- Site inspection/pre-clearance survey of each dam, one week prior to commencement of decommissioning, to record water quality measurements, identify priority aquatic weeds, presence of waterbirds (including status of breeding/nesting), determine salvage equipment requirements and site safety considerations
- Where feasible, dam decommissioning should avoid nesting season.
- Discuss and implement any weed control measures, with particular focus on the prevention of the spread of Alligator Weed *Alternanthera philoxeroides* propagative material if detected
- Site supervisor is to coordinate the setup of pumps and commence dewatering of the dams until the maximum depth of the dam is no greater than 1.2 metres. The dewatering should occur progressively over several days to allow fauna to relocate. The project ecologist is to be notified that dewatering has commenced and DPI Fisheries is to be notified in accordance with a current DPI Fisheries Research Permit
- The project ecologist is to undertake activities to salvage aquatic fauna using a range of equipment to be determined by the prevailing site conditions including seine nets, fyke nets, dip nets, electrofishing and hand collection
- Pumping operations are to continue until the project ecologist is satisfied that fauna salvage operations are no longer required or ineffective
- The dam wall is to be broken to drain the remaining water, with any remaining aquatic fauna to be collected in fyke nets staked at the break in the dam wall
- Aquatic fauna salvaged during dewatering is then to be relocated to the identified recipient site(s)
- Removal of silt and capping of dam bed can then commence.

### B.3.3 Salvaging and relocation of aquatic fauna

The collection, handling and storing of aquatic fauna will be undertaken by experienced aquatic ecologists and operate under an approved DPI Fisheries scientific collection permit.

All aquatic vertebrate fauna collected will be identified to species level and any notes taken on their general condition including lesions, presence of *Lernaea*, ulcerations and fin deformities. Any species identified as Noxious under the *Fisheries Management Act 1994* (FM Act) and any moribund native species are to be euthanised, in accordance with animal ethics approvals. Animal ethics approvals (Animal Research Authority) is to have been issued by, and in accordance with, the Animal Care and Ethics Committee of the Secretary NSW Department of Primary Industry.

All aquatic fauna is to be held in appropriately sized containers, tubs and buckets, fitted with aerators and shading to prevent overheating or asphyxiation of animals.

### B3.4 Euthanasia of aquatic fauna

Euthanasia of fish and larvae in the field is achieved by overdose of AQUI-S (175 mg/L – 20 mins). Euthanasia of crustaceans in the field is achieved by overdose of AQUI-S (250 mg/L – 20 mins). Where euthanasia using overdose of AQUI-S is infeasible, such as for larger species (e.g. Carp), then euthanasia

will be achieved via blunt trauma with a fish bat. Blunt force trauma involves delivery of enough force to the brain case of the fish to cause mortality with minimal distress of the animal.

Rationale for euthanasia follows an assessment by suitably qualified aquatic ecologists on a case by case basis and includes a determination of the survival of the individual based on physical condition, level of parasitism, injury or damage to critical functions (e.g. compromised iso-osmotic barrier, gill trauma, blood loss). These assessments are continually conducted during processing identifying potentially affected individuals. These individuals are then placed in separate containers with adequate aeration to assist recovery. Affected individuals are constantly monitored and if recovery is not observed then the individual is immediately euthanised by the most appropriate method for the species.

Certain species are to be euthanised under permit restrictions (i.e. listed noxious species). Listed noxious species in New South Wales include Common Carp, Eastern Gambusia and Oriental Weatherloach. These individuals are separated from species to be returned to the water and are euthanised as soon as practicable to minimise distress associated with restraint and handling. Post-processing of euthanised fish may include length and weight measurements, gut analysis and taking of genetic samples and otoliths.

## B4. Threatened Species Management Protocol

### B4.1 Scope and Objectives

The threatened species management protocol details the requirements for Microbat; Cumberland Plain Land Snail (CPLS); Green and Golden Bell Frog (GGBF) and Threatened Birds.

Targeted surveys will be undertaken by a suitably qualified ecologist as part of the preclearance surveys to determine the presence of threatened microbats, CPLS and GGBF within the Airport Site. If present or likely to be present, the following will be addressed in the respective Management Plans:

- Map of identified areas of occurrence
- Unexpected Finds Protocol
- Legislative requirements
- Protocols for potential relocation, habitat management and ecological supervision
- Schedules for inspection, monitoring, management and corrective actions.

### B4.2 Microbat management

#### Background

The on-airport microbat management within the RCIZ will be managed in accordance with the Western Sydney Airport Microbat Management Plan included in the WSA Biodiversity CEMP and in consultation with Western Sydney Airport.

Microbat species were recorded during surveys for the Western Sydney Airport EIS. The threatened microbat species (Vulnerable, BC Act) include Eastern Freetail-bat *Mormopterus norfolkensis*, Eastern False Pipistrelle *Falsistrellus tasmaniensis*, Eastern Bentwing-bat *Miniopterus schreibersii oceanensis*, Large-footed Myotis *Myotis macropus*, Greater Broad-nosed Bat *Scoteanax rueppellii*, Eastern Cave Bat *Vespadelus troughtoni* and Yellow-bellied Sheath-tail Bat *Saccolaimus flaviventris*.

Common species were also recorded such as Chocolate Wattled-bat *Chalinolobus morio* and Eastern Little Freetail-bat *Mormopterus ridei*. Given the ecology of these species, they are likely to utilise the Badgerys Creek Corridor and the large adjacent woodland patches for foraging and breeding. Consideration for their ecology and home ranges should be shown in the Sensitive Area Mapping provided in the Threatened Species Management Plan for the project.

Potential impacts on microbat species likely to result from the Project include:

- Direct impacts on individuals/populations/species habitat resulting from vegetation clearing and construction works on known habitat for microbats within the Project.
- Indirect impacts on riparian foraging species (i.e. Large-footed Myotis) if run-off is a by-product of the works resulting in reduced water quality, affecting food resources.
- Indirect impacts resultant of construction, remediation and clearing works such as light, noise and vibration causing roost disturbance, leading to potential roost exodus.

## Targeted surveys

A suitably qualified ecologist will undertake targeted surveys for microbats and potential microbat habitat (e.g. culverts or other structures etc.) within the RCIZ airport site outside of the Stage 1 CIZ, prior to the implementation of the management plan.

Microbats identified in the Sydney Metro WSA Revised BDAR (M2A 2021) as being either present, probably recorded (via Anabat):

- Large Forest Bat *Vespadelus darlingtonia*
- Southern Myotis *Myotis Macropus*
- White-striped Freetailed bat *Tadarida australis*
- East Coast Freetail Bat *Mormopterus norfolkensis*.

Additional species considered likely to occur may include:

- Eastern False Pipistrelle *Falsistrellus tasmaniensis*
- Eastern Bentwing Bat *Miniopterus schreibersii oceanensis*
- Little Bentwing Bat *Miniopterus australis*
- Greater Broad-nosed Bat *Scoteanax rueppellii*
- Large eared Pied Bat *Chalinolobus dwyeri*
- Yellow-bellied Sheath-tail Bat *Saccolaimus flaviventris*.

The microbat targeted surveys will involve visual ground-based inspections and where crevices are present, the use of a handheld ultrasonic detector to detect potential microbat roost habitat.

A suitably qualified ecologist will position themselves within 5 metres of structure being assessed while holding a hand-held ultrasonic bat detector (e.g. Anabat, EchoMeter Touch or SongMeter). Approximately 2 minutes is required to be spent scanning each structure with the detector.

Collected call data will be analysed to determine species present and activity levels. Once identified, the location, species, estimated number of individuals and any evidence of breeding (e.g. presence of juveniles) will be recorded at each roost site. An ecologist may then elect to deploy stationary ultrasonic call detectors over two nights at known or suspected roosting sites, if deemed useful to further establish the importance of a given habitat structure to microbats.

Following the completion of the targeted Microbat surveys, a report or brief letter will be submitted which includes mapping of relevant ecological values and habitat features within five working days, detailing the results of the survey.

## Preclearance and exclusion

Pre-clearance surveys are to be undertaken during the day of all suitable areas with the potential to support microbat habitat prior to the commencement of works. All potential habitat is to be inspected to confirm if microbats are present.

All potential habitat found not to support microbats during pre-clearance surveys AND considered likely to be impacted by proposed works is to have temporary exclusion measures installed to prevent microbats from moving in.

Exclusion measures are to include:

- Thick tape (such as bitumen tape) or plywood installed over the habitat with the use of an emulsion fluid painted directly onto the culvert
- Expanding foam is not to be used due to difficulties in removal post-construction
- Exclusion measures are to be installed immediately following pre-clearing surveys by an ecologist to ensure microbats do not move into the habitat overnight
- Exclusion measures are to be confirmed enough and effective by a qualified ecologist prior to moving on to the next phase of works.

Habitat not considered likely to be impacted by the works are to remain available to any displaced microbats. Where exclusion measures are not practical and/or cannot be achieved a suitably qualified ecologist is required to supervise the works and relocate microbats to nearby suitable habitat if found.

If microbats are found to be present during pre-clearance inspections, temporary exclusion measures are to be installed overnight once the bats have left the roost to forage. Planned roost exclusion can be conducted from November to March under the supervision of a qualified ecologist to ensure all microbats have vacated the roost.

Roost exclusion should be undertaken in accordance with the following procedure:

1. Installation of temporary wooden roost boxes at exclusion site;
2. Inspection of the culvert/bridge to be decommissioned to be undertaken and any known roost sites that are unoccupied would be excluded on the same day;
3. Active roost sites will be identified and the species present and approximate number of individuals recorded. If bats cannot be determined to be absent, roosts will be treated as occupied.
4. Occupied roosts would be fitted with one-way valves on the same day and reinspected with an endoscope 90 minutes after nightfall to assess whether bats have left the roost. If still present the roost will be left to be re-checked the following morning and, if still present, 90 minutes after the next nightfall.
5. Once the roost has been determined to be vacated, the roost will be permanently sealed off any further access for the bats. This will prevent bats returning to them and encourages transfer to the artificial batboxes set in place.
6. This process will be repeated each night until all roosts (and potential roost sites e.g. cracks/crevices on bridge) have been filled in.
7. 1-3 months later ecologist will inspect culvert and seal up any further unoccupied roosts.
8. Ecologist to wait until after nightfall as per existing methodology, and exclude remaining roosts in culvert and bridge (once bats have left for the night).
9. Bats take up refuge in wooden roost box in lieu of other habitat.
10. 1-3 months later bats to be sealed up using canvas material (left box in Plate 1), and relocated to an approved, pre-determined location.
11. Weekly monitoring of boxes to determine success of translocation to follow.

The following safeguards must be considered to minimise potential impacts to displaced bats:

- Ensure that this procedure is not conducted during an extensive dry period (drought) as this could be detrimental and lead to mortality, if there is no nearby suitable habitat

- Avoid conducting this procedure during windy, full-moon, cold or rainy nights, as there is a lower likelihood of roost exodus

If works and exclusion of roosting bats are required during the colder months (April to September), when many culvert roosting bats enter torpor (hibernation state), the following additional safeguards must be adhered to:

- Nocturnal monitoring of roost activity is to be undertaken by a qualified ecologist and bats must be confirmed as leaving the roost to forage on at least two separate occasions prior to installation of exclusion measures
- If bats are not confirmed as leaving the roost to forage (i.e. in winter torpor) additional monitoring is to be undertaken until regular foraging has resumed
- Works are not to impact upon culverts with bats present in winter torpor.

Additional safeguards that must be considered when exclusion devices are installed include:

- Avoid the breeding season between April and May, as this could disrupt the reproductive success of a population
- All roost exclusion should be done after dusk, once individuals have emerged to feed and an ecologist is satisfied no microbat individuals remain within the roost
- Roosting habitat that has been sealed must be regularly monitored to ensure the sealing mechanism remains intact and no microbats are able to utilise the habitat. If it is suspected that the exclusion mechanism has failed, then an ecologist must re-inspect the habitat before the seal is reapplied
- Alternative roosting habitat should be made/left available wherever possible when undertaking passive roost exclusion
- All exclusion devices must be temporary and be easily removed following completion of the works. Removal of exclusion devices is to be confirmed by an ecologist
- Potential impacts to bats in winter torpor or during breeding season must be avoided.

Reports are to be provided outlining the findings of pre-clearance assessments and detailing the exclusion measures installed (if required).

Vegetation removal surrounding any culverts should be undertaken during the day and wherever possible. Maintaining appropriate exclusion zones and managing night works by ensuring noise and light pollution is kept to a minimum through the breeding and lactation period (April and May) in the vicinity of identified microbat habitat.

Should habitat be excluded at one end of a culvert due to the need to undertake works, the opposite end of the culvert where habitat may remain un-impacted (and not excluded) should have any vegetation blocking the fly-way removed to mirror the end of the culvert known to allow entry/exit for bats i.e. ensure both ends of the culvert allow access to any habitat that remains inside. If bats are present in torpor within a structure, fortnightly winter monitoring should be conducted during upgrades or maintenance works to ensure that over-wintering roosting colonies are not being adversely impacted by ongoing maintenance works.

Monitoring reports are to be provided outlining the findings of each inspection. A conclusion must be made as to the successful removal of any installed exclusion measures.

## Management Actions



The following management actions should be followed to avoid or minimise impacts on microbat Species:

1. Where possible the RCIZ should be refined to avoid direct or indirect (hollow-bearing trees).
2. Identify impacts on known microbat populations found within the RCIZ.
3. A Microbat Management Plan should be prepared to provide appropriate management for the species prior to and during vegetation clearing and construction for the Project.
4. Targeted surveys by the Project Ecologist to locate all threatened microbat species present within the RCIZ and provide recommendations to relocate individuals (if necessary) to suitable areas in accordance with the Microbat Management Plan.
5. Microbats should be intentionally handled by a vaccinated wildlife handler and/or Project Ecologist to ensure appropriately handling and mitigate the risk of contracting Australian Bat Lyssavirus (ABL – a rabies-like disease).
6. All personnel working on the Project should be informed of the presence of threatened microbat species and habitat within and adjacent to the Project, and how to avoid or minimise impacts. This information should be provided during site inductions, and reiterated during pre-start meetings in areas where known records of microbats occur.
7. Minimise construction associated disturbance near known roost sites (i.e. light pollution, noise, vibration and dust generation) and ensure the roost site is delineated from the works with the installation of signage and No-Go-Zones.
8. Inform Environmental Officer if impacts on microbats/habitat are observed or predicted.

### B4.3 Cumberland Plain Land Snail Management

#### Background

The Cumberland Plain Land Snail (CPLS) is listed as an endangered species under the *Biodiversity Conservation Act 2016* (NSW) (BC Act). The species lives in small areas on the Cumberland Plain west of Sydney, from Richmond and Windsor south to Picton and from Liverpool west to the Hawkesbury and Nepean Rivers at the base of the Blue Mountains. It faces a range of threats such as clearing of Cumberland Plain Woodland, removal of shelter material, weeds, inappropriate fire regimes and predation. ([Department for Planning, Industry and Environment 2018](#)).

The Cumberland Plain Land Snail primarily inhabits Cumberland Plain Woodland, which is a grassy, open woodland with occasional dense patches of shrubs. It is also known from Shale Gravel Transition Forests, Castlereagh Swamp Woodlands and the margins of River-flat Eucalypt Forest ([Department for Planning, Industry and Environment 2018](#)).

The snail is superficially similar to the familiar exotic Garden Snail *Helix aspera* but differs most obviously in its 25 - 30-millimetre diameter shell. While this shell may be almost any shade of brown, it is always uniform in colour, while that of the Garden Snail consists of dark patches on a pale background. A green or yellow tinge may be present. The Cumberland Plain Land Snail also has a more flattened shell that is very thin and fragile, compared with the thick shell of the Garden Snail. The underside of the shell tends to have a glossy appearance and is semitransparent, enabling the observer to see the animal colour and some internal organs. The upper side of the shell has a coarse wrinkly appearance. The Cumberland Plain Land Snail lives under litter of bark,

leaves, logs or rubbish, or shelters in loose soil around grass clumps. It can dig several centimetres into the soil to escape drought (Department for Planning, Industry and Environment 2018).

Given the ecology of this species, direct impacts on Cumberland Plain Land Snail resulting from the Project are likely to occur during vegetation clearing and earthworks.

### Targeted surveys

Targeted surveys will be completed by a suitably qualified ecologist (in suitable conditions) to determine the occurrence of Cumberland Plain Land Snail habitat and individuals within the airport site. Surveys will need to be completed in accordance with the Environmental Impact Assessment Guidelines: Cumberland Plain Land Snail (NPWS 2000). Field surveys will be undertaken following a period of rain. Moist conditions are considered favourable for Cumberland Plain Land Snail searches, as the species is easily detectable. Searches will be undertaken by lightly raking at the leaf litter and soil in areas of potential habitat. Where the soil is friable, it will be raked to a few centimetres below the surface. This is because in dry conditions, the snail is known to burrow into the ground in search of moisture.

If individuals or shells are found during targeted surveys they will be relocated as per the protocol detailed below. The occurrence of both Cumberland Plain Land Snail individuals and habitat within the airport site will be mapped, to guide further pre-clearance surveys, salvage and translocation.

Cumberland Plain Land Snail habitat will be considered 'good' if the following components are present:

- Abundant logs and building refuse
- Abundant leaf litter
- Remnant vegetation
- A large patch size or connectedness to adjoining habitat
- More than 10 % open ground cover with low abundance of dense exotic grasses.

Cumberland Plain Land Snail habitat will be considered 'moderate' if the following components are present:

- A low abundance of logs or building refuse
- Moderate leaf litter
- Regrowth vegetation
- A small patch or fragmentation
- Less than 10 % open ground with a patchy mix of plant cover.

If habitat has no logs, leaf litter, natural vegetation or open ground cover it will be considered 'poor'.

### Pre-clearance

Following mapping of Cumberland Plain Land Snail individuals and habitat, any area of habitat which will be removed or impacted during works will require the following pre-clearance protocol to be undertaken:

- Searches will involve a sweeping of the area by a qualified ecologist, focusing on areas of higher quality habitats and where snails have previously been located
- Searches will target the base of native trees, accumulated leaf litter, moist areas such as drains and depressions, under fallen logs, rubbish and rubble and around clumps of grass
- Searches will involve gently scraping back the leaf litter to expose the soil profile. In dry environments, loose soil may be disturbed to a maximum depth of 10 centimetres at the base of trees using a hand trowel
- All salvaged individuals will be identified, measured (diameter), photographed, and their location recorded in a hand-held GPS. A brief description of habitat context including the location, tree species and condition the individual was captured
- The snails will be temporarily stored in moist leaf litter within a 20-litre bucket while collections are being completed
- A total number of live snails and shells will also be recorded for each pre-clearance survey.

If due to unforeseen circumstances there is a delay of more than two weeks between surveys and the clearing of vegetation, additional surveys may be required.

### Translocation

Salvaged Cumberland Plain Land Snail and suitable shelter sites will be relocated into appropriate habitat nearby the airport site on the same day as being salvaged from the area to be cleared of vegetation. Appropriate recipient sites will be discussed with Department for Planning, Industry and Environment prior to translocations. Individuals are to be transported with some moist leaf litter from the salvage site to the recipient site. Leaf litter should be taken from areas where weed densities are low. Similarly, large fallen wood debris or trees to be removed will be relocated to the recipient site prior to clearing of vegetation within the CIZ.

Relocated Cumberland Plain Land Snails should be placed under leaf litter, beneath Forest Red Gum or similar microhabitat to where the snail was located within the salvage site. Relocation of Cumberland Plain Land Snails into the recipient site is to occur within 100 metres of the captured location, where possible.

Only invertebrates listed as threatened under the BC Act (i.e. Cumberland Plain Land Snail) will be relocated into the adjacent recipient site during pre-clearance surveys. Introduced species such as the Garden Snail will be destroyed if found during the pre-clearance surveys. If identification of individuals is difficult, especially for juvenile specimens, then individuals will be recorded as Cumberland Plain Land Snail and relocated, however, a confidence assessment will be used to determine the level of accuracy (Certain, Probable or Possible).

Relocated Cumberland Plain Land Snails will be released into the recipient site at similar densities to those found during the salvage surveys. Where possible, recipient sites should include a large extent of moderate- high quality habitats to prevent overcrowding of new/existing populations. To mitigate the risk of competition between Cumberland Plain Land Snail individuals, no more two individuals may be released at the base of a native tree with a diameter at breast height (DBH) of 20 centimetres. This can be increased proportional to DBH, to up to five individuals around larger trees (e.g. 100 centimetres DBH). Where possible, individuals found at under the same tree, or structure, will be relocated together.

### Management Actions

The following management actions should be followed to avoid or minimise impacts on the Cumberland Plain Land Snail:

1. Pre-clearing surveys should be conducted by the Project Ecologist to locate all individuals present within the Project prior to each stage of vegetation clearing or construction works.
2. If individuals are located, works should be postponed within the area (including and appropriate buffer areas surrounding individual/s).
3. Procedures for the translocation of Cumberland Plain Land Snail to suitable areas in accordance with the recommendations in Section B11.4 Translocation.
4. All personnel working on the Project should be informed of the potential for Cumberland Plain Land Snail within the Project, and how to avoid or minimise impacts. This information should be provided during site inductions, and re-iterated during pre-start meetings.
5. Inform Environmental Officer if Cumberland Plain Land Snail are observed on site.
6. If a CPLS individual is encountered unexpectedly during works, all activities that may affect the individual or its habitat will be ceased until an ecologist is present and can collect the individual. This would also be communicated to the Department. Any such individuals will be recorded and translocated accordingly. Refer to the Unexpected Threatened Find Protocol.

#### B4.4 Green and Golden Bell Frog Management

##### Background

The Green and Golden Bell Frog is listed as Vulnerable under the Commonwealth EPBC Act, and as Endangered under the NSW BC Act. It is a relatively large frog, ranging from approximately 45 millimetres to 100 millimetres snout to vent length. Its distinguishable features include a gold or creamish white stripe running along its side, extending from the upper eyelids almost to the groin, with a narrow dark brown stripe beneath it, from nostril to eye. It also has blue or bluish-green colour on the inside of its thighs. The colour of the body varies, and is usually vivid pea-green splotched with a metallic brassy brown or gold (Department for Planning, Industry and Environment 2017).

The species were formerly distributed from the NSW north coast near Brunswick Heads, southward along the NSW coast to Victoria and into East Gippsland. Since 1990 there have been approximately 50 recorded locations in NSW, most of which are small, isolated, coastal or near-coastal populations (Department for Planning, Industry and Environment 2017).

Green and Golden Bell Frog inhabit marshes, dams and stream-sides, favouring unshaded water bodies containing bullrushes or spike rushes. Some populations occur in highly disturbed areas (Department for Planning, Industry and Environment 2017). The species will be subject to targeted surveys between the end of November and January in accordance with the *Survey Guidelines for Australia's Threatened Frogs* (CoA 2010).

##### Site Hygiene Management

A water-borne fungal pathogen *Batrachochytrium dendrobatidis*, commonly known as frog chytrid fungus, is responsible for the disease Chytridiomycosis (NPWS 2001). The accidental introduction or spread of this pathogen has the potential to adversely affect frog populations and must be managed accordingly.

When travelling between potentially infected sites it is recommended in the Threatened Species Management Information Circular No. 6 – Hygiene Protocol for the Control of Disease in Frogs (NPWS 2001) that the following hygiene precautions be taken if the GGBF is determined to be present at the Airport Site:

- Hands, arms, knees etc. should be cleaned to remove debris and washed or wiped with a suitable disinfectant before entering the vehicle or moving to another site
- Footwear should be thoroughly cleaned and disinfected at the commencement of fieldwork and between each site. This can be achieved by initially scraping boots clear of mud and standing the soles in a disinfecting solution. The remainder of the boot should be rinsed or sprayed with a disinfecting solution. Clothing that has significant contact with frogs and the environment should also be subjected to changing or cleaning
- Disinfecting solutions should be prevented from entering any water bodies
- Any equipment used on site should be cleaned and disinfected before use at another site
- If a vehicle is to transverse a known frog site, the wheels and tyres should be cleaned and disinfected prior to travelling to another site.

Recommended disinfection strategies and products are detailed in Phillott et al. 2010.

### Targeted surveys

Targeted surveys for Green and Golden Bell Frog are required to confirm the species is not present within the CIZ. As Green and Golden Bell Frog is listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) and BC Act, surveys will need to be completed in accordance with:

- Threatened species survey and assessment guidelines: field survey methods for fauna. Amphibians (DECC 2009)
- Survey Guidelines for Australia's Threatened Frogs (CoA 2010)

The key outcome of the targeted surveys is to determine if there are any habitat features within the CIZ being utilised by Green and Golden Bell Frog for breeding, refuge, dispersal or overwintering.

Targeted surveys must be undertaken when conditions are suitable (from October to January) after a minimum 50 millimetres of rainfall in seven days, and following confirmation of calling from known reference populations within the local area. The proposed methodology for targeted surveys for the Green and Golden Bell Frog in accordance with Commonwealth and NSW survey guidelines is outlined in Table 19.

### Pre-clearance

Prior to undertaking activities that may impact on identified habitat for Green and Golden Bell Frogs, such as broad-scale application of herbicide, and mechanical removal of vegetation, the project ecologist is to undertake a pre-clearance inspection. This will involve targeted active diurnal searches of potential Green and Golden Bell Frogs habitat located within the proposed disturbance. Following the diurnal habitat searches, a nocturnal habitat search may need to be conducted to assess nocturnal usage in the habitat area. These searches may include searching of habitat features that were searched during the day, spotlighting and/or call play-back.

### Translocation

If a GGBF is located during preclearance surveys of a proposed impact area, the following relocation procedure will be carried out:

- The qualified ecologist undertaking the preclearance assessment will capture the frog using a gloved hand or inverted plastic bag
- If the frog appears healthy, the frog will be transported and released into a pre-determined nearby relocation area. If captured during the day the individual will be held in a cool, dark and moist place until nightfall. The individual will be released nearby suitable shelter and a water source
- If the frog appears to be sick or injured and would most likely not survive transportation, it will be humanely euthanised
- If the frog appears to be sick or injured and appears likely to survive transportation, it will be placed inside a moist bag with damp leaf litter and transported to an appropriate wildlife carer or vet

All details of translocations including the location the individual was found, the sex and life stage of the individual and the release point are to be recorded.

### Management Actions

The following management actions should be followed to avoid or minimise impacts on the Green and Golden Bell Frog:

1. Where possible the CIZ should be refined to avoid direct or indirect (upstream) impacts on known populations of the Green and Golden Bell Frog.
2. Exclusion fencing and signage should be in place prior to all vegetation clearing and construction works to ensure Green and Golden Bell Frog populations adjacent to the Project, or to be retained within the Project will not be impacted by the Project.
3. Targeted surveys to locate all Green and Golden Bell Frog present within the RCIZ construction footprint should be conducted to identify areas of sensitivity and provide recommendations to translocate individuals to suitable areas in accordance with the Green and Golden Bell Frog Management Protocol.
4. Appropriate hygiene protocol should be observed during all works within and adjacent to/upstream of all known populations of/habitat for the Green and Golden Bell Frog to avoid introducing/spreading frog Chytrid fungus in accordance with the Pathogen and Weed Management Strategy.
5. All personnel working on the Project should be informed of the presence of the Green and Golden Bell frog and habitat within and adjacent to the Project, and how to avoid or minimise impacts. This information should be provided during site inductions, and reiterated during pre-start meetings in areas where known records of the Green and Golden Bell Frog occur.
6. No parking, digging, laydown of equipment and materials or any other activities that may impact on Green and Golden Bell Frog/habitat within exclusion fencing.
7. Appropriate run-off and sediment controls to be in place prior to any vegetation clearing/translocation and construction works for the Project.
8. Spill kits should be provided on site to avoid impacts of chemical spills on downstream populations of Green and Golden Bell Frog.

9. Inform environmental team if impacts on Green and Golden bell Frogs/habitat are observed.

## B4.5 Threatened Birds

### Background

Various birds were recorded during surveys for the Western Sydney Airport EIS. Threatened bird species (Vulnerable, BC Act) include Varied Sitella *Daphoenositta chrysoptera*, Little Lorikeet *Glossopsitta pusilla*, Scarlet Robin *Petroica boodang*, Little Eagle, Black Bittern, Blue-billed Duck, Swift Parrot, Powerful Owl, Masked Owl, Diamond Firetail and Flame Robin. The locations of threatened bird records within the CIZ should be shown in the Sensitive Area Mapping provided in the Threatened Species Management Plan for the Project.

Given the ecology and sedentary nature of some of the above species, direct impacts on Varied Sitella *Daphoenositta chrysoptera*, Little Lorikeet *Glossopsitta pusilla* and Scarlet Robin *Petroica boodang* are likely to occur during vegetation clearing and earthworks (barrier for movement and loss of hollow-bearing trees).

### Management Actions

The following management procedures should be followed to avoid or minimise impacts on threatened birds:

1. Pre-clearing surveys should be conducted by the Project Ecologist to locate all individuals present within the Project prior to each stage of vegetation clearing or construction works.
2. If individuals or cup-shaped nests are located, works should be postponed within the area (including an appropriate buffer area surrounding the roosting individual/s) until further inspections confirm that birds are no longer present.
3. All personnel working on the Project should be informed of the potential roosting or foraging of threatened birds within the Project, and how to avoid or minimise impacts. This information should be provided during site inductions, and re-iterated during pre-start meetings.
4. Inform Environmental Officer if threatened birds are observed on site.
5. Ensure nest boxes are installed in accordance with the Nest Box Strategy to ensure adequate prey shelter habitat remains present during vegetation clearing and construction works.

## B5. Fauna Handling and Rescue Procedure

### B5.1 Introduction

This procedure explains the actions to be undertaken in the event fauna (including injured, shocked, juvenile or other animal) that require handling or rescue are discovered on the project site during vegetation and soil clearance and ongoing construction activities.

This procedure is applicable to all native and introduced species that are found on the project site.

#### Frogs

Green and Golden Bell Frog is considered unlikely to occur at the Airport site or within the RCIZ. However, a conservative approach is being taken to undertake further targeted pre-clearing surveys for the species in farm dams that provide suitable habitat for the species.

#### Birds

Fourteen threatened bird species have been identified as likely to occur within or adjacent to the RCIZ. Of the species recorded within the vicinity eight are considered likely to be encountered by construction personnel during clearing of vegetation, including the removal of hollow-bearing trees, as these species utilise these nesting resources. Clearance of vegetation during late winter to spring is considered likely to substantially increase the likelihood of these species being encountered and impacted upon.

#### Mammals - Chiroptera (Bats)

Eight Chiroptera species have been recorded within the vicinity of the Rail Construction Impact Zone, with eight of these species regarded as microchiropteran (microbats) and one megachiroptera (megabats – Grey-headed Flying Fox) species. Some of these microbat species are considered likely to be encountered during the clearance of vegetation (roost habitat).

Encounters with native mammals will be predominantly restricted to clearing of native vegetation, and further restricted to tree dependant fauna including; Common Ringtail Possum, Common Brushtail Possum and Antechinus species. Most mammals recorded are mobile species and will evade personnel and equipment undertaking works within the CIZ. Special considerations for identified microbat roost habitats should be considered prior to works and recommendations referred to in Microbat Management Plan.

#### Molluscs

Records of Cumberland Plain Land Snail *Meridolum corneovirens* have been located within the vicinity of the Airport, although not previously within the RCIZ outside of Stage 1. The species utilises terrestrial ground habitat resources such as woody debris, peeling bark and leaf litter. The proposed works will interfere with preferred foraging habitat of the species, therefore, Cumberland Plain Land Snail has the potential to be encountered during vegetation clearing works and associated earthworks within the RCIZ.

### B5.2 Clearing procedure

The Project Ecologist will undertake the following steps:

1. Prior to undertaking clearing at any location or time, a pre-clearing assessment must be undertaken by the Project Ecologist to identify the presence or evidence of the presence of fauna (including fresh scats, scratches and remains of prey), including threatened



species. The pre-clearing assessment must also include the identification and assessment of habitat trees affected by the clearing activities, including details on the checks by the project ecologist on trees for fauna, nests and the like. The assessment must include processes and actions to protect or rescue the identified fauna including koalas, bat colonies and roosts, glider dens and frogs and address all elements of the implementation, outcomes and effectiveness of the proposed fauna rescue procedure (Section 6.6).

2. All hollow bearing trees, potential hollow bearing trees and all other fauna containing habitat trees, including trees with nests, dreys and termitaria likely to be occupied by fauna, must be marked at least 7 days prior to the commencement of clearing in a manner which clearly identifies and demarcates the trees.
3. Under-scrubbing and non-habitat tree removal. Non-habitat trees must be removed at least 48 hours before habitat trees are removed, unless otherwise agreed with the Department for Planning, Industry and Environment.
4. Habitat trees should be inspected by Project Ecologist prior to removal to ensure animal exodus. Excavator operator to knock or disturb the habitat tree prior to felling, with the intent to encourage the passive removal of fauna from hollows and nests.
5. Habitat tree removal. Habitat trees must be carefully felled at least 48 hours after Stage 1 unless otherwise agreed with the Department for Planning, Industry and Environment, to allow fauna an opportunity to move from habitat trees and allow time to concentrate rescue efforts on the trees that are most likely to be inhabited. Habitat trees must be felled using equipment that allows the trees to be lowered to the ground with minimal impact (e.g. claw extension). All habitat trees must be felled under the supervision of a suitably qualified ecologist. Felled trees must be left for a short period of time, determined by the project ecologist, on the ground to give any fauna trapped in the trees an opportunity to escape.
6. Injured fauna is to be taken to a local vet or a WIRES representative is to be contacted as soon as possible.

All fauna captured will be relocated into areas of suitable habitat adjacent to the Project site in accordance with the Rescue Procedure detailed in Section 6.6. The species, number, sex, age, class and general health of everyone is to be recorded for later reporting in accordance with the Rescue Procedure detailed in Section 6.6 below.

### **B5.3 Rescue procedure**

If wildlife is discovered within the CIZ during site construction activities, including clearing (refer Biodiversity CEMP Section 6) that may harm, or has resulted in harm, to the animal or pose a risk to site personnel, the following steps will be taken:

1. Stop all work in the vicinity of the fauna and immediately notify project Superintendent who will notify the Environmental Manager and suitably qualified ecologist.
2. Preferably allow fauna to leave the area without intervention.
3. Use a licensed fauna ecologist or wildlife carer with specific animal handling experience to carry out any fauna handling.
4. Where necessary, to minimise stress to native fauna and/or remove the risk of further injury before a licensed fauna handler arrives onsite, the Environmental Officer will implement the Handling Procedure detailed in Section 6.7.
5. If the animal cannot be handled (i.e. venomous reptiles):

- exclude all personnel from the vicinity with fencing and/or signage; and
  - record the exact location of the animal and provide to the suitably qualified ecologist or appropriate rescue agency.
6. Call the appropriate rescue agency immediately and follow any advice provided by the agency. Once the rescue agency arrives at the site, they are responsible for the animal. Any decisions regarding the care of the animal will be made by the rescue agency.

The contact details for the Project Ecologist will be kept at a convenient location on the project site and be available to the Contractor's personnel at all locations where clearing is being undertaken, to enable quick contact and access to the Project Ecologist.

In the event the rescue service and/or local veterinary service cannot be contacted, the injured animal will be delivered to the relevant agency as soon as practically possible.

In the event the rescue service and/or local veterinary service cannot be contacted, if required, the most appropriate euthanasia will be administered by the Project Ecologist (i.e. cervical dislocation for small vertebrates, ice slurry for introduced fish). This is to occur in accordance animal ethics approval and legislative requirements:

1. If the fauna species is identified as a threatened species that is not a species identified in the TSMP, the Project Environmental Manager must:
  - immediately cease all work likely to affect the threatened species;
  - inform the SM - WSA Environment Manager;
2. Contact the following stakeholders, in the order provided, to determine the appropriate corrective actions and additional safeguards to be undertaken:
  - Project Ecologist
  - SM - WSA Environment Manager
  - Government agencies in consultation with SM - WSA.
3. Relocation of fauna captured during construction works, including clearing and associated works, will be undertaken by the Project Ecologist or wildlife rescuer. If the animal is not injured or stressed, it should be released to an area that is not to be disturbed by the project construction works, in accordance with the following:
  - sites identified as suitable release points by the Project Ecologist or wildlife rescuer;
  - release site will contain similar habitat and occur as close to the original capture location as possible;
  - if the species is nocturnal, release will be carried out at dusk;
  - release would generally not be undertaken during periods of heavy rainfall;
  - non-native fauna will not be translocated and will be euthanised.
4. If the animal has been placed into care due to injury, age (i.e. young) or stress, upon its rehabilitation it will be released in an area that is not to be disturbed by the project construction works, at the discretion of the Project Ecologist or wildlife rescuer.
5. Following consultation with all relevant stakeholders, the Project Ecologist/Environmental Manager will implement any corrective actions and additional safeguards.

6. Following confirmation by the Project Ecologist/Environmental Manager that all appropriate safeguards have been implemented, construction works can recommence.
7. Project Ecologist/Environmental Manager to record find/translocation in the WSA Environmental Incident Report or Weekly Environmental Inspection Checklist. All relevant characteristics of the fauna find should be recorded to the extent practicable (i.e. visual signs of behaviour; habitat; health signs; sex, time date, weather etc.), and capture and relocation data.

#### **B5.4 Handling procedure**

The Handling Procedure will be implemented to minimise stress to native fauna and/or remove the risk of further injury. The Project Ecologist will:

1. Cover larger animals with a towel or blanket and place in a cardboard box and/or hessian bag;
2. Place smaller animals in a cotton bag, tied at the top;
3. Keep terrestrial fauna quiet, warm, ventilated and in a dark location away from noisy construction activities;
4. Place aquatic fauna in plastic aquaria or plastic bag with enough water. Ensure enough water and adequate aeration;
5. Transport frogs without water or debris in recognition of the risk of transporting disease and the minimal transport time.
6. Animals such as venomous reptiles and raptors require handling and will only be handled by appropriately qualified personnel, i.e. Project Ecologist or wildlife rescuer.
7. If handling bats, the handler must be vaccinated against the Australian Bat Lyssavirus (ABL), which is a form of rabies.
8. Any frog handling will be undertaken in accordance with the Hygiene Protocol for the Control of Disease in Frogs (DECC 2008). This protocol recommends onsite hygiene precautions be undertaken to minimise the transfer of disease between and within wild frog populations. Measures recommended include:
  - thorough cleaning/disinfecting of footwear and equipment when moving from one site to another;
  - spraying/flushing vehicle tyres with a disinfecting solution where necessary in high risk areas;
  - Cleaning/disinfecting hands between collecting samples/frogs (gloves, not bare hands, will be used to handle frogs); and limiting one frog or tadpole to a bag. Bags will not be reused.

#### **B5.5 Deceased Fauna**

If deceased wildlife is found the following will occur:

1. If animal is confirmed as a threatened species by the Project Ecologist (identified in the TSMP) the Project Environmental Manager must:
  - immediately cease all work in the area where the deceased animal was found;
  - inform the SM - WSA Environment Manager;

2. Contact the following stakeholders, to determine the appropriate corrective actions and additional safeguards to be undertaken:
  - Project Ecologist
  - Contractor and SM - WSA Environment Manager
  - Government agencies (relevant agencies to be determined in consultation with SM - WSA and Project Ecologist).
3. All Protected deceased fauna found on site will be recorded in a project Deceased Fauna Register. This document will include:
  - Species
  - Location and time found
  - Cause of death (if known)
  - Disposal location

## B6. Seed collection and salvage program

Collection of seed from native vegetation will be undertaken from the vegetation within the RCIZ prior to and during vegetation clearing as part of the Project wide (on and off airport) seed collection for use in reinstatement.

Access will be provided to seed collection contractors prior to and during the clearing of vegetation. Seed collection from the RCIZ will focus on canopy and shrub species that can be collected without contamination of weed species. This will prioritise the species of the Cumberland Plain Woodland vegetation communities. Seed that is in the canopy that is above the height that can be reached with pole loppers will be collected once trees have been felled, requiring seed harvest of these species to be coordinated with clearing works.

The RCIZ is unsuitable for broadscale mechanical collection on any of the sites due to the lack of weed-free native grass patches

Seed collected from the RCIZ will be banked with seed collected from other areas of the Sydney Metro Western Sydney Airport project (off-airport) and surrounds. This seed will be used for the reinstatement of the Sydney Metro Western Sydney Airport Project (on or off-airport).

## B7. Adaptive Management and Contingency Measures

An adaptive management approach is to be employed in respect to the works forming part of the Biodiversity Management Protocols. An adaptive management approach involves an integrated process of monitoring, reviewing and then responding to the health and condition of the species or habitat features addressed in this Management Plan. This will identify any alterations to the design and maintenance of works that may be required to ensure the objectives of the Management Plan are achieved.

For example, the results of targeted surveys for threatened species should be considered and incorporated into the Management Plan once completed. Annual reporting shall also be provided to indicate where known or potential problems occur, and contingency measures will be implemented as part of an ongoing adaptive management strategy for the Project.

It is important to note that any changes should comply with the aims of this Management Plan, and any licensing or approval conditions issued before implementation. An Adaptive Management Statement (or similar) will be prepared and signed by both parties prior to implementation of any adaptive management actions.

A summary of potential problems that may be detected during the implementation of the management plans detailed in this document and suggested contingency measures to facilitate adaptive management of these problems are presented below:

**Table A6: Adaptive Management and Contingency Measures**

Action	Potential Problem	Contingency Measure
<b>Baseline surveys</b>	Detection of a threatened species not previously recorded or accounted for in management plans	Implement unexpected finds procedures.

Action	Potential Problem	Contingency Measure
<b>Nest box monitoring</b>	Performance parameters outlined in Section 3.7 not met	Review nest boxes utilised and reassess nest box recipient sites. Relocate nest boxes or source suitable additional sites outside of the conservation area and recommence nest box management plan.
<b>Threatened species targeted surveys</b>	Failure to detect threatened species or threatened species habitat during targeted surveys	Follow unexpected finds procedures when working in areas identified as containing suitable habitat
<b>Translocation of CPLS</b>	Failure to detect CPLS during follow up monitoring of translocated individuals.	Compare findings of monitoring with results collected at reference sites, to identify correlation with regional trends. If no regional trend is identified that correlates with failed detection, implement EPBC Act offset requirements.
<b>Translocation of GGBF</b>	Failure to detect GGBF during follow up monitoring of translocated individuals.	Compare findings of monitoring with results collected at reference sites, to identify correlation with regional trends. If no regional trend is identified that correlates with failed detection, implement EPBC Act offset requirements.

## Appendix C Weed and Disease Management Plan

### C1. Introduction

#### C1.2 Scope

This Weed and Disease Management Plan (**WDMP**) provides controls and actions required to manage the retained ecological features within the Airport. The impact within the early works footprint and retained vegetation within the site are to be managed in accordance with the WDMP.

#### C1.1 Objectives

The WDMP focuses on:

- Identification and mapping of the known extent of NSW Department of Primary Industry (DPI) listed Priority Weeds and pathogens within the construction area (to be undertaken during the preparation for the contractor site environmental management documentation, including within the Environmental Controls Maps (ECM) and or Environmental Work Method Statement (EWMS) (refer to Section 4.3 of the SEMF).
- Prevention of the introduction of the Priority Weeds and pathogens within the impact area, not limited to the 12 listed priority weeds and three potential pathogens identified in the EIA.
- Prescription of suitable control measures and means of preventing spread beyond the construction impact area during construction.
- The minimisation of impacts arising from Key Threatening Processes (KTP) listed under the *Environment Protection and Conservation Act 1999* (Cth) (EPBC Act) and *Biodiversity Conservation Act 2016* (NSW) (BC Act) as a result of the occurrence and/or spread of pathogens and weeds (GHD 2017) is also a priority to ensure the Project does not increase the operation of or increase impact of KTPs.

### C2. Existing environment

#### C2.1 Key Threatening Processes

Key threatening processes listed under the EPBC Act and BC Act relevant to managing weeds and disease during construction activities associate with the construction works covered by the Biodiversity CEMP, are outlined in Table A7.

Table A7: Key threatening processes - managing weeds and disease during Stage 1

Key Threatening Process	EPBC Act	BC Act
Dieback caused by the root-rot fungus ( <i>Phytophthora cinnamomi</i> )	X	
Infection of amphibians with chytrid fungus resulting in chytridiomycosis	X	
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	X	

Key Threatening Process	EPBC Act	BC Act
Novel biota and their impact on biodiversity	X	
Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners		X
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis		X
Infection of native plants by <i>Phytophthora cinnamomic</i>		X
Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae		X
Invasion and establishment of exotic vines and scramblers		X
Invasion of native plant communities by African Olive <i>Olea europaea</i> subsp. <i>cuspidata</i> (Wall. ex G. Don) Cif.		X
Invasion of native plant communities by <i>Chrysanthemoides monilifera</i>		X
Invasion of native plant communities by exotic perennial grasses		X
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants		X

## C2.2 Priority and environmental weeds

Table A8 below, outlines the weeds listed under the *Noxious Weed Act 1993* (NSW) (NW Act) at the time of assessment by (GHD 2016) and an updated Biosecurity Duty under the *Biosecurity Act 2015* (NSW) (BiosecurityAct). All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable. Species that are listed as Weeds of National Significance (WoNS) are also outlined below in Table A8.

Table A8: Priority and environmental weeds recorded within the Airport

Scientific name	Common name	Biosecurity Act 2015 Biosecurity Duty	WoNS
<i>Alternanthera philoxeroides</i>	Alligator Weed	Biosecurity Zone The Alligator Weed Biosecurity Zone is established for all land within the state except land in the following regions: Greater Sydney; Hunter (but only in the local government areas of City of Lake Macquarie, City of Maitland, City of Newcastle or Port Stephens). Within the Biosecurity Zone this weed must be eradicated where practicable, or as much of the weed destroyed as practicable, and any remaining weed suppressed.	Yes
<i>Anrederacordifolia</i>	Madeira vine	General biosecurity duty	Yes
<i>Asparagus asparagoides</i>	Bridal Creeper	General biosecurity duty	Yes



Scientific name	Common name	Biosecurity Act 2015 Biosecurity Duty	WoNS
<i>Bryophyllum</i> spp.	Mother-of-millions	General biosecurity duty	No
<i>Cestrum parqui</i>	Green Cestrum	Regional Recommended Measure Land managers should mitigate the risk of new weeds being introduced to their land. Land managers should mitigate spread from their land. The plant should not be bought, sold, grown, carried or released into the environment.	No
<i>Cortaderiaselloana</i>	Pampas grass	General biosecurity duty	No
<i>Lantana camara</i>	Lantana	General biosecurity duty	Yes
<i>Ligustrum lucidum</i>	Broad-leavedPrivet	General biosecurity duty	No
<i>Ligustrum sinense</i>	Small-leavedPrivet	General biosecurity duty	No
<i>Lycium ferocissimum</i>	African Boxthorn	General biosecurity duty	Yes
<i>Olea europa subsp. cuspidata</i>	African Olive	Regional Recommended Measure	No
		An exclusion zone is established for all lands in Blue Mountains City Council and Central Coast local government areas. The remainder of the region is classified as the core infestation area. Whole region: The plant or parts of the plant are not traded, carried, grown or released into the environment. Core infestationarea: Land managers prevent spread from their land where feasible.	
<i>Opuntia stricta</i>	Common Pricklypear	General biosecurity duty	Yes
<i>Ricinus communis</i>	Castor Oil Plant	General biosecurity duty	No
<i>Rubus fruticosus species aggregate</i>	Blackberry	General biosecurity duty	Yes
<i>Salvinia molesta</i>	Salvinia	Regional Recommended Measure Exclusion zone: whole region except for the core infestation areaof the Georges and Hawkesbury-Nepean Rivers and their tributaries. Whole region: Land managers mitigate the risk of the plant beingintroduced to their land. Core infestation area: Land managers should prevent spread from their land where feasible.	Yes
<i>Senecio madagascariensis</i>	Fireweed	General biosecurity duty	Yes



## C2.4 Weeds Mapping

The mapping of priority weeds will be undertaken as a component of the pre-construction survey prior to the commencement of works.

### C3. Biosecurity protocol

All contractors are to follow the biosecurity hygiene protocol detailed below in Table A9 prior to clearing, during construction and post-construction.

Table A9: Biosecurity hygiene protocol

Timing	Hygiene protocol	Risk reduction
<b>Prior to clearing</b>	<ul style="list-style-type: none"> <li>Presence of biosecurity matters are to be discussed during toolbox talks.</li> <li>Tools to be cleaned free of soil and plant material prior to bring tools to site or moving between works areas.</li> <li>Vehicle/machine hygiene inspections are to be undertaken prior to works starting using the checklist in Appendix 1 to determine if vehicles are free from soil and plant material.</li> <li>Vehicles/machines must pass the hygiene inspection prior to works commencing, Additional cleaning may be required to achieve this.</li> <li>Vehicles to be parked in designated roadsides and parking spaces only.</li> <li>Completed hygiene inspection forms are to be kept within the relevant vehicle/machine during the works and provided to the relevant land access officers at completion of the works.</li> <li>Toolbox talks are to include information on potential presence of weed and methods to reduce spread</li> </ul>	Prevent import of new biosecurity items to the Airport site.
<b>During construction</b>	<ul style="list-style-type: none"> <li>Presence of biosecurity matters to be discussed during toolbox talks. Hygiene procedures above to be maintained.</li> <li>Avoidance or limiting vehicle / foot traffic through areas identified as having biosecurity matters present, if feasible.</li> <li>Limit access between and across vegetated areas to formed roads wherever practicable.</li> <li>Minimise entry and exit points from sites determined as supporting biosecurity matters.</li> <li>If vehicles/machines have left formed roads, or have become soiled due to wet conditions, since the last vehicle hygiene inspection, a vehicle hygiene inspection must be conducted and passed prior to accessing any additional properties.</li> <li>Vehicle/machine wash down, and completion of hygiene inspection must be undertaken prior to accessing a new vegetation clearing site.</li> <li>Regular visual checks of PPE and vehicle tyres for plant parts and seed.</li> <li>All plant material and soil removed is to be bagged and disposed of in landfill or at a registered green-waste facility.</li> <li>Tools to be cleaned free of soil and plant material upon completion of works at each property</li> </ul>	Prevent import of new biosecurity items to the Airport site.
<b>Post-construction</b>	<ul style="list-style-type: none"> <li>PPE and clothing/waders to be brushed down, plant fragments and seeds removed, soils scrubbed from footwear, inside of vehicles cleaned. Bag detritus and seal bag before depositing at a local waste cell or waste cell collection point.</li> </ul>	Prevent import of new biosecurity items to the Airport Site.

## C4. Weed Management

Weeds have been recorded throughout the biodiversity assessment undertaken for the Project. Specific locations of weeds have not been mapped to date, however mapping of priority weeds is to be undertaken prior to clearing works.

### C4.1 General approach

Priority weeds (as listed under the Biosecurity Act) will be treated to satisfy the requirements of the general biosecurity duty whereby the potential spread of exotic species present within the Airport site will be prevented, and the presence of weeds in the construction footprint and adjoining areas will be reduced.

Weed occurrence and extent will be mapped during pre-clearance surveys and regular inspections, with infestations to be treated on an ongoing basis.

General weed management measures to be undertaken include:

- Use a range of weed management methods such as clearing, slashing or mowing (physical and mechanical control) as well as a range of herbicides (to avoid herbicide resistance).
- Mow/slash areas infested with weeds before they seed (avoiding native vegetation).
- Employ biosecurity hygiene protocols.
- Securely cover loads of weed-contaminated material.
- Dispose of weed contaminated soil at an appropriate waste management facility.
- Remove weeds immediately and dispose of without stockpiling.
- Separate weeds from native vegetation to be mulched, do not use weed material for mulch.
- Minimise soil disturbance in weed infested areas.

Application of herbicide during weed control works will depend on species targeted and the growing situation. For example, the selection of a herbicide and the application method for a particular species or class of plant will be determined by factors such as the degree of infestation of target species, limiting damage to off target native flora and preventing herbicides entering waterways. The *Noxious and Environmental Weed Control Handbook. A Guide to Weed Control in Non-crop, Aquatic and Bushland Situations, 5th Edition* (DPI 2011) should be referred to as guide for specific herbicides, record keeping and herbicide application techniques.

Use of herbicides must be according to the NSW *Pesticides Act 1999*, Material Safety Data Sheets and labelling instructions for specific trade name herbicides and off label use permits registered with the Australian Pesticides and Veterinary Medicines Association. Any contractors using herbicides on the site must be trained and appropriately qualified to do so (ChemCert Level 2 or equivalent for subordinates and ChemCert Level 3 or equivalent for supervisors). Due to the highly sensitive nature of the retained native vegetation (i.e. TECs and threatened species habitats) all weed control works are to be carried out by a qualified and experienced bush regeneration contractor.

All herbicide use must also be undertaken in accordance with the on-label requirements and site procedures for the application and storage of chemicals.

Pre-clearance weed control is required for weeds that pose a biosecurity risk to local land use and biodiversity values.

Prior to vegetation removal a pre-clearance inspection report is required to outline the recommended treatment methods for weeds present within the project site. Weed species and the required pre-clearance actions are outlined in VMP.

#### C4.4 Weed Management Action

Table A11 outlines the recommended treatment methods for the Biosecurity Act priority weeds known to occur on site. Treatment priorities and performance criteria provided are based on WSA general biosecurity duty to prevent, eliminate or minimise the occurrence of priority weeds within the construction footprint. Table A11 provides treatment recommendations for each of the weed types known to occur within the construction footprint.

Where “pre-treatments’ have been recommended following pre-clearance inspections, or weed treatments are required following ongoing monitoring inspections, weed types listed below are to be treated as detailed in Table A12. Pre-clearance inspection reports will also outline recommended treatment methods for weeds recorded on site, not listed in this Plan.

**Table A11 Weed treatment recommendations**

Scientific name	Common name
<b>Woody weeds</b>	Spot spray application of Glyphosate 360 g/L Roundup® at a rate of 1-part glyphosate to 50 parts water. Completely wet all leaves and stems. Best done during times of active growth i.e. Spring/summer. Stem injection for basal diameter up to 25 cm of Glyphosate 360 g/L Roundup® at a rate of 1- part glyphosate to 1 part water, 2 mL per cut or for basal diameter 25 cm to 60 cm undiluted, 2mL per cut. Best done during times of active growth i.e. Spring/summer.
<b>Perennials/ Scrambling weeds</b>	Spot spray application of Glyphosate 360 g/L Roundup® at a rate of 1-part glyphosate to 50 parts water. Completely wet all leaves and stems. Best done during times of active growth i.e. Spring/summer.
<b>Annual and grass weeds</b>	Slashing for large areas of infestation.
<b>Vines</b>	Spot spray application Glyphosate 360 g/L Roundup® at a rate of 1-part glyphosate to 50 parts water. Best done during times of active growth i.e. Spring/summer.

#### B4.5 Herbicide use

Use of herbicides must be according to the *Pesticides Act 1999* (NSW), Material Safety Data Sheets and labelling instructions for specific trade name herbicides and off label use permits registered with the Australian Pesticides and Veterinary Medicines Authority (APVMA). The use of herbicide as part of this plan will be limited to direct application to cut stumps and spot spraying. High pressure spraying may be permissible in areas located 50 metres away from waterways during favourable weather conditions (i.e. low/no wind/rain). Any contractors using herbicides on the site must be trained and appropriately qualified to do so (NSW ChemCert Level 2 or equivalent for subordinates and ChemCert Level 3 or equivalent for supervisors).

Manual and chemical options for weed control have been taken from the noxious and environmental weed control handbook *A guide to weed control in non-crop, aquatic and bushland situations, 6th edition* (DPI 2014).

The primary means of weed control during construction works (covered in the Biodiversity CEMP) will be to mechanically remove weeds with appropriate plant and machinery at the initial stages of construction, due to ease and speed of removal. The preference for the use of mechanical control measures will also reduce the development of herbicide resistances in the

identified weed species. Control methods include hand removal, herbicide application, and mechanical removal. Weeds requiring hand or mechanical removal, including contaminated topsoil, would require disposal by encapsulation (deep burying) or to an approved waste management facility.

## C5. Pathogen management

General information on known pathogens to occur in the vicinity of the construction footprint were identified within the EIS biodiversity investigations (GHD 2016), however no testing for the occurrence of pathogens was undertaken or the identification of high pathogen risk areas. The aim of developing pathogen management protocols is to create a dynamic process that identifies the extent of pathogens within the subject site and prevents their spread outside of known infestation areas.

### C5.1 General approach

The approach to managing pathogens within the RCIZ to assume occurrence within suitable environments to support these pathogens. Pre-clearance assessments will then assess each of these areas following a set of criteria to determine the likely presence of pathogens within these environments. Testing will then be undertaken of these areas to resolve the occurrence of pathogens within the construction footprint and facilitate the development of mapping and establishment of exclusion zones.

### C5.2 Pathogen Risk Zones and Priority Weeds

Pathogen risk zones were developed as means of identifying areas within the potential impact area that have a high, medium or low risk of spreading or disturbing pathogens. Through the development of these risk zones, management measures can be implemented which would be commensurate with the level of risk identified within an area.

Determination of risk zones for each of the pathogens identified in the EIS was undertaken by assessing vegetation for signs of infection or, in the case of Chytrid, identifying areas that within the potential impact area where a precautionary approach can be practically applied. The following criteria were applied when determining the Pathogen risk zones:

- **High** – Myrtle rust identified on host plants OR, extensive evidence of tree dieback potentially attributed to Phytophthora.
- **Medium** – Small instances of tree dieback (more than 3 trees in close proximity) potentially affected by Phytophthora OR, small drainage lines within potential impact area containing suitable frog (vector) habitat.
- **Low** – No tree dieback evident, AND no evidence of myrtle rust on host plants AND low potential for surface water to persist and maintain frog (vector) habitat.

It is important to note that there are in excess of 50 native species of Phytophthora in Australia, and while the occurrence of these species may be identified during the testing phase, no management measures will be proposed other than for *Phytophthora cinnamomi*.

### C5.3 Management measures

#### Pathogens

Management measures for pathogens can be split into three broad categories as follows:

- Planning or awareness measures

- Exclusion measures; and
- Containment measures

Pathogen management measures have been developed in accordance with the Roads and Maritime Services *Biodiversity Guidelines – Guide 7* (RTA, 2011), and incorporate best practice measures for reducing the transport of potentially harmful pathogens throughout the construction footprint and associated surrounding landscape.

#### **C5.4 Monitoring**

Monitoring of the noxious weed and pathogen management measures are to be evaluated against performance targets, required to ensure the measures outlined in this plan are implemented and that performance criteria are satisfied as far as possible. The monitoring program will commence prior to weed control works and continue for the operation period i.e. pre, during and post construction. The monitoring program can draw upon the information contained in this plan and will involve reporting to assess and document outcomes, including:

- The implementation of weed and pathogen management measures.
- General condition of the Airport site including identification of additional priority weeds or reduction in the occurrence of priority weeds.
- Recommendations to undertake additional measures should these be identified as required during site inspections.
- Recommendations for corrective measures and/or revised vegetation management techniques as a result of site response to the works specified herein or other factors such as climatic conditions.

An adaptive management approach is to be employed in respect of the works forming part of this noxious weeds and pathogen management plan. An adaptive management approach involved an integrated process of monitoring, reviewing and then responding to the health and condition of the measures as well as the status of the noxious weed species to identify any alterations to the design and maintenance of works that may be required to ensure the objectives of the noxious weed and pathogen

## Appendix D Bushfire Management Plan

### D1. Introduction

#### D1.1 Background

Originally, the Badgerys Creek Bush Fire Risk Management Plan (the Plan) was prepared by the Western Sydney Unit (WSU) of the Department of Infrastructure and Regional Development for the Western Sydney Airport (WSA) site. The Plan was an interim strategy to address bushfire risks associated with the management of the site only, which require mitigation and response actions. The Plan was intended to sit within the broader context of the Macarthur Bushfire Risk Management Plan, prepared by the Macarthur Bush Fire Management Committee. Subsequent iterations of the Plan have taken into account a greater understanding of the site, its inherent conditions and the changing nature of the works being performed as well as consultations with all relevant stakeholders and local authorities.

The Bushfire Risk Management Plan however did not address bushfire risks associated with the development of the site or construction and future operations of an airport. In July 2015, as part of the Western Sydney Airport Environmental Impact Statement (EIS), a Bushfire Risk Assessment was conducted for airport operations. The responsible authority would prepare any required plans for the airport in future following the grant of a lease to an Airport Lessee Company.

In late 2017 WSA Co was established with the objective of the design, construction and operation of Western Sydney Airport. Subsequently in May 2018 WSA assumed responsibility of the site in the lead up to the commencement of construction activities. In assuming control of the site WSA has taken responsibility for bushfire management and relationships with the Rural Fire Service (RFS) and will ensure the bushfire management and mitigation plan is up to date and reflects the changing site conditions generated by the construction activities and into the future, the final operations as a functioning airport.

The WSA Bushfire Management Plan prepared by WSA Co in consultation with specialist consultants addresses:

- The known fire conditions
- Future-proofing the Plan to consider the changing construction activities and the changed levels of responsibility associated with the appointment of contractors to complete the various packages
- The requirements of the RFS proposed fire trail standards

This Bushfire Management Plan has been prepared under in and in accordance with the WSA Bushfire Management Plan and for the Sydney Metro on-airport lands outside of the Stage 1 Construction Impact Zone (CIZ).

#### D1.2 Aims and objectives

The aim of this Plan is to identify and define the levels of bushfire risk within the site boundary and from / to adjoining properties. This Plan also aims to minimise the adverse impacts of bushfires on the local community and environment through implementation of the bushfire risk management activities identified in Section D3.

The objectives of the Plan are to:



- Meet the obligations of a large landowner under the Rural Fires Act 1997, and under the Macarthur Bush Fire Risk Management Plan;
- Reduce the risk of bushfire damage to life, property and the environment on the site and adjoining lands (see discussion in Section D2) through the use of appropriate bushfire risk management strategies (Section D3);
- Manage fuel to reduce the rate of spread and intensity of bushfires, while minimising environmental impacts (Section D3);
- Develop and communicate a variety of plans and maps – bushfire prone lands, hydrant maps and updated fire access and fire trail plans;
- Ensure relevant people understand their bushfire management responsibility, including the local community through the Western Sydney Airport updates; and
- Provide for effective monitoring of bushfire risk management strategies to ensure protection and conservation of the site.

### D1.3 Scope of the Plan

#### Description of the Badgerys Creek site

The scope of this plan is the Commonwealth owned land at Badgerys Creek in New South Wales, which was proclaimed as the Western Sydney Airport site in August 2015 and covers approximately 1800 hectares, with this version of the plan pertaining specifically to the approx. 600 Ha for which WSA has control as at September 2020. The operation of this Plan will be undertaken in alignment and cooperation with BEC Bushfire Management Plan to ensure there is a consistent approach to management and emergency response.

The site is located approximately 50 kilometres west of the Sydney central business district and is within the Liverpool local government area and the Macarthur Bush Fire Management Committee (BFMC) area. The Nepean River and the Greater Blue Mountains area lie to the west of the site. The landscape consists mostly of large areas of grassland related to the past agricultural uses of the site, with patches of forest and shrub vegetation.

Until 2014 there were around 200 short-term residential rural and commercial leases within the site. Land uses of the site in the past have included grazing, horse agistment, a winery, a shop, a piggery, duck farming, quarrying, irrigation, landfilling and market gardens. The majority of the individual properties were approximately two hectares or greater in size.

Following the Australian Government's announcement in April 2014 that the site for a Western Sydney airport would be Badgerys Creek, all leases were gradually terminated with no tenants remaining on site at the time WSA assumed control.

In 2018, the newly established company, Western Sydney Airport (WSA) Co assumed responsibility for the site. In doing so, WSA also became responsible for the management of risks associated with bushfires on the site.

In early 2020 with the commencement of Bulk Earthworks Construction on the airport site, responsibility for the bulk of the site moved to the appointed contractor and WSA remained responsible for approximately 600 hectares. This iteration of the Plan relates to this WSA controlled land – Figure D3 and shown in yellow.

Refer to Figure D1 for site location, Figure D2 for site layout plan and Figure 3 details the WSA controlled land specifically covered by this plan.

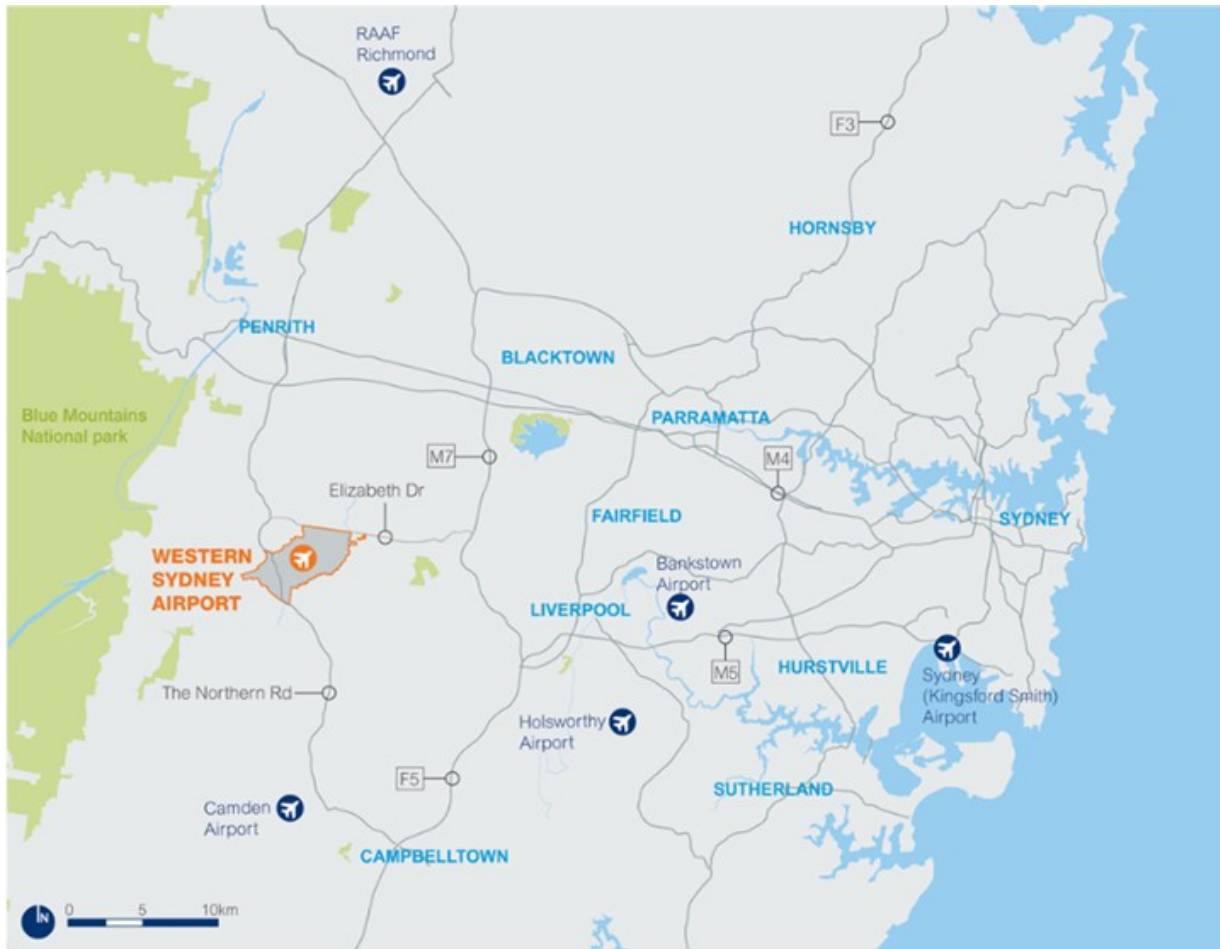


Figure D1 Western Sydney Airport site location plan

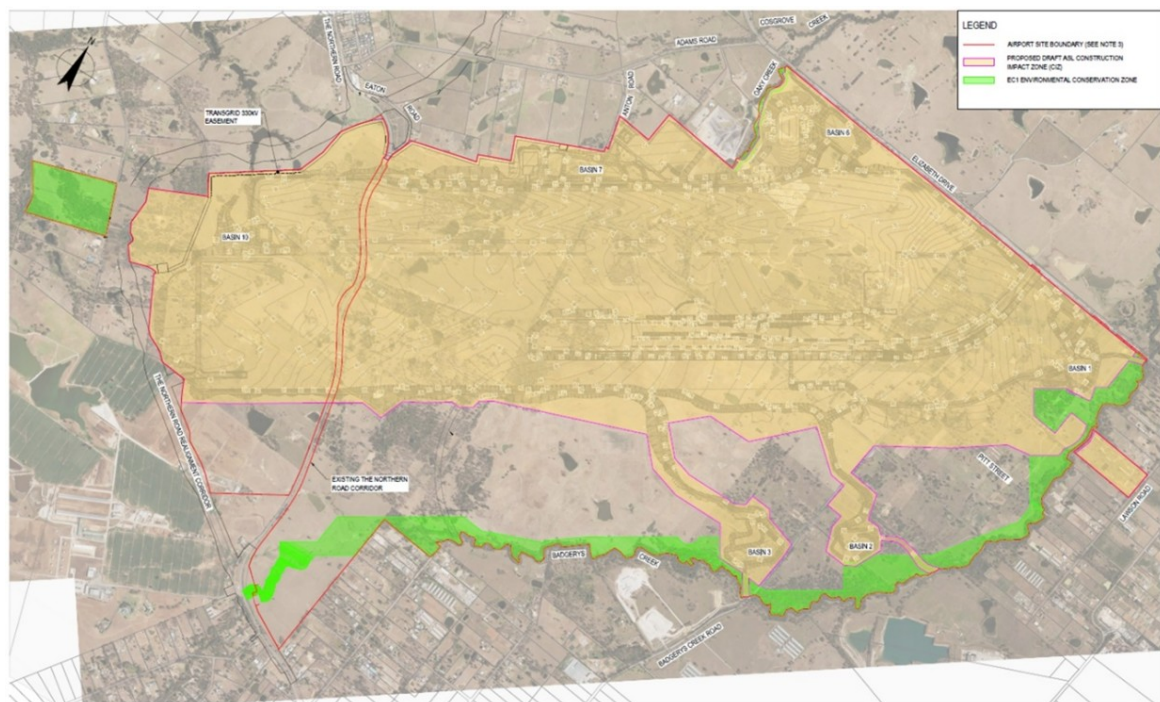


Figure D2 Western Sydney Airport site layout plan

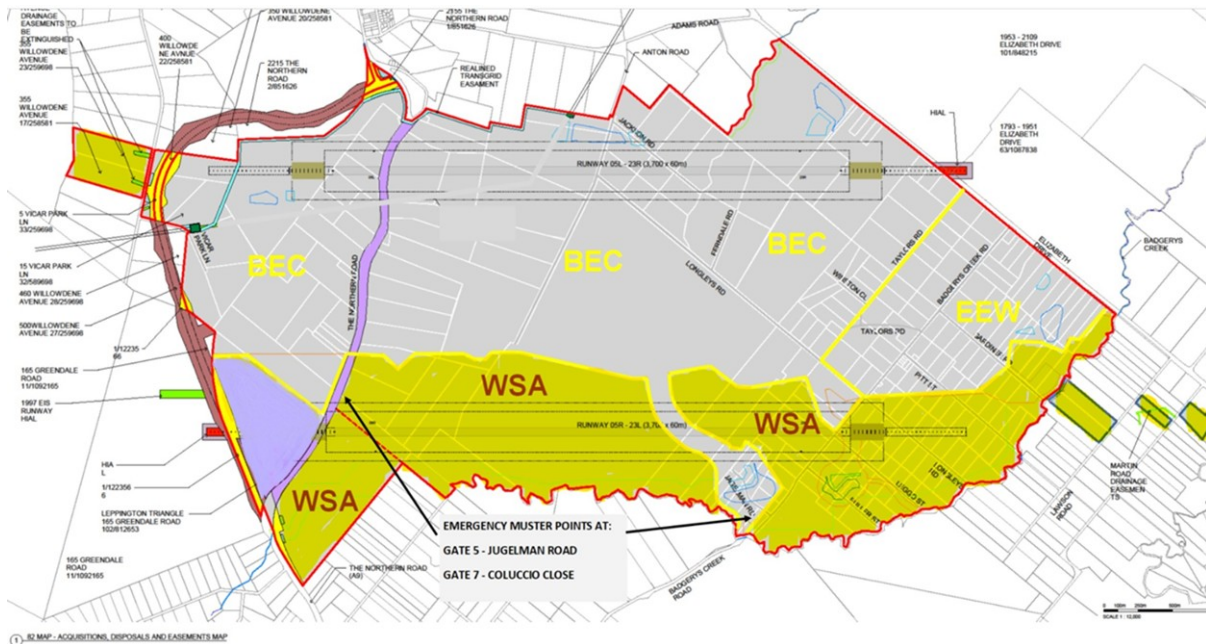


Figure D3 Site map of WSA controlled land – marked up in yellow

### Climate and bushfire season

The Badgerys Creek site typically experiences warm to hot conditions and the bushfire season usually runs from October to the end of March. However, it is worth noting that in recent years the nominated bushfire season has been extended with earlier starts or later finishes. During this period, the area experiences strong south-westerly to north-westerly winds and high daytime temperatures. The main sources of ignition have been through thunderstorm activity (dry electrical storms), accidental ignition, escaped and intentionally lit fires (arson).

In the summer of 2019 / 2020 the bushfire season commenced earlier than previous years across NSW with devastating bushfires impact across the regions. The airport site whilst not directly impacted by the fires, operations were on alert to take action as required. The fires came within approx. 6kms of the site, to the west, in the Warragamba region. In consultation with RFS, it has been identified that the coming years will see the official bushfire season extended. This Plan will be subject to review with input from the RFS and the impending results of the Bushfire Royal Commission, which was instigated following the devastating bushfires of 2019 / 2020.

## D2. Bushfire Risk

### D2.1 What is bushfire risk?

Bushfire risk is the chance of a bushfire igniting, spreading and causing damage to assets valuable to the community, including land, residential development and items of heritage and natural significance (Macarthur BFMC, 2012). Bushfire is an established natural hazard within this landscape and can occur across parts of south-western Sydney frequently during the summer months. The Macarthur BFMC area, in which the WSA site is located, experiences an average of 417 bushfires annually, of which around five develop into major fires (Macarthur BFMC, 2012). The last major fires to burn near the WSA site occurred in 2001 and 2002, where fires under adverse westerly winds resulted in significant property and stock losses.

Prolonged dry conditions, hot temperatures, and low humidity during spring, summer and early autumn are experienced regularly at the WSA site. In the years leading up to the 2019 / 2020

fire season climatic conditions and droughts were at their worst during recorded history. Along with wind, these climate features contribute significantly to the behaviour of a fire (such as increasing the chance ignitions will hold, quicker build-up time and rate of spread, quicker curing and increased combustibility of grass fuels, and higher intensity and spotting potential). The correlation between very dangerous fire weather conditions, major wildfire events, and long hot dry periods is strong.

The Bush Fire Risk Management Planning Guidelines and Australian/New Zealand Standard AS/NZS 4360: 2004 Risk Management were used as a basis for the risk assessment process. A bushfire hazard exists where there is fuel in the form of vegetation, including grass, scrub, bushes and trees. The risk arising from the hazard depends on factors including:

- **Fuel:** The initial development of a bushfire depends largely on the availability of fuel. The type and arrangement of vegetation are factors in determining how a fire will behave. Fuel reduced areas, mown areas, bare or wet ground will reduce the intensity of a bushfire.
- **Ignition sources:** Includes both natural sources and those that are caused by deliberate activity.
- **Topography:** The slope of land will affect the speed and intensity of fire. Some aspects will also receive increased exposure to the drying effects of sun.
- **Climate:** Including humidity, temperature, wind and rainfall. High temperatures can make fuel more susceptible to ignition. Wind can increase the intensity and rate of spread of fire.

## D2.2 Bushfire Risk Assessment: identifying the site assets and risks

Current and near future assets within the site that have been and continue to be at risk from bushfire include:

- Livestock (present risk)
- Areas within and around the boundary of the airport site that face on to internal and external roads (present risk)
- Fencing – currently being finalised (present risk)
- Identified areas of threatened or significant flora, including land which has been utilised for translocation activities – Willowdene Avenue property (present risk);
- Aboriginal Cultural Heritage sites (present risk)
- Experience Centre and Office Accommodation (present risk)

## D2.3 Environmental significance

The WSA site is composed of gently undulating, low hills on shale and broad flats on alluvium on the Cumberland Plain. The site features remnant patches of grassy woodland and narrow corridors of riparian forest within extensive areas of derived grassland, cropland and cleared, developed land. Across the site, the condition of native vegetation is generally poor, and there is moderate to severe weed infestation.

Notwithstanding the generally poor condition of the airport site, it has high conservation significance due to the presence of threatened species and ecological communities and the generally limited extent and quality of similar environments in the Western Sydney region.

No heritage values consistent with World Heritage or National Heritage listing were identified within the WSA site. However, the EIS identified items of indigenous heritage significance and of European heritage significance within the WSA site. Refer to the SM WSA Aboriginal Heritage CEMP and European Heritage CEMP for further details of the heritage values within the SM-WSA RCIZ outside of the WSA Stage 1 area.

### D2.3 Bushfire Risk Assessment: analysing/assessing/evaluating the site risks

In recognising the assets at 2.2, the potential impact of a bushfire on these assets has been considered. For all assets, this involved consideration of:

- Assessing likelihood and consequences of a bushfire occurring and impacting these assets;
- Fire history of the region;
- Ignition cause and patterns;
- Known fire paths;
- Access routes;
- Containment potential; and
- Potential fire run.

Consequence and likelihood ratings were used to identify the level of risk. The risk assessment for current and near future assets can be found at Attachment D1: Asset Register.

Once the risk ratings were identified, these were evaluated to identify appropriate risk level assessment, where treatment was required and treatment priorities. The bushfire risk ratings were used to prioritise the risk treatments.

In addition to considering the key assets on the site the overall likelihood factors were considered. The identified likelihood factors are contained in Attachment D2: Risk Assessment.

### D2.4 Activities likely to generate sparks

All Contractors working on the airport site have the potential to generate sparks and create a source of fire when undertaking certain activities. These activities are summarised in Table D1.

**Table D1 Activities likely to generate sparks**

Activity	Mitigation Measures
Smoking	<ul style="list-style-type: none"> <li>• <b>Ignition management</b> – no smoking (including e-cigarettes) on site except at designated areas. Dedicated butt disposals at each location.</li> <li>• <b>Hazard reduction</b> – fuel on site will be managed on an ongoing basis, reducing ignition sources.</li> <li>• <b>Preparedness</b> – Not required as smoking is banned on site, except in designated areas.</li> </ul>
Plant Maintenance	<ul style="list-style-type: none"> <li>• <b>Ignition management</b> – Hot works permit to be completed on a case by case basis, assessing the risk of fire and setting appropriate mitigation measures</li> <li>• <b>Hazard reduction</b> – fuel on site will be managed on an ongoing basis, reducing ignition sources. Contractors will not undertake cutting, welding or grinding on total fire ban days. Exemptions will be considered where an application for exemption has been approved by the RFS or where exemptions are gazetted. Where exemptions</li> </ul>

Activity	Mitigation Measures
	<p>are granted then the works must take place in an area at least 50m away from an ignition source and appropriate firefighting controls are in place.</p> <ul style="list-style-type: none"> <li>• <b>Preparedness</b> – Fire extinguishers available on all plant and equipment and in areas where maintenance is conducted.</li> </ul>
<b>Driving on site</b>	<ul style="list-style-type: none"> <li>• <b>Ignition management</b> – Vehicles will not be driven or idled in areas of long grass on fire ban days or after prolonged periods of dry weather.</li> <li>• <b>Hazard reduction</b> – fuel on site will be managed on an ongoing basis, reducing ignition sources. During periods of fire bans, all entry points into the site are to be shut to prevent unauthorised vehicle access and torching.</li> <li>• Preparedness – Fire extinguishers available on all plant and equipment. Regular communication with Fire Services on changes to fire trails and water sources. Site Monitoring Protocol as detailed in Appendix G.</li> </ul>
<b>Other hot works</b>	<ul style="list-style-type: none"> <li>• <b>Ignition management</b> – Hot works permit to be completed on a case by case basis, assessing the risk of fire and setting appropriate mitigation measures</li> <li>• <b>Hazard reduction</b> – fuel on site will be managed on an ongoing basis, reducing ignition sources. Contractors will not undertake cutting, welding and grinding on total fire ban days, unless the works takes place in an area at least 50m away from an ignition source and appropriate firefighting controls are in place.</li> <li>• <b>Preparedness</b> – Fire extinguishers available on all plant and equipment.</li> </ul>

## D3. Bushfire Treatments (mitigation and management strategies)

### D3.1 Bushfire Procedures

In the event of a Bushfire occurring on or threatening the site, any personnel on site should respond by raising the alarm in accordance with communicated procedures, to emergency services and any other onsite personnel immediately and where it is safe to do so.

### D3.2 Bushfire management zones

Bush Fire Management Zones were identified and mapped within the site, identifying the fire management intent for each specific area, refer Table 2. The four categories of Bush Fire Management Zones are:

- Asset Protection Zone
- Strategic Fire Advantage Zone
- Land Management Zone
- Fire Exclusion Zone

Maps in Attachment D3: Bushfire Management Zones sets out the Asset Protection Zones within the site (these areas identify the European and Aboriginal heritage items on the site – it is worth noting that the European Heritage items have been documented and removed from site) and the Strategic Fire Advantage Zones within the site (these areas identify where low intensity hazard reduction activities can occur).

All areas that are not mapped or described as an Asset Protection Zone or a Strategic Fire Advantage Zone are considered to be a Land Management Zone. Table D2 describes these zones and their purposes.

A series of bushfire trails have been created on the site. These provide quick, unobstructed access within the site. The map at Attachment D4: Badgerys Creek Bush Fire Trails sets out the bushfire trails on site which should be used to allow rapid emergency access and egress in event of a bushfire access gates across the site including location of internal gates meeting points to coordinate escorted access for RFS as required GIS coordinates for all trails, access and meeting points. This map will be reviewed and updated as site conditions change or at least annually. This map and future revisions will be supplied to the RFS.

Other bushfire risk management and mitigation activities implemented include the extension of fire breaks; hay baling and stock grazing to reduce fuel load, removal of contaminated waste and other rubbish which maybe illegally dumped on the site, and further bushfire risk assessment and emergency response activities. The maps at Attachment D4: Livestock & Hay Baling identifies areas of the site where hay baling and livestock grazing is conducted.

**Table D2 Bush Fire Management Zones: Purpose, objectives and characteristics**

Zone	Purpose	Suppression Objective(s)	Zone characteristics
<b>Asset Protection (APZ)</b>	Protect human life, property and highly valued public assets and values.	Enable safe use of Direct Attack suppression strategies <sup>1</sup> within zone and minimise impact on undefended assets.	Refer to NSW RFS's 'Standards for Asset Protection Zones' for further information.
<b>Strategic Fire Advantage (SFAZ)</b>	Provide strategic fire protection advantage areas to reduce speed and intensity of bush fires and reduce potential for spot fires to develop. Aid containment of wildfires to existing management boundaries.	Improve likelihood and safe use of: <ul style="list-style-type: none"> <li>Parallel Attack suppression strategies<sup>2</sup> within the zone, and/or</li> <li>Indirect Attack<sup>3</sup> (back burning) in high to very high fire weather conditions within the zone.</li> </ul> Reduce likelihood of: <ul style="list-style-type: none"> <li>Crown fire<sup>4</sup> development within the zone and/or</li> <li>Spot fire ignition potential from the zone.</li> </ul>	Factors such as: <ul style="list-style-type: none"> <li>Topography</li> <li>Aspect</li> <li>Spotting propensity</li> <li>Location of adjacent fire breaks</li> <li>Mosaic pattern of treatment</li> <li>Assess overall fuel hazard once vegetation communities reach minimum fire thresholds within this plan.</li> <li>Management practices should aim for mosaic fuel reduction patterns so majority of the zone has an acceptable overall hazard.</li> </ul>
<b>Land Management (LMZ)</b>	Meet relevant land management objectives in areas where Strategic Fire Advantage Zones are not appropriate.	As per land management and fire protection objectives of the responsible land management agency. Reduce likelihood of spread of fires.	Undertake mosaic slashing as appropriate to achieve land management objectives such as heritage, biodiversity and/or fire protection objectives.
<b>Fire Exclusion (FEZ)</b>	To exclude bush fires.	N/A	Zone characteristics vary depending on the size of the fire sensitive area requiring protection.

Notes: 1. Direct Attack - any treatment applied directly to burning fuel such as wetting, smothering, or chemically quenching the fire or by physically separating the burning from not burned fuel. This includes the work of fire engines, fire personnel and aircraft applying water or fire retardant directly to the burning fuel.

2. Parallel Attack - where crews construct a fireline at some distance from the edge of the fire and then burn out the fuel in the buffer as the fireline is completed.

3. Indirect Attack - is a preparatory suppression tactic carried out a distance away from the oncoming fire. These include fuel reduction activities, establishment of firelines, backburning activities and wetting unburnt fuels.

4. Crown Fire - a fire that advances from the top-to-top of trees or shrubs more or less independently of a surface fire.

### D3.4 Bush Fire Management Treatments

Bush fire management treatments are undertaken on an ongoing basis to reduce the overall bushfire risk within the area near the site. Five broad strategies are available for this Plan to treat the bushfire risk. The types of asset specific treatments which can be applied are set out in Table D3.

**Table D3 Bush Fire Management Strategies: Purpose, objectives and characteristics**

Strategy	Targeted treatments
<b>Ignition Management</b>	<ul style="list-style-type: none"> <li>Roadside Vegetation Management - prevents ignition and inhibits the spread of any fire. This can occur through mowing or slashing as appropriate</li> <li>Roadside firebreaks - maintain firebreaks along the roadside to provide access for fire services; implement containment lines and to reduce the spread of fire.</li> <li>Vegetation Inspections and Management - prevent bushfires across the site including those associated with power infrastructure.</li> <li>Restrict Vehicle Access: prevent unauthorised access to site (interface) with gates, locks and barrier fencing and associated liaison with NSW Police Force.</li> </ul>
<b>Hazard Reduction</b>	<ul style="list-style-type: none"> <li>Strategic Fire Advantage Zone Management - maintain identified SFAZ by mowing, mechanical slashing, hay baling, cattle grazing as appropriate.</li> <li>Land Management Zone Management - maintain identified LMZ in accordance with relevant Fire Management Plans.</li> <li>Rubbish accumulation - continually monitor and remove accumulated or dumped rubbish.</li> </ul>
<b>Community Education</b>	<ul style="list-style-type: none"> <li>Community Engagement - communicate bushfire hazards to all stakeholders interacting with the site including neighbours and the community at large.</li> </ul>
<b>Property Planning</b>	<ul style="list-style-type: none"> <li>Pre-Incident Planning - undertake pre-incident planning regimes as identified. Regular liaison with relevant authorities. Once assets such as EC/SO established, revised plans to be developed and communicated to relevant stakeholders.</li> </ul>
<b>Preparedness</b>	<p>RFS and Fire &amp; Rescue NSW Operational Pre-Incident Planning / Protocols: Consultative processes in place to ensure maximum understanding pertaining to items including the following:</p> <ul style="list-style-type: none"> <li>adequate response and recorded information for assets identified at risk;</li> <li>access / egress points including internal gates;</li> <li>regular liaison with relevant authorities;</li> <li>the bushfire trails on site which should be used to allow rapid emergency access and egress in event of a bushfire;</li> <li>meeting points to coordinate escorted access for RFS as required;</li> <li>GIS coordinates for all trails, access and meeting points; and</li> <li>any other information to facilitate the effective management of bushfires and associated activities</li> </ul> <p>Establish regular meetings and working parties with all first responders.</p>

### D4.4 Implementation of Treatments

The bushfire mitigation and management strategies discussed above have been and will be implemented according to Appendix 6 – Treatment Register. Environmental and heritage assets of the site will be considered as this Plan is implemented.



## Site Access Protocols

Site Access Protocols for all WSA controlled land govern all access to the site and must be followed by any person entering the site for any purpose at any time. They are at Appendix 6 – Site Access Protocols.

## Road Closures & Site Security

As areas within the site have become vacant over time and the various construction packages have commenced, all internal roads are now closed to public access. Where roads are used for site access, secured gates have been installed to maintain site security.

## Monitoring and review of Bushfire Risk

The management of the site, in particular its risk of bushfire (and therefore this Bushfire Risk Management Plan), is monitored on an ongoing basis by WSA. WSA's proactive management of the site aims to ensure:

- all relevant stakeholders are aware of their bushfire management responsibility
- the plan is effective in reducing the risk of bushfires
- the plan remains current over the period which it is in place, in terms of current and near future site activities, assets and infrastructure.

## Attachment D1 Risk Assessment

### Risk assessment likelihood definitions

Likelihood level	Definition
Almost certain	The impact is expected to occur in most circumstances.
Likely	The impact will probably occur in most circumstances.
Possible	The impact will probably occur at some time.
Unlikely	The impact could occur at some time.
Rare	The impact may only occur in exceptional circumstances.

### Risk Matrix

Likelihood level	Insignificant	Minor	Moderate	Major	Extreme
Almost certain	Significant	Significant	High	High	High
Likely	Moderate	Significant	Significant	High	High
Possible	Low	Moderate	Significant	Significant	High
Unlikely	Low	Low	Moderate	Moderate	Significant
Rare	Low	Low		Moderate	Moderate

Table D.D1.1 Asset Register of current and near future assets

Asset / Location	Location	Type	Threat	Vulnerability	Likelihood	Consequence	Risk	Treatment Number
<b>Aboriginal site, various locations</b>	Various locations & 2 primary sites along Badgerys Creek	Heritage/ Cultural – Aboriginal significance	Medium	High	Low	Moderate	Medium	1
<b>Threatened Flora and various locations</b>	Various locations	Environment /Endangered	Medium	High	Low	Moderate	Medium	2
<b>Experience Centre and Site accommodation</b>	Eaton Road, Luddenham	Commercial / Infrastructure	Medium	High	Low	Moderate	Medium	1/4/5
<b>Badgerys Creek Road (new)</b>	Badgerys Creek Road between Badgerys Creek (south) and Elizabeth Drive (north)	Infrastructure	Medium	High	Low	Moderate	Medium	1/2/4/5
<b>Willowdene Avenue – translocated endangered flora</b>	345 Willowdene Ave, Luddenham	Environment /Endangered	Medium	High	Low	Minor	Medium	1/2/4/5
<b>ECZ – various locations</b>	Badgerys Creek, Oakey Creek	Environment /Endangered	Medium	High	Low	Minor	Medium	1/2
<b>Transgrid – Northern &amp; Southern Transition Points</b>	2 locations	Power infrastructure	Medium	High	Low	Medium	Medium	1/2/4/5
<b>Livestock - cattle</b>	Various locations	Commercial	Medium	High	Low	Minor	Medium	1

## Identified likelihood factors and their risk

The following construction activities will significantly reduce vegetation cover, these include:

- Pitt, Longley, Link and Haul Roads (AEW 2021)
- Prefabrication yards (SCAW and SBT 2022)
- Permanent stockpile area (2022).

All areas of the site, including uncleared areas, will be subject to restricted access – vehicle and personnel to reduce the risk of ignition sources.

Likelihood factors	Risk Rating	Risk Description	Mitigation measures
<b>Vegetation cover in the surrounding landscape</b>	Moderate	<p>The site adjoins areas of rural-residential subdivision and agricultural enterprises which contain grass and woodland vegetation.</p> <p>The Blue Mountains National Park to the west contains large areas of thick vegetation in which a fire can develop and spread from.</p>	<p>This risk could be reduced through community consultation (including consultation with and conducted by the Liverpool, Penrith and Wollondilly councils) on the importance of being bushfire aware and the required mitigations to reduce the potential of a bushfire. Additionally, this could be extended to the recent increased awareness programs conducted by the NSW Rural Fire Service (RFS).</p>
<b>Vegetation cover within the site</b>	Moderate	<p>The 600 Ha is comprised of existing pastoral / rural land with extensive grasslands and wooded areas as well as the natural bushland of and adjoining the identified ECZs – Badgerys Creek and Oakey Creek. The grass and woodland vegetation are capable of supporting a bush or grassfire which may burn across Badgerys Creek.</p> <p>Unmanaged grass and woodland fuel can enable grassfires to spread and then potentially move off-site and impact peri-urban areas of Bringelly, Badgerys Creek and Kemps Creek. These areas contain fire sensitive agricultural assets including vegetable gardens, poultry farms and stables.</p>	<p>The measures currently in place include:</p> <ul style="list-style-type: none"> <li>• Strategic reduction of grass fuel and fine-fuels (slashing and mowing) within the site including along the site boundaries and adjacent to areas where people work or the public may congregate.</li> <li>• Contracts to allow for hay baling and cattle grazing as appropriate for further fuel load reduction measures.</li> <li>• Establishment and maintenance of agreed fire trails and access / egress points across the site.</li> </ul>
<b>Proximity of woody / bushland vegetation on surrounding lands</b>	Moderate	<p>The site is adjacent to woody vegetation in some areas and on some occasions is only separated by narrow breaks.</p> <p>The proximity of adjoining grass and woodland fuel can enable direct fire spread into the site along a number of boundaries.</p> <p>Adjoining vegetation also provides a means by which a fire may be able to move off-site.</p>	<p>The measure currently adopted is strategic reduction of grass fuel and fine-fuels (slashing and mowing) along those boundaries which adjoin vegetation hazard.</p>

Likelihood factors	Risk Rating	Risk Description	Mitigation measures
<b>Spotting and ember attack potential of vegetation</b>	Moderate	<p>The vegetation surrounding parts of the site may facilitate spotting and ember attack.</p> <p>Long distance spotting, as has occurred previously, may also result from fires burning under adverse conditions in the Blue Mountains National Park to the west.</p> <p>Vegetation retained within the site may be susceptible to spotting and ember attack, igniting spot fires within the site.</p>	<p>The measure currently adopted is strategic reduction of grass fuel and fine-fuels (slashing and mowing) within the site and adjacent to assets.</p> <p>Risks to assets which adjoin vegetation hazards may be reduced through the creation and maintenance of asset protection zones and appropriate operational preparedness actions.</p>
<b>Land management practices on adjoining land</b>	Moderate	<p>The site is predominantly surrounded by rural residential areas and agricultural enterprises which include patches of woody vegetation which may not be frequently hazard-reduced.</p> <p>The removal of grazing and agricultural enterprises may result in an increase in fuel load across the adjoining land, significantly elevating bush and grass fire risk above historic levels.</p>	<p>The measure currently adopted is strategic reduction of grass fuel and fine-fuels (slashing and mowing) within the site and along the site boundaries.</p>
<b>Topography and access within and surrounding the site</b>	Low	<p>Topography surrounding the site is relatively flat and access is not restricted.</p> <p>On the site this risk may move into the MEDIUM class where access trails and roads across former agricultural properties fall into disrepair (through erosion, revegetation or tree fall) and access is restricted from current levels. Where access is restricted for responding fire crews, initial bushfire attack may be delayed, potentially enabling a fire to develop into an uncontrollable size before control actions can be applied.</p>	<p>The site will be managed to ensure that open access is preserved across the site, through maintaining a clearance area around the fire trails (marked on Appendix 4). This will enable the responding fire crews to access all parts of the site in the event of a fire ignition.</p> <p>The bushfire trails will be maintained in accordance with RFS requirements and regulations. Bushfire trail maps (including names) and gate numbers will be provided to local fire authorities. There is ongoing liaison between the site and emergency services authorities in particular the NSW Police and NSW Rural Fire Service.</p> <p>Regular inspections and Maintenance conducted with obstructions removed.</p>
<b>Potential ignition sources within and surrounding the site</b>	Moderate	<p>The site has a history of ignitions on or adjoining the site (from an annual to a decadal occurrence).</p> <p>The departure of residents and agricultural enterprises has not seen an increase in unauthorised and illegal ignitions at the site, as was predicted.</p>	<p>This risk will be reduced through active management strategies (fencing, the closure of internal roads and fuel reduction through slashing, spraying and mowing) reducing the opportunities for arson and unauthorised use of the site.</p> <p>A Site Security Services contract is in place to ensure randomised security patrols of the site. Security patrols are increased in times of higher likely risk, for example in school holidays.</p> <p>The significant increase in site activities associated with the construction is an additional deterrent to unauthorised access and activities across the site.</p>

Likelihood factors	Risk Rating	Risk Description	Mitigation measures
<b>Detection of new ignitions</b>	Low	<p>New ignitions will be quickly detected in western Sydney due to the sites' proximity to residential areas and main roads.</p> <p>This risk has been highest during the pre-construction phase and is expected to reduce during construction phases, with the lowest risk likely during the operational phase.</p>	<p>This risk will be reduced through the site security patrols described above and the regular site visits of the Site team</p> <p>The existing arrangements with local Rural Fire Service crews provides appropriate emergency fire response.</p> <p>Construction activities will see a significant increase in people on site and the detection of any fires will be rapid with appropriate responses.</p>
<b>Local fire response capacity</b>	Low	<p>The site is located in an urban/rural residential area and firefighting resources are located nearby – Warragamba, Kemps Creek, Bringelly and Luddenham as the closest.</p> <p>Site access trails and roads across former agricultural properties which fall into disrepair (through erosion, revegetation or tree fall) and restricted access may restrict access for responding fire crews.</p>	<p>This risk factor is reduced through the maintenance of clear access trails across the site, to enable responding fire crews to access all parts of the site in the event of a fire ignition.</p> <p>Fire trails retained are clearly signposted and are suitable dimensions and load capacity for access by all RFS vehicles.</p> <p>Trail maps (including names) and gate numbers are provided to local fire authorities and prepared in consultation with NSW RFS senior staff.</p> <p>In late 2019 the fire trails were assessed and the vehicles categorised and subsequently included in this revision. The updated map has been provided to RFS HO, local brigades and their Captains.</p> <p>September 2020 – fire trails have been reviewed in keeping with this Plan and the land controlled by WSA.</p>
<b>Local fire at the Eaton Road Complex</b>	Low	<p>The facility is located in an urban/rural area and fire suppression resources have been installed in the buildings onsite.</p> <p>Landscaping surrounds the establishment and is maintained regularly.</p> <p>Designated smoking areas have been established</p>	<p>Landscaping – there has been extensive use of mulch / bark to cover a significant area of the site in an effort to minimise grasses which could aid in the spread of any fire. To minimise the effect the mulch may have on the spread of a fire a landscaping company has been retained to ensure grass and weed management are monitored and actioned accordingly.</p> <p>Buildings - whilst the buildings and the materials do not present a significant risk, the fire systems have been significantly upgraded to improve water pressure by the installation of large water tanks.</p> <p>To minimise ignition to mulch and other points of ignition</p> <p>Smoking will be in one designated area on site which is removed from any areas of potential ignition. Cigarette butt containers will be used and maintained under cleaning / maintenance contracts.</p> <p>All hot works on site will be only conducted in accordance with established procedures and all subcontractors will be subject to pre-starts outlining these requirements. Contractors will not undertake cutting, welding or grinding on total fire ban days. Exemptions will be considered</p>

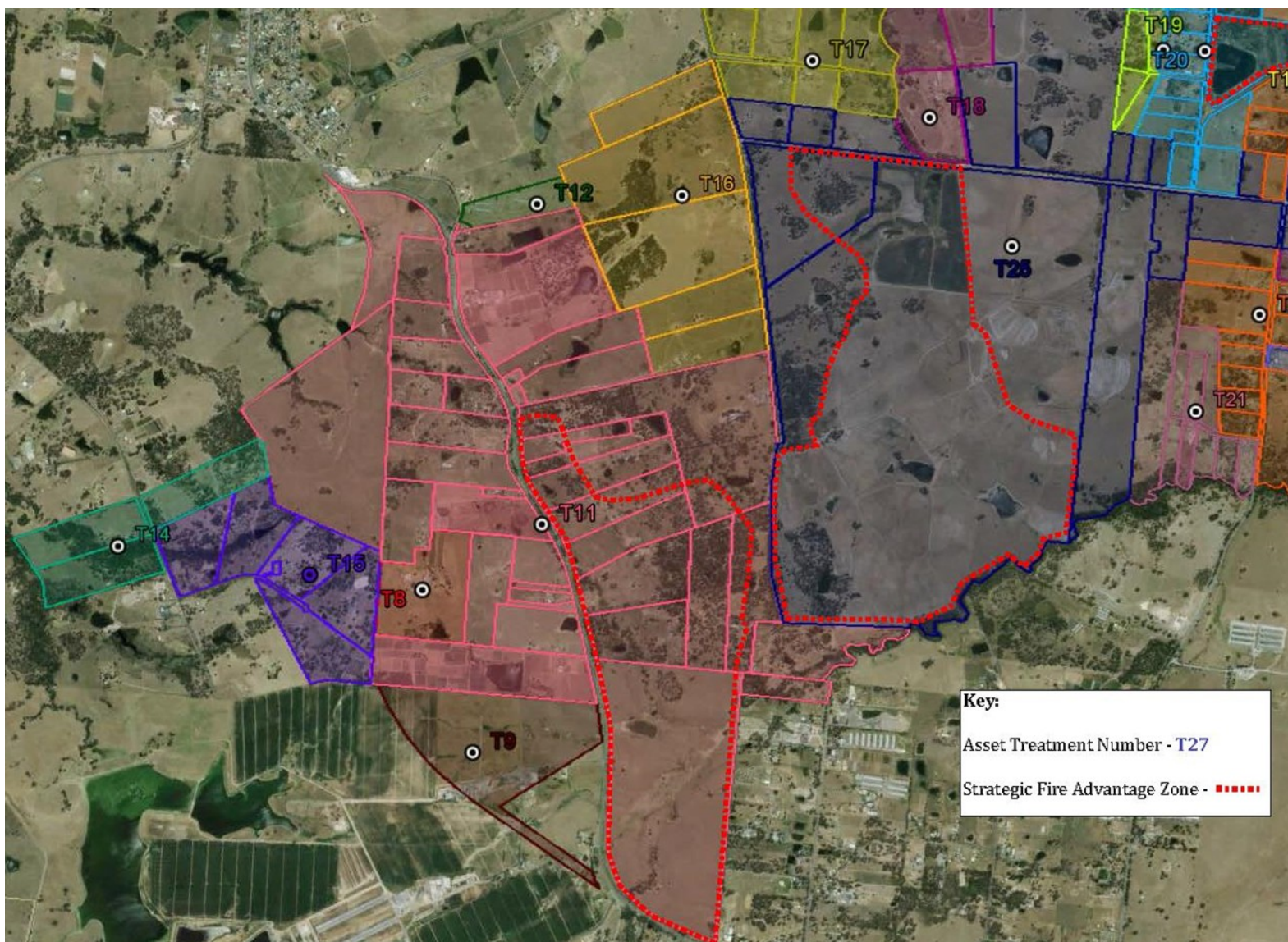
Likelihood factors	Risk Rating	Risk Description	Mitigation measures
			where an application for exemption has been approved by the RFS or where exemptions are gazetted. Where exemptions are granted then the works must take place in an area at least 50m away from an ignition source and appropriate firefighting controls are in place.



---

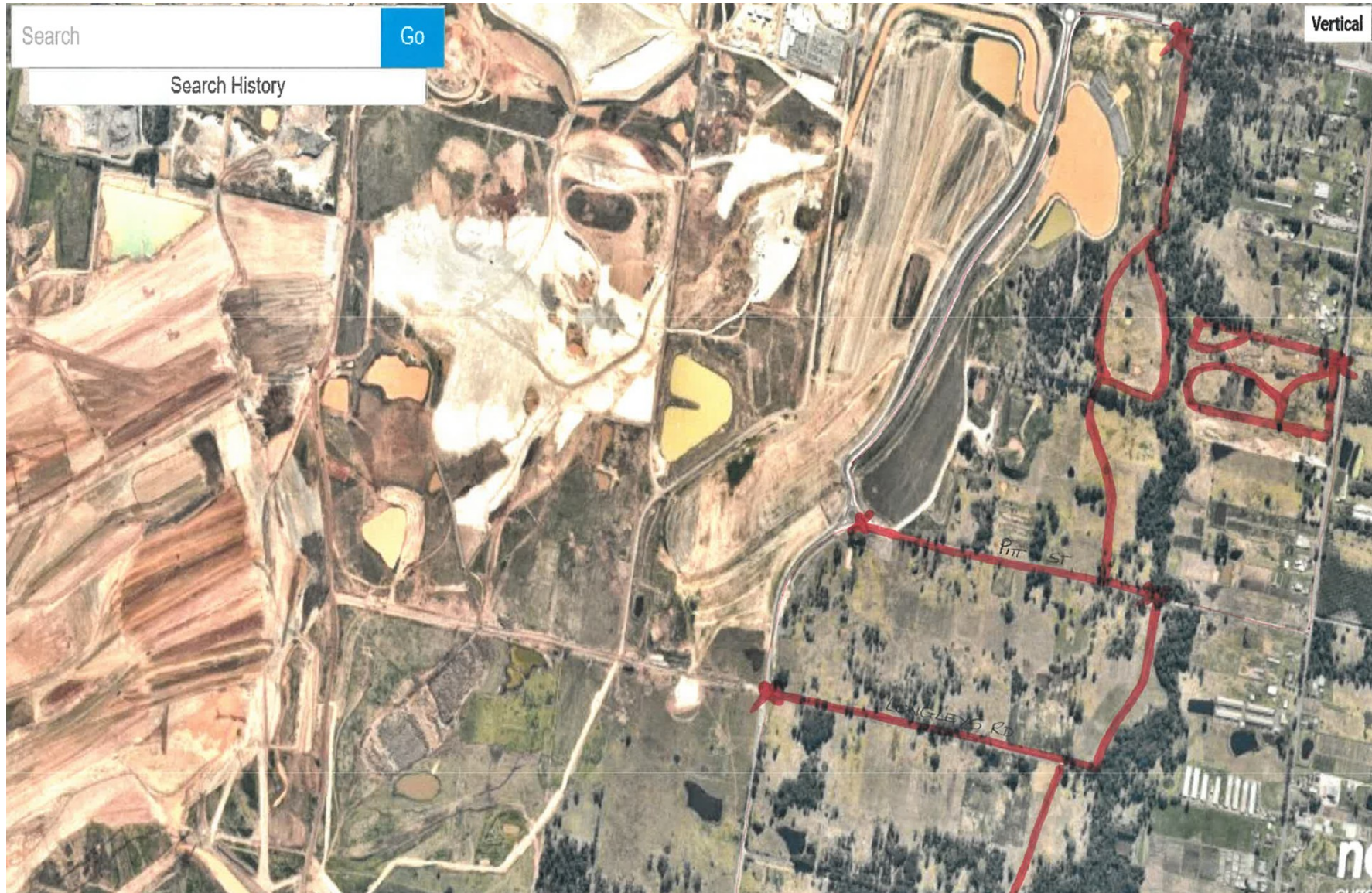
## Attachment D2      Bush Fire Management Zones

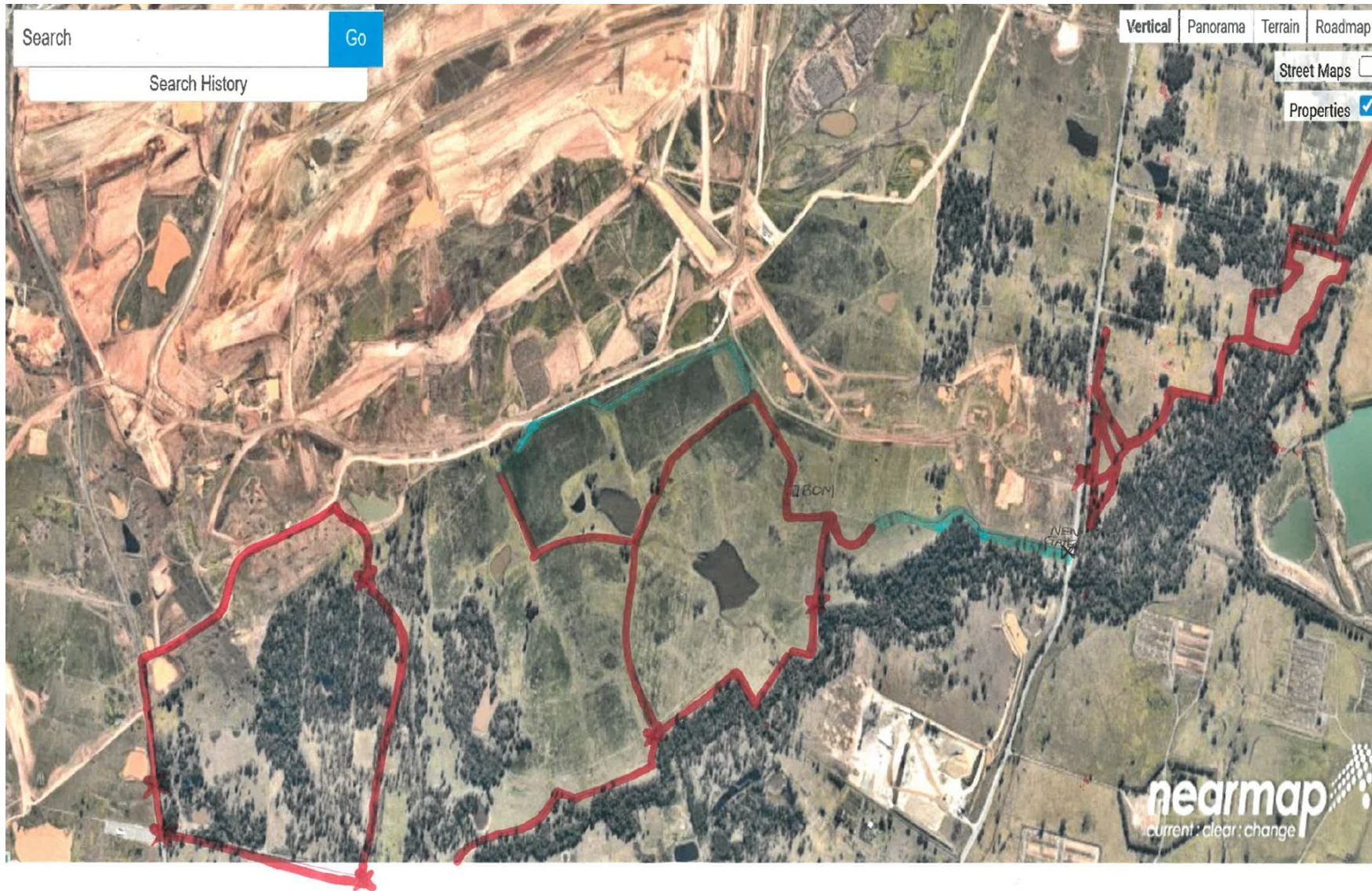


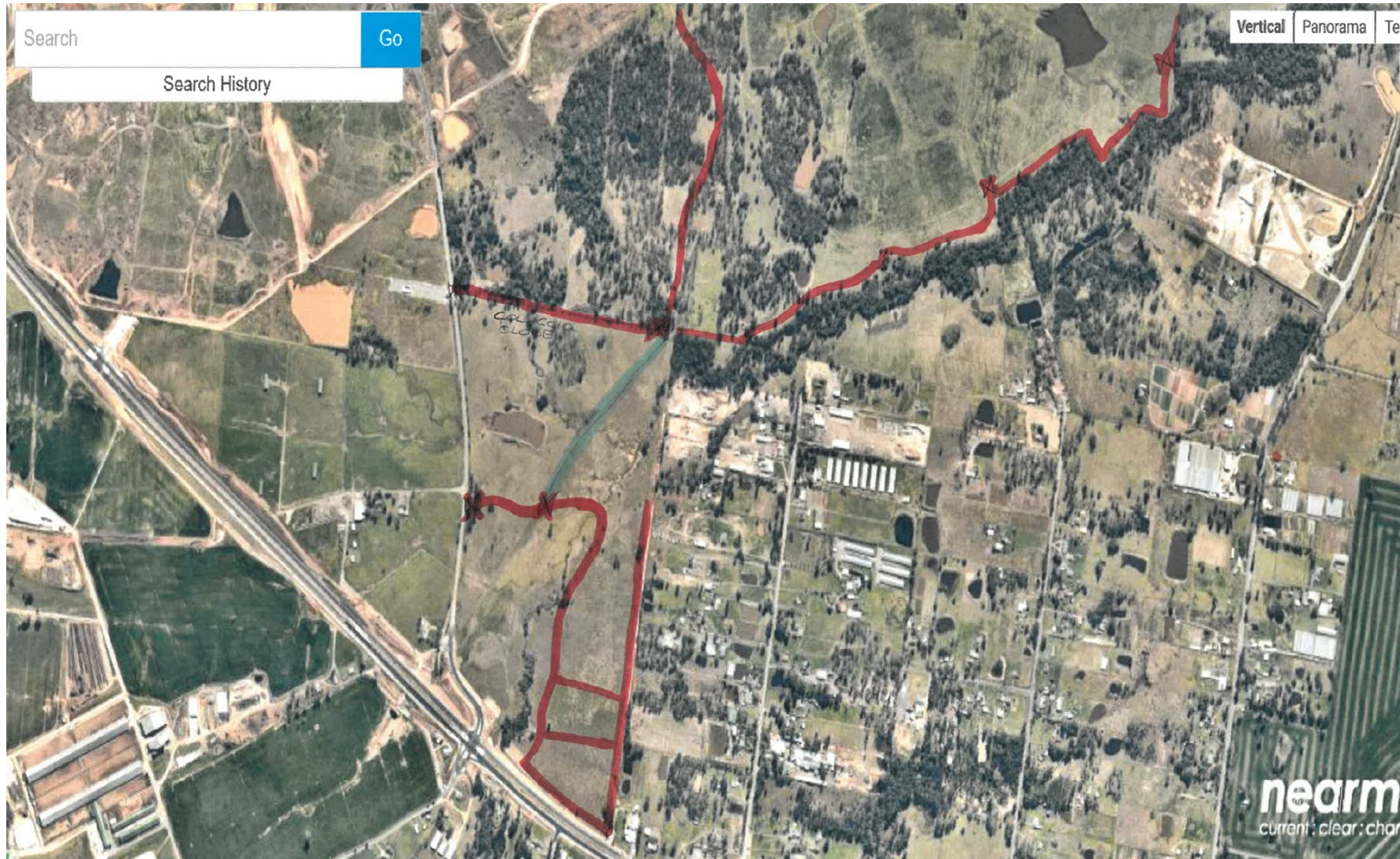


## Attachment D3 Fire Trail Maps

The following maps detail the fire access points and subsequent trails which have been established to allow RFS the ability to fight bushfires on site. The currently established trails / roads are shown in red and identified new trails which will be established in late 2020 are shown in blue. The maps are indicative and will be socialised with local RFS Captains and fully developed maps involving RFS Office personnel will be developed and included by December 2020.

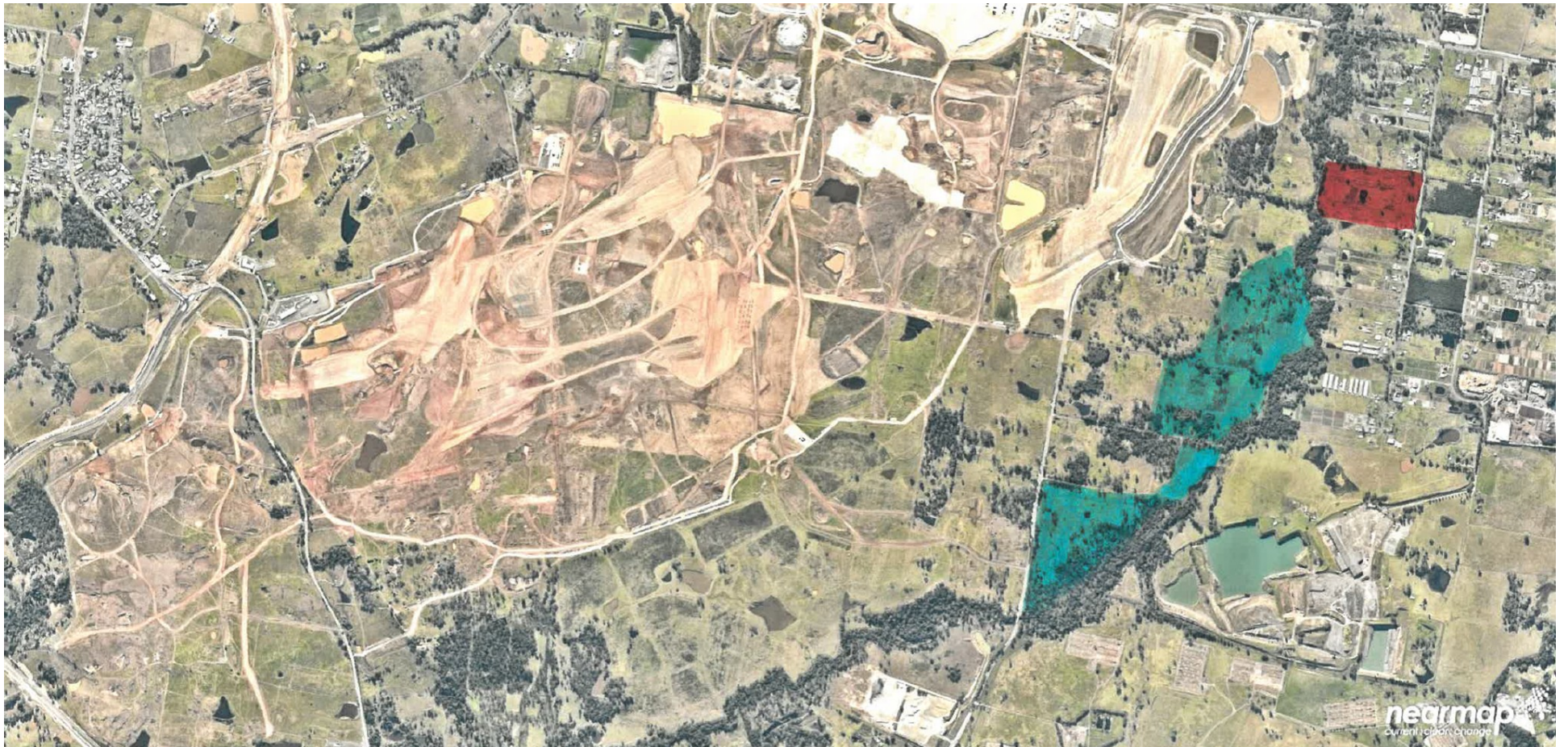


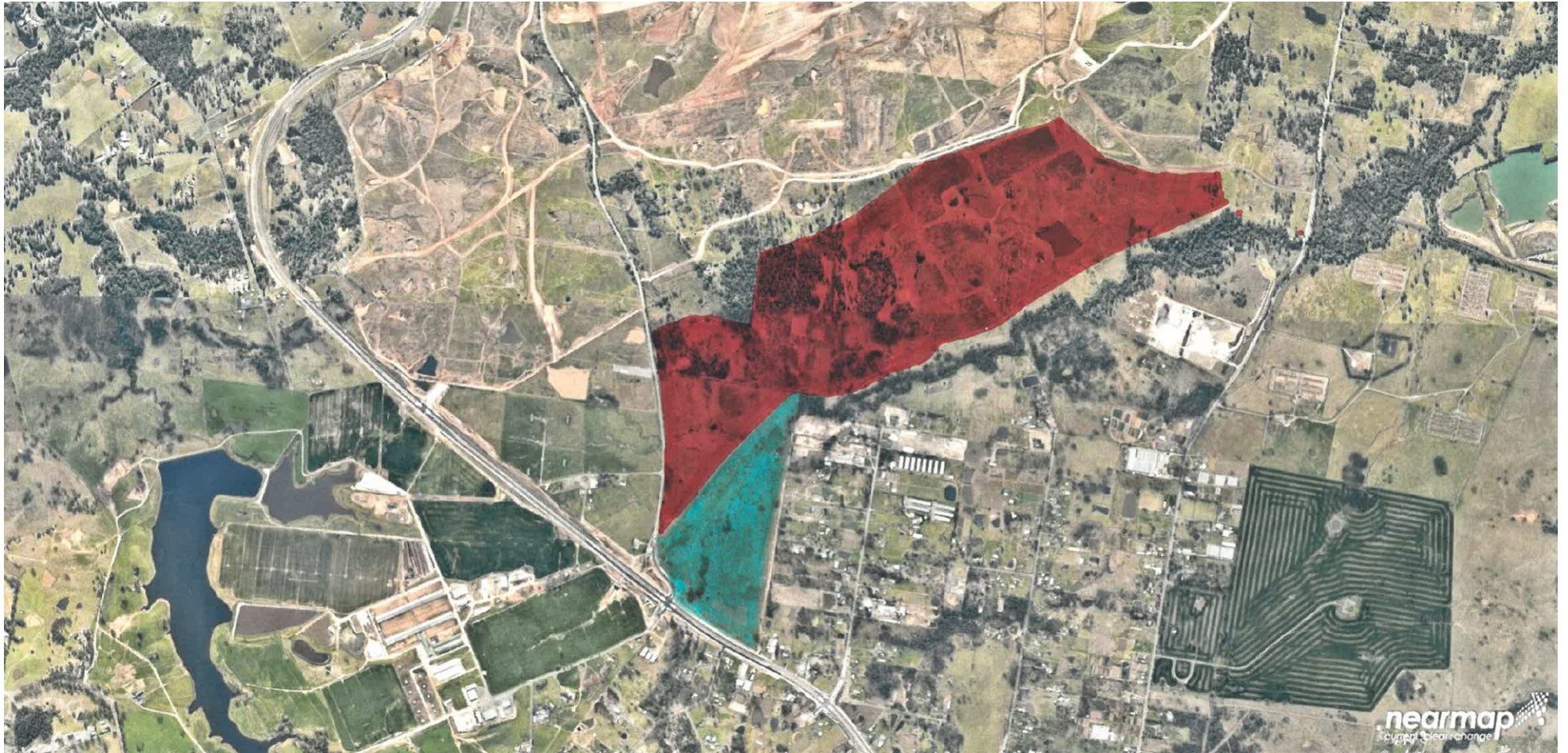




## Attachment D4 Livestock & Hay Baling maps

The following maps detail the areas of the 600Ha which have been identified for fuel reduction activities of livestock grazing (shown in red) and hay baling (shown in blue).







## Attachment D5 Treatment Register for current and near future assets

To protect all assets on site both currently and into the near future there are a number of consistent activities which will be required. These actions include (but not limited) to the following:

- Construction Contractors:
  - No smoking on-site except at designated areas;
  - All works involving a fire source to have a hot works permit in place with specific controls to prevent risk of a fire;
  - Supply of water to be available at all times for firefighting purposes. Supply points will be communicated with local firefighting authorities;
  - Emergency response procedure to be implemented and detailed in an Emergency Management Plan;
  - Contractors will not undertake cutting, welding or grinding on total fire ban days. Exemptions will be considered where an application for exemption has been approved by the RFS or where exemptions are gazetted. Where exemptions are granted then the works must take place in an area at least 50m away from an ignition source and appropriate firefighting controls are in place;
  - All entry points into the site are to be shut to prevent unauthorised vehicle access and torching;
  - Site Access Protocol as detailed in Attachment D6; and
  - Site Condition Monitoring Protocol in Attachment D8
- RFS will be consulted to assist and provide professional advice to WSA and other relevant stakeholders as required;
- WSA will be responsible for hazard reduction and ignition management of vacant properties, community education and assist in the preparedness for residents in the local community; and
- Liverpool City Council will provide services in hazard reduction and ignition management of roadside and public areas.

**Table D.D5.1 Treatment register**

Treatment Number	Asset / Location	Strategy (Community Education, Hazard Reduction, Ignition Management, Preparedness or Property Planning)	Action (Slashing, mowing, back burning)
1	Aboriginal site, various locations	Community education, hazard reduction, ignition management, preparedness	Slashing and mowing as required
2	Threatened Flora, various locations	Community education, hazard reduction, ignition management, preparedness	Slashing and mowing as required
3	Experience Centre/ Site Accommodation	Community education, hazard reduction, ignition management, preparedness Construction Site offices	Slashing and mowing as required

Treatment Number	Asset / Location	Strategy (Community Education, Hazard Reduction, Ignition Management, Preparedness or Property Planning)	Action (Slashing, mowing, back burning)
4	Badgerys Creek Road (new)	Community education, hazard reduction, ignition management, preparedness	Slashing and mowing as required
5	Willowdene Avenue – translocated endangered flora	Community education, hazard reduction, ignition management, preparedness	Slashing and mowing as required
6	ECZ – various locations	Community education, hazard reduction, ignition management, preparedness	Slashing and mowing as required
7	Transgrid Northern & Southern Transition points	Community education, hazard reduction, ignition management, preparedness	Slashing and mowing as required
8	Livestock (cattle)	Hazard reduction, ignition management, preparedness	Cattle will reduce fuel loads

## Attachment D6 Site Access Protocols

The following site access protocols have been developed to provide guidance to WSA staff and all other people including consultants accessing the 600Ha of WSA controlled land. These protocols must be followed to ensure WSA's property management and environmental obligations continue to be met.

As the airport lessee company, WSA has compliance obligations in accordance with airports legislation and regulations and health and safety requirements. In fulfilling these obligations, WSA is responsible for managing the site in an appropriate manner and therefore has wide discretion in determining who can access the site, when that access can be granted and for what purpose.

### Summary of process

Any access must follow the process described below.

- Personnel requiring site access submit a request for access to WSA (see section 1 below).
- WSA provides initial advice on site sensitivities and assists the requesting team to refine site access requirements.
- WSA provides final advice on on-site protocols (see section 2 below).

### Requesting site access

An email must be sent to [acummings@wsaco.com.au](mailto:acummings@wsaco.com.au) with the information set out below. This will assist the team to identify any sensitivities and facilitate site access arrangements where appropriate. A minimum of 5 working days' notice.

- Describe the nature of work proposed, addressing the following matters:
  - proposed activities while on site
  - the name and organisation of those who will be accessing the properties
  - number of personnel on site
  - machinery/vehicles to be used
  - any information on likely work health and safety issues – copies of relevant SWMS to be reviewed
- Identify the proposed timing of access, including the date(s) on which access is required and the duration of access (i.e. hours/days/weeks). Be as specific as possible to allow facilitation of site access with minimal delays.
- Identify the sites to be accessed, including whether the proposal is to only access public roads.
  - Provide specific title details and/or street addresses and schedule (if known). Plans to access different parts of the site on different dates should be avoided wherever possible.
  - Speak with a WSA team member prior to submitting the access request as they can assist in identifying properties.

### On-site protocols

On day 1 of the intended work schedule all persons will attend for a site induction. The intent of the induction will be to provide information on the project, safety and cultural awareness as

well as the hazards which maybe encountered whilst on site. All inductees will be required to provide:

- General construction induction card;
- Proof of identity with photo; and
- Complete WSA induction form.

While on site, all visitors must:

- avoid damaging any environmental or heritage features on the land;
- avoid any actions that may pose a fire risk and be vigilant for any source of ignition (and please also check behind you when you leave); and
- inform a site representative immediately if any issues are encountered on site.

In order to ensure on-site activities do not breach any obligations the under the Environment Protection and Biodiversity Conservation Act 1999 the following matters must be addressed when considering any construction, building works or site investigations involving machinery undertaken on site:

- protocols and permits, including Conditions of Approval attached to Part 13 Permit E2017- 1038, as referenced in the Biodiversity CEMP), that address impacts on listed threatened species or ecological communities, a member of a listed migratory species, or a member of a listed marine species in or on a Commonwealth area;
- protocols to protect and manage known sites of environmental sensitivity, including Aboriginal cultural heritage sites; and
- unexpected finds protocols to be followed in the event that new heritage items or safety risk items (asbestos) are encountered, including stopping work immediately.

WSA will ensure the above protocols and permits have been addressed prior to any activities taking place on the site.

## Attachment D7 Site Condition Monitoring Protocol

The following protocols have been established for the entire Airport site and any actions contained will also be performed by those responsible under this version of the plan and pertaining to the 600Ha. This approach will ensure a consistent set of actions are undertaken by all personnel on site at the time of any events.

Table D.D7.1 Treatment Register

Position	Normal	Trigger Level 1 (T1)	Trigger Level 2 (T2)	Trigger Level 3 (T3)
<b>Trigger Description</b>	<p>Wind – Light to gentle breeze (20km/h). Not impacting working @ heights or lifting activities</p> <p>Rain – No rain forecasted. No recent flooding impacting works.</p> <p>Lightning – No lightning or signs of lightning within area</p> <p>Bushfire – No bushfire</p> <p>Fire Danger Ratings – Low to High</p>	<p>Wind – Strong wind with wind gusts up to 45 km/h/ 12.5m/s creating a risk that is not controlled with existing measures</p> <p>Rain – Light rain fall (50-90% chance 50-100mm) in immediate catchment area with continuing rain forecast</p> <p>Lightning – Lightning activity greater than 30 kilometers away.</p> <p>Other - Weather warning from BOM</p> <p>Bushfire – 30kms-200kms away Fire Danger Ratings – Very High</p>	<p>Level 1 triggers plus</p> <p>Wind – Strong wind to strong gale force winds of 45 km/h to 87 km/h, 13-24 m/s</p> <p>Rain – Forecast significant rain fall (50-90% chance of 100-200mm) in immediate catchment area. Rain / storms forecast in catchment areas.</p> <p>Lightning – Lightning activity 10-30 kilometers away</p> <p>Other - Severe weather warning from BOM</p> <p>Bushfire – Bushfire 5-30kms away Fire Danger Ratings – Severe</p>	<p>Level 2 triggers plus</p> <p>Wind – Storm force winds in excess of 88 km/hr., 25 m/s causing immediate risk</p> <p>Rain – Current/immediate risk of heavy downpour resulting (Greater than 200MM) in localised flooding. Current/immediate risk of waterways flooding. Long term &gt; 4-day loss of site access</p> <p>Lightning – Lightning &lt;5 Kilometers away.</p> <p>Other- Flood warning BOM website</p> <p>Bushfire – Bushfire &lt;5km away Fire Danger Ratings – Catastrophic</p>
<b>Site works</b>	Operate as normal	<p>Check crane operation limits and cease works if required</p> <p>Ensure ERSED measures are in place to manage dirty water</p> <p>Operate as normal ensure measures are in place to control fire if it occurs</p>	<p>Check crane operation limits and cease works if required</p> <p>Ensure ERSED measures are in place to manage dirty water</p> <p>Allow Hot Works if strictly necessary</p>	<p>Cease crane operation</p> <p>Ensure ERSED measures are in place to manage dirty water</p> <p>Cease all Hot Works</p>
<b>Project Manager</b>	No variation from standard project managerial activities	Communicate status to all Section Managers.	<p>Communicate status to with relevant staff (function support managers).</p> <p>Consider mobilisation of ECO</p> <p>Communicate status to EPC</p>	<p>Communicate status to senior Managers</p> <p>Conduct Planning session with relevant staff (function support managers)</p>

Position	Normal	Trigger Level 1 (T1)	Trigger Level 2 (T2)	Trigger Level 3 (T3)
<b>Superintendent/ Emergency Controller</b>	No variation from standard supervision activities	Communicate status to subcontractors Ensure new environmental conditions are assessed by contractors and Identify temporary works at risk in event of escalation Communicate status to Project Manager	Communicate status to Project leader Communicate with subcontractors and develop action plan. Ensure sub-contractors and emergency management plans are ready to be activated. Monitor progress. Communicate status to Project Manager	Communicate status to Project Manager Ensure Project emergency management plans are activated Monitor progress of action plan Communicate status to Project Manager
<b>Environmental Staff</b>	No variation from standard management activities	Monitor and communicate information relating to inclement weather to Project Manager	Monitor and communicate information relating to inclement weather to Project Manager Provide advice on environmental preparation Conduct inspections as required	Monitor and communicate information relating to inclement weather to Project Manager Provide advice on environmental preparation Conduct inspections as required

## **Attachment D8      Site Access and Gates**

The following drawing details the access points to the airport site and showing the various gates and who has control of the gate.



Sydney Metro – Integrated Management System (IMS)

(Uncontrolled when printed)

