Appendix B2 Construction Flora and Fauna Management Sub-plan

M12 Motorway - West Project

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Details of Revision Amendments

Document Control

The Project Director is responsible for ensuring that this plan is reviewed and approved. The Project Director is responsible for updating this plan to reflect changes to construction, legal and other requirements, as required.

Amendments

Any revisions or amendments must be approved by the Project Director and/or client before being distributed / implemented.

Revision Details

Rev	Date	Reviewed By	Details
A	18/02/2022	L. Cooper	First Draft
B	13/05/2022	C. Douchkov	Second Draft following TfNSW/Arcadis review and comment
C	27/06/2022	A. Zvirzdinas	Third Draft following TfNSW/Arcadis review and comment on Rev B
D	18/07/2022	A. Zvirzdinas	Fourth Draft following TfNSW/Arcadis/ER review and comment on Rev C. New document number.
E	25/07/2022	A. Zvirzdinas	Fifth Draft following ER review and comment on Rev D
00	27/07/2022	A. Zvirzdinas	First Controlled Issue
F	31/01/2023	K. Purkiss	6 monthly review
01	16/05/2023	A.Brajlih	Second Controlled Issue

Document Review

Position	Name	Signature	Date
Project Director	[redacted]	[redacted]	27/07/2022
Project Director	[redacted]		17/05/2023

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Endorsement

Position	Name	Signature	Date
Ecologist	[redacted]		31/01/2023

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Acronyms and Abbreviations

Abbreviations	Expanded text
AFC	Approved for Construction
APVMA	Australian Pesticides and Veterinary Medicines Authority
AR	Amendment Report
Areas of vegetation to be retained	These areas present potential opportunities for the Construction Contractor to avoid and minimise potential vegetation impacts if possible. As vegetation impacts may occur during construction, these impacts have been considered in biodiversity off-set calculations.
ARSR	Amendment Report Submissions Report
BAR	Biodiversity Assessment Report
BC Act	NSW *Biodiversity Conservation Act 2016*
BOS	Biodiversity Offset Strategy
CA	Consistency Assessment
CCS	Community Communication Strategy
CEMP	Construction Environmental Management Plan
CFFMP	Construction Flora and Fauna Management Sub-plan
CoA	Condition of Approval
CPBGG JV	CPB Georgiou Joint Venture
Construction	Includes all activities required to construct the CSSI as described in the documents listed in Condition A1, including commissioning trials of equipment and temporary use of any part of the CSSI, but excluding Low Impact Work which is carried out to complete prior to the approval of the CEMP, works approved under a Site Establishment Management Plan, approved under a Consistency Assessment, demolition of acquired residential houses, structures and sheds, and works approved under an environmental management plan(s) in accordance with Condition A24.
CSSI	Critical State Significant Infrastructure
CSWMP	Construction Soil and Water Management Plan
CWRMP	Construction Waste and Resources Management Plan
DAWE	Former Commonwealth Department of Agriculture, Water and the Environment (now Commonwealth Department of Climate Change, Energy, Environment and Water)
DCCEEW	Commonwealth Department of Climate Change, Energy, Environment and Water
DEC	Former NSW Department of Environment and Conservation
DECC	Former NSW Department of Environment and Climate Change
DECCW	Former NSW Department of Environment, Climate Change and Water

DITRDC	Commonwealth Department of Infrastructure, Transport, Regional Development and Communications
Division 5.2 Approval	Approval issued by the NSW Minister for Planning and Public Spaces for the M12 Motorway
DPE	NSE Department of Planning and Environment
DPI	NSW Department of Primary Industries
DPIE	Former NSW Department of Planning, Industry and Environment (now NSW Department of Planning and Environment)
EAD	Environmental Assessment Documentation
EEC	Endangered Ecological Community
EES	Former Environmental, Energy and Science Group (now EHG)
EIS	Environmental Impact Statement
EMS	Environmental Management Systems
Environmental Assessment Documentation	The set of documents that comprise the Division 5.2 Approval: • Roads and Maritime Services (October, 2019) M12 Motorway, Environmental Impact Statement (EIS) • Transport for NSW (October, 2020) M12 Motorway, Submissions Report (the Submissions Report) • Transport for NSW (October, 2020) M12 Motorway, Amendment Report (AR) • Transport for NSW (December, 2020) M12 Motorway, Amendment Report submissions report (ARSR) • Transport for NSW (March, 2021) The M12 Motorway Amendment Report Submissions Report – Amendment (ARSR amendment) • WSP (October, 2021) M12 Motorway – West Package Detailed Design Consistency Assessment • GHD (October, 2021) M12 Motorway – Central Package Detailed Design Consistency Assessment • Arcadis (June, 2022) M12 Motorway – Sydney Water Crossings Consistency Assessment • Arcadis (July, 2022) M12 Motorway – Design Boundary Changes Consistency Assessment • Arcadis (August, 2022) M12 Motorway – Minor Change Consistency Assessment The documents that comprise the EPBC referral: • Submission #3486 – The M12 Motorway Project between the M7 Motorway, Cecil Hills and the Northern Road, Luddenham, NSW • Notification of referral decision and designated proponent – controlled action; date of decision 19 October 2018; ID: 2018-8286.
EP&A Act	*NSW Environmental Planning and Assessment Act* 1979
EPA	NSW Environment Protection Authority
EPBC Act	*Environmental Protection and Biodiversity Conservation Act* 1999

EPBC Referral	A Proponent must refer a proposed action to the Australian Government Minister for the Environment (the Minister) for assessment, if it has, will have, or is likely to have a significant impact on the world heritage values of a declared World Heritage property, or is likely to have a significant impact on the National Heritage values of a National Heritage place.
EPL	Environment Protection Licence
ER	Environmental Representative
ESM	Environment and Sustainability Manager (TfNSW)
ESR	Environmental Site Representative (CPBGG JV)
EWMS	Environmental Work Method Statements
Exclusion zones	Exclusion zones are areas of environmental importance (e.g. threatened vegetation or heritage items) that need to be protected. These exclusion zones are defined as no-go areas and are to be protected for the duration of construction in that particular footprint area.
FBA	NSW Framework for Biodiversity Assessment 2014
Federal Approval	Approval (EPBC 2018/8286) for carrying out the M12 Project under Part 8 of the *Environmental Protection and Biodiversity Conservation Act 1999* subject to specific CoA as detailed in Annexure A of the approval.
Final construction footprint	The area shown in the map(s) submitted under Commonwealth CoA 2, determined by TfNSW in accordance with a consistency assessment(s) or a modification assessment under the *NSW Environmental Planning and Assessment Act 1979* where no new significant impacts to protected matters are identified.
FM Act	NSW *Fisheries Management Act 1994*
HCP	Habitat Compensation Plan
Infrastructure Approval	Approval (SSI 9364) for carrying out of the M12 Project under Section 5.19 of the *Environmental Planning and Assessment Act* 1979 subject to specific CoA as detailed in Schedule 2 of the approval.
KFH	Key Fish Habitats
KTP	Key Threatening Processes
NASF	National Airports Safeguarding Framework
NPW Act	NSW *National Parks and Wildlife Act 1974*
NSW CoA	NSW Conditions of Approval
OCEMP	Overarching Construction Environmental Management Plan
OEH	NSW Office of Environment and Heritage, now Environment Energy and Science
PBFD	Psittacine beak and feather disease
Pesticide Act	NSW *Pesticides Act 1999*
PCT	Plant Community Type

PDLP	Place, Design and Landscape Plan
PMST	Protected Matters Search Tool
POEO Act	NSW *Protection of the Environment Operations Act 1997*
Primary CoA/REMM	CoA or REMM that is specific to the development of this Plan
Project, the	M12 Motorway West Project
REMM	Revised Environmental Management Measures
RIAR Group	NSW Regions, Industry, Agriculture and Resources Group (a part of DPIE)
Roads and Maritime	Former NSW Roads and Maritime Services. Now Transport for NSW
RTA	Roads & Traffic Authority. Former NSW Roads and Maritime Services, now Transport for NSW
SEARs	Secretary Environmental Assessment Requirements
Secondary CoA/REMM	CoA or REMM that is related to, but not specific to, the development of this Plan
TEC	Threatened Ecological Communities
TfNSW	Transport for New South Wales
TSC Act	*Threatened Species Conservation Act 1995* (NSW) (repealed) but relevant for this assessment due to being assessed under the Biodiversity Conservation Transitional arrangements.
WSIA	Western Sydney International Airport
WSP	Western Sydney Parklands
WSA Co	Western Sydney Airport Corporation
WSPT	Western Sydney Parklands Trust

1 Introduction

1.1 Context

This Construction Flora and Fauna Management Sub-plan (CFFMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the M12 Motorway (West project (the Project). The CPB Contractors and Georgiou Group Joint Venture (CPBGG JV) has been awarded the M12 West stage which is a construct only contract between The Northern Road, Luddenham and about 250 metres east of Badgerys Creek.

An Overarching Construction Environmental Management Plan (OCEMP) has been prepared by TfNSW to address to address the requirements of the NSW Minister's Conditions of Approval (CoA), Commonwealth Conditions of Approval, the environmental management measures detailed in the M12 Motorway Environmental Impact Statement (EIS), Revised Environmental Management Measures (REMMs) detailed in the Amendment Report (AR), all subsequent Consistency Assessments (CA) and all applicable legislation and Transport for New South Wales (TfNSW) Quality Assurance (QA) specifications. The OCEMP was approved by DPIE on 21/12/2021.

This CFFMP has been prepared by CPBGG JV to address the requirements of the OCEMP, all relevant TfNSW specifications, Environment Protection Licence (EPL) conditions and legislation.

1.2 Background and project description

The Project EIS assessed the impacts of construction of the Project on flora and fauna. As part of EIS development, a detailed Biodiversity Assessment Report (BAR) was prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued by the DPIE and the Commonwealth EIS Guidelines issued by the Commonwealth Department of Climate Change, Energy, Environment and Water (DCCEEW) (was DAWE). The BAR including a Biodiversity Offset Strategy (BOS) was included in the EIS as Appendix E.

Further assessment of flora and fauna impacts was undertaken subsequent to exhibition of the EIS and incorporated into a Biodiversity Supplementary Technical Report. The additional assessment considered the impacts on flora and fauna due to refinements in the Project design, including changes in the Project footprint, and the results of additional flora and fauna surveys which could be undertaken as property access was available during the spring survey time. The Biodiversity Supplementary Technical Report was included in the Amendment Report as Appendix A. Revised Environmental Management Measures (REMMs) were provided within the Amendment Report. Where applicable, the REMMs from the Amendment Report have been included in this CFFMP.

Revised areas of native vegetation impacted by the Project were identified for the 80% detailed design for the West and Central stages of the Project. The M12 Detailed Design – 80% Vegetation Clearing Report (GHD, 2021) completed for Central stage identified minor revisions to native vegetation directly impacted by the Project. The Biodiversity Consistency Assessment Memo for M12 Motorway - West Package Detailed Design (WSP, 2021), M12 Motorway – Central Package Detailed Design (GHD, 2021), M12 Motorway – Sydney Water Crossings (Arcadis, 2022a), M12 Motorway – Design Boundary Changes (Arcadis, 2022b) and M12 Motorway – Minor Design Boundary Changes and Temporary Signage Areas determined that the revised area of impact does not prevent the Project from being carried out generally in accordance with NSW CoA A1. The applicable components of these revisions have been included within this CFFMP.

A summary of the biodiversity offset credits required for the Project based on the refined design is presented in Appendix E of the EIS and revised in Section 8 of the Biodiversity Supplementary Technical Report.

The M12 West Project will involve building 7.5 km of motorway from east of Badgerys Creek (M12 West) to the Water Tower Access Road within Western Sydney Parklands and will provide a dual carriageway with a wide median to allow for future widening to six lanes. A detailed project description is outlined in Section 2 of the CEMP.

1.3 Scope of the Plan

The scope of this CFFMP is to describe how the CPBGG JV propose to manage potential flora and fauna impacts during construction of the Project.

Operational flora and fauna impacts and operation measures do not fall within the scope of this CFFMP and therefore are not included within the processes contained within the CFFMP.

1.4 Environmental Management System overview

The overall Environmental Management System for the Project is described in Section 1.5 of the Construction Environmental Management Plan (CEMP).

The CFFMP forms part of CPBGG JV's environmental management framework for the Project, as described in Section 1.5 of the CEMP.

Management measures identified in this CFFMP may also be incorporated into site or activity specific Environmental Work Method Statements (EWMS). EWMS incorporate appropriate mitigation measures and controls and identify key procedures to be used concurrently with the CFFMP. EWMS will be prepared for activities outlined in Table 3-5, Section 3.2.5 of the CEMP.

EWMS will be prepared for:

- Activities that impact on or are carried out in proximity to:
  - Threatened ecological communities, including identified areas of:
- Cumberland Plain Woodland in the Sydney Basin Bioregion (critically endangered)
- River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (endangered)
- Swamp oak floodplain forest of the NSW North Coast, Sydney Basin and South East Corner bioregions (endangered)
  - Threatened flora species, including *Dillwynia tenuifolia* and *Pultenaea parviflora*
  - Identified areas of occupied and potential habitat for the Cumberland Plain Land Snail, Southern Myotis and the White-bellied Sea-Eagle
  - Waterways, including Cosgroves Creek (M12 West), Badgerys Creek (M12 West),
- Vegetation clearing and grubbing
- Activities with high environmental risk
- Pre-construction activities including the delineation of sensitive areas
- Dewatering activities including activities where construction water may be discharged into natural waterways
- All works associated with rehabilitation of farm dams including but not limited to dewatering and filling.

EWMS will be prepared by the CPBGG JV Environmental Site Representative (ESR) and reviewed by the TfNSW Project Manager and TfNSW Environment and Sustainability Manager (ESM) (or delegate) and independent Environmental Representative (ER) prior to the commencement of the construction activities to which they apply. Construction personnel undertaking a task governed by an EWMS will undertake the activity in accordance with the mitigation and management measures identified in the EWMS.

Used together, the CEMP, strategies, procedures and EWMS form management guides that clearly identify required environmental management actions for reference by CPBGG JV personnel and subcontractors. The review and document control processes for this CFFMP are described in Section 3.11 and 3.13 of the CEMP.

1.4.1 CFFMP preparation, endorsement and approval

The CEMP and Sub-Plans will go through a review and update process as described in section 3.1 of TfNSW Specification G36 to ensure the CEMP and associated documents have been developed in accordance with the OCEMP. TfNSW will provide the CEMP to the ER for approval.

A hold point shall be submitted in accordance with G36 Section 3.1 - Preparation and submission of CEMP. TfNSW shall consider the documents prior to authorising the release of the Hold Point. TfNSW may request additional information for inclusion in the CEMP before authorising the release of the Hold

Point. Construction must not commence until the CEMP, CEMP Sub-plans and monitoring programs have been approved by the ER.

Other hold points are contained in Table 3-6 of the CEMP (including those contained in TfNSW QA Specifications G36 and G40 which are relevant to this CFFMP eg. clause 3.2.4).

This CFFMP will be updated to include the requirements of the Western Sydney Airport Plan and the WSIA Construction Environmental Management Framework at a later date which will require approval from the WSIA Environmental Manager prior to commencement of any works on WSIA land.

1.4.2 Interactions with other management plans

This Plan has the following interrelationships with other management plans and documents:

- Vegetation Management Plan including Vegetation Clearing Procedure outlining all the requirements for clearing activities, including pre-clearing and post clearing surveys and monitoring.
- A Habitat Compensation Management Plan, which will include a Nest Box Strategy will be developed and implemented
- Vegetation to be retained within construction worksites will be detailed on the CPBGG JV Sensitive Area Plans detailed in the CEMP
- Any fauna and /or flora management required in the establishment of ancillary facilities detailed in the Site Establishment Management Plan(s) will be in accordance with this CFFMP
- The Construction Soil and Water Management Plan (CSWMP) addresses the erosion and sedimentation impacts associated with vegetation clearing. Additionally, it addresses requirements for erosion management around permanent and temporary waterway crossings and water quality aspects associated with dewatering/discharge activities
- The Construction Waste and Resources Management Sub-plan (CWRMP) addresses the management of waste and provides a framework for waste management
- The Sustainability Management Framework addresses the requirement to enhance biodiversity conservation where reasonable and feasible
- Consultation between TfNSW and its CPBGG JV, stakeholders, the community and relevant agencies will be undertaken in accordance with the Overarching Communication Strategy (OCS) prepared by TfNSW to address the requirements of NSW CoA B1 and B2
- The CPBGG JV WHS Management Plan will address the safety requirements associated with the use of herbicides and pesticides. Safety Data Sheets (SDS) and product labels will also be referenced prior to application of herbicides and pesticides. The Weed Management Procedure identifies all record keeping requirements associated with the use of herbicides and pesticides.

1.5 Consultation

Section 1.9 .2 (Table 1-5) of the OCEMP outlines consultation undertaken during the development of the CEMP as required by the CoA and Revised Environmental Management Measures (REMMs).

A copy of the CEMP Sub-Plans (including this CFFMP) will be provided to the relevant government agencies for their information once these documents have been approved by the Independent Environmental Representative (ER).

1.5.1 Ongoing consultation during Construction

Consultation between TfNSW and its CPBGG JV, stakeholders, the community and relevant agencies regarding the management of flora and fauna within the Project area will be undertaken during the construction of the Project as required. The process for the consultation is documented in the OCS. Consultation as detailed by the State Infrastructure Approval is identified in Table 1-1.

Table 1-1 Consultation requirements

Reference	Description	Consultee	Responsibility
G36	Consultation with the appropriate specialists to assess the significance	Technical specialists/Project Ecologist	CPBGG JV

	of the unexpected flora/fauna find and development of management options		
NSW CoA E12	Impacts to Key Fish Habitat	DPI Fisheries	TfNSW
NSW CoA E15	Potential reuse of all removed native trees and vegetation including hollows, tree trunks, mulch, bush rock, root balls, coarse woody debris, collected plant material seeds and/or propagated plants	Council, Western Sydney Parklands, Landcare groups and relevant government agencies including NSW National Parks & Wildlife Service (Scheyville Office), Greater Sydney Local Land Services and DPI Fisheries.	TfNSW

2 Purpose and objectives

2.1 Purpose

The purpose of this Plan is to describe how construction impacts on flora and fauna will be minimised and managed during the construction of the Project.

2.2 Objectives

The objective of the CFFMP is to ensure that all avoidance, mitigation and management measures relevant to the protection of native flora and fauna including threatened species and endangered ecological communities are described, scheduled and assigned responsibility as outlined in:

- Environmental Assessment Documentation
- NSW CoA granted to the Project on 23 April 2021
- Commonwealth CoA granted to the Project on 3 June 2021
- Applicable requirements within the TfNSW QA Specifications G36, G38, G40, R178 and R179.

2.3 Targets

The following targets have been established for the management of flora and fauna impacts during construction of the Project:

- Achieve compliance with the relevant legislative requirements, CEMP, CoA and TfNSW specifications
- Ensure controls and procedures are implemented during construction activities to avoid, minimise or manage potential adverse impacts to flora and fauna within and adjacent to the Project corridor
- No increase in distribution of weeds currently existing within the Project areas
- No new weeds introduced to the Project areas
- No transfer of plant diseases or pathogens to or from the Project work areas
- Effective rehabilitation / revegetation that meets its ecological and landscaping objectives
- All fauna species encountered during construction are handled humanely in accordance with industry standards
- No pollution or siltation of aquatic ecosystems, wetlands, endangered ecological communities or threatened species habitat
- Minimise barriers to fauna movement and fish passage.

3 Environmental requirements

3.1 Relevant legislation and guidelines

3.1.1 Legislation

All legislation relevant to the Project is included in Appendix A1 of the CEMP. Legislation considered during the development of this Plan includes:

- *Environmental Planning and Assessment Act 1979*
- *Environment Protection and Biodiversity Conservation Act 1999*
- *National Parks and Wildlife Act 1974*
- *Biodiversity Conservation Act 2016 (Under Part 7 (Clause 27) of the Threatened Species Conservation Act (TSC Act))* [1]
- *Biosecurity Act 2015*
- *Pesticides Act 1999*
- *Fisheries Management Act 1994*
- *Protection of the Environment Operations Act 1997.*

3.1.2 Additional approvals, licences, permits and requirements

Refer to Appendix A2 of the CEMP.

3.1.3 Guidelines and standards

The main guidelines, specifications and policy documents relevant to this Plan include:

- TfNSW QA Specification G36 – Environmental Protection (Management System)
- TfNSW QA Specification G38 – Environmental Protection (Management System)
- TfNSW QA Specification G40 – Clearing and Grubbing
- TfNSW QA Specification R178 – Vegetation
- TfNSW QA Specification R179 – Landscape Planting
- TfNSW Biodiversity Guidelines (September 2011)
- NSW Biodiversity Offsets Policy for Major Projects (OEH, 2014b)
- Department of Primary Industries 'Policy and Guidelines for Fish Habitat Conservation and Management (DPI 2013)
- Hygiene protocol for the control of disease in frogs (DECCW, 2008).
- Australian Standard AS 4373 Pruning of Amenity Trees
- Roads and Maritime Environmental Direction No.25 - Management of Tannins from Vegetation Mulch (Roads and Maritime, 2012)
- Wildlife Connectivity Guidelines for Road Projects (Roads and Maritime, draft, November 2011)
- Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft (NSW Department of Environment and Conservation, 2004)
- Threatened Species Survey and Assessment Guidelines: Field Survey Methods for Fauna - Amphibians (NSW Department of Environment and Climate Change (DECC), 2009)
- Framework for Biodiversity Assessment (OEH, 2014)
- Policy and Guidelines for Fish Habitat Conservation and Management (NSW Department of Primary Industries (DPI), 2013)

[1] An application was granted on 5 April 2018 to save the Project under Part 7 (Clause 27) of the BC Act therefore, allowing it to be assessed under the TSC Act and in accordance with the NSW Biodiversity Offsets Policy for Major Projects (2014). This is underpinned by the *Framework for Biodiversity Assessment 2014* (FBA). Further detail can be found in Section 1.4 of the Biodiversity Assessment Report (BAR) for the Project.

- Policy and Guidelines for Fish Friendly Waterway Crossings (DPI, 2004)
- Fish Passage Requirements for Waterway Crossings (Fairfull and Witheridge, 2003)
- NSW Guide to Surveying Threatened Plants (OEH, 2016)
- Noxious and Environmental Weed Control Handbook, 4th Edition, NSW Industry & Investment Management Guide
- Australian Standard 4970 – 2009 Protection of Trees.
- PS311 – Environmental Design and Compliance, specifically:
  - M12 Central Approved for Construction (AFC) - Vegetation Clearing Report (GHD, 2021)
  - M12 West (AFCVegetation Clearing Report) (WSP, 2021)
- Biodiversity Consistency Assessment Memo for M12 Motorway - West Package Detailed Design (WSP, 2021)Consistency Assessments:
  - Biodiversity Consistency Assessment Memo for M12 Motorway – Sydney Water Crossings (Arcadis, 2022a)
  - Biodiversity Consistency Assessment Memo for M12 Motorway – Design boundary changes (Arcadis, 2022b)
  - Minor Biodiversity Consistency Assessment Memo for M12 Motorway – Design boundary changes and temporary signage areas (Arcadis, 2022c)

3.2 Ministers Conditions of Approval

The primary NSW CoA relevant to the development of this Plan are listed in Table 3-1. A cross reference is also included to indicate where the CoA is addressed in this Plan or other Project management documents.

Table 3-1 Primary CoA

CoA No.	Condition Requirements	Document Reference
A5	Where the terms of this approval require a document or monitoring program to be prepared or a review to be undertaken and submitted to the Planning Secretary, and the terms of this approval require the document, monitoring program or review to be prepared/undertaken in consultation with identified parties, evidence of the consultation must be submitted to the Planning Secretary with the relevant document, monitoring program or review. The evidence must include:	Section 1.5
	(a) documentation of the engagement with the party identified in the condition of approval that has occurred before submitting the document for approval;	
	(b) a log of the dates of engagement or attempted engagement with the identified party;	
	(c) documentation of the follow-up with the identified party where engagement has not occurred to confirm that they do not wish to engage or have not attempted to engage after repeated invitations;	
	(d) outline of the issues raised by the identified party and how they have been addressed; and	
	(e) a description of the outstanding issues raised by the identified party and the reasons why they have not been addressed.	
C2	The CEMP must provide: (h) a list of all the CEMP Sub-plans required in respect of construction, as set out in Condition C4. Where staged construction of the CSSI is proposed, the CEMP must also identify which CEMP Sub-plan applies to each of the proposed stages of construction;	CEMP This CFFMP
	(k) for periodic review and update of the CEMP and all associated plans and programs.	CEMP Section 3.1.3 Section 8.2
C4	The following CEMP Sub-plans must be prepared in consultation with the relevant agencies identified for each CEMP Sub-plan. Details of all information requested by an agency during consultation must be provided to the Planning Secretary as part of any submission of the relevant CEMP Sub-plan, including copies of all correspondence from those agencies as required by Condition A5. (c) Flora and Fauna – DPI Fisheries, EES, DAWE (now DCCEEW) and relevant Council(s)	Section 1.5.1
C5	The **CEMP Sub-plans** must state how: (a) the environmental performance outcomes identified in the documents listed in **Condition A1** will be achieved;	Section 2.2 Section 2.3 Section 3.2 Section 3.3 Section 6
	(b) the mitigation measures identified in the documents listed in **Condition A1** will be implemented;	Section 3.2

CoA No.	Condition Requirements	Document Reference
		Section 3.3 Section 3.4 Section 6 Table 6-2
	(c) the relevant terms of this approval will be complied with; and	Section 3.2 Section 3.3 Section 6 Table 6-2
	(d) issues requiring management during construction (including cumulative impacts), as identified through ongoing environmental risk analysis, will be managed through SMART (Specific, Measurable, Achievable, Realistic and Timely) principles.	Section 5.3 Section 8 CEMP Section 4.1
C8	The Flora and Fauna CEMP Sub-plan must be endorsed by a suitably qualified and experienced ecologist and include, but not be limited to:	Document Control page
	(a) details of the measures to avoid and minimise disturbance to native vegetation, and other habitat of native flora and fauna species;	Table 6-2
	(b) procedures for undertaking pre-clearing surveys for native fauna, including surveys by a suitably qualified and experienced ecologist to determine the presence of native fauna in the area impacted by the CSSI, and procedures and measures to manage their relocation;	Appendix A (Section 2) Appendix A (Section 2.6) Appendix A (Appendix A – Vegetation Clearing Procedure)
	(c) pre-clearing measures for Cumberland Plain Land Snail known and potential habitat and measures to protect the White-bellied Sea Eagle nest;	Appendix A (Section 2.2.3; Section 2.2.5)
	(d) a Habitat Compensation Plan and Snag Management Plan as committed to in the document listed in Condition A1(d);	Appendix D Appendix E
	(e) details of proposed management and mitigation measures for each threatened species listed in Table 3 and *Pimelea spicata* (Spiked Rice-flower) if recorded in the surveys carried out under Condition E8;	Section 6.3 Section 4.1.2
	(f) a weed, pest and pathogen management plan, including measures to minimise the spread of Phytophthora cinnamomic;	Section 5.2.5 Section 5.2.6 Appendix C

CoA No.	Condition Requirements	Document Reference
	(g) procedures for the dewatering of farm dams, including the relocation of aquatic fauna; and	Section 6.5 Appendix F Appendix G
	(h) protocols for incidental finds of threatened species and ecological communities within the construction boundary.	Section 6.7 Appendix B
C9	Any of the CEMP Sub-plans may be submitted to the Planning Secretary for approval along with, or subsequent to, the submission of the CEMP but in any event, no later than one (1) month before the commencement of construction	Table 1-1 CEMP
C10	Construction must not commence until the CEMP and all CEMP Sub-plans have been approved, unless otherwise agreed by the Planning Secretary. The CEMP and CEMP Sub-plans, as approved by the Planning Secretary, including any minor amendments approved by the ER must be implemented for the duration of construction. Where construction of the CSSI is staged, construction of a stage must not commence until the CEMP and sub-plans for that stage have been endorsed by the ER and approved by the Planning Secretary.	Section 1.4.1 Overarching CEMP and FFMP approved by DPE 21/12/2021

3.3 EPBC Conditions of Approval

The primary Federal CoA relevant to the development of this Plan are listed in Table 3-2.

Table 3-2 Commonwealth CoA

CoA No.	Condition Requirements	Document Reference
3	The approval holder must not clear protected matters outside the final construction footprint.	Section 5.2.1
4	To minimise the impacts of the action on protected matters the approval holder must not clear more than the following specified amounts, or another specified amount determined in consultation with the Department in accordance with condition E4 of the State Infrastructure approval within the final construction footprint:	Section 5.2.1
4(a)	42.89 hectares of known Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest threatened ecological community;	Section 5.2.1
4(b)	0.44 hectares of known Western Sydney Dry Rainforest and Moist Woodland on Shale threatened ecological community;	Section 5.2.1
4(c)	100 known *Pultenaea parviflora* individuals;	Section 5.2.1
4(d)	The number of *Pimelea spicata* individuals identified in the additional surveys required by condition E8 of the State Infrastructure approval;	Section 5.2.1
4(e)	62.71 hectares of known foraging habitat for Grey-headed Flying Fox (*Pteropus poliocephalus*);	Section 5.2.1
4(f)	80.21 hectares of known foraging habitat for Swift Parrot (*Lathamus discolor*).	Section 5.2.1

3.4 Revised Environmental Management Measures

The primary REMMs relevant to the development of this Plan are listed in Table 3-3 below. A cross reference is also included to indicate where the REMM is addressed in this Plan or other Project management documents.

Table 3-3 Primary REMMs

ID	Measure/requirement	Timing	CFFMP Reference
B1	A CFFMP will be prepared. The measures in the CFFMP will include:	Prior to construction	This CFFMP
	• A site-specific induction		Section 7.2 CEMP Section 5.3.1
	• Identification of clearing limits and exclusion fencing		Section 6.3
	• Pre-clearance surveys		Section 6.1
	• Vegetation clearing procedures		Appendix A (Appendix A – Vegetation Clearing Procedure)
	• An unexpected finds procedure		Appendix B
	• Procedures for weed management and monitoring		Section 6.7 Appendix C
	• A process for de-watering farm dams and the relocation of aquatic fauna		Section 6.6 Appendix F
	• Provision of supplementary fauna habitat (e.g. nest boxes).		Section 6.2 Appendix D

3.5 TfNSW QA Specifications

The TfNSW QA Specifications set out the minimum requirements for the detailed outcomes in terms of quality or performance expected in the finished product for construction projects and are relevant to various construction activities on work sites to minimise impacts to the environment.

TfNSW specifications are a key source of environmental protection management processes relevant to this CFFMP. The specifications set out environmental protection requirements, including Hold Points that must be complied with by the CPBGG JV during construction of the Project. A Hold Point is a point beyond which a work process must not proceed without express written authorisation from TfNSW.

TfNSW QA Specifications relevant to this CFFMP are outlined in Section 3.1.3.

4 Existing Environment

The key reference documents are Section 6.1 and Appendix A of the M12 Motorway Amendment Report (AR), Section 7.1 and Appendix E of the M12 Motorway EIS, the Amendment Report Submissions Report (ARSR) the ARSR Amendment.

The Project boundary and relevant ecological data is shown on the Sensitive Area Plans included in Appendix A6 of the CEMP.

Key components of the Biodiversity Assessment Report (BAR) methodology included:

- Desktop review of:
  - NSW BioNet Species Sightings data collection, managed by the EHG
  - Protected Matters Search Tool, managed by DCCEEW
  - BioNet Vegetation Classification data collection managed by EHG
  - BioNet Threatened Species data collection, managed by EHG
  - NSW WeedWise, managed by DPI
  - RIAR Spatial Data Portal
  - Other relevant environmental and strategic planning documents.
- Undertaking a likelihood of occurrence assessment involving determining the likelihood of a particular species occurring within the Project study area. A likelihood ranking was assigned to species, including 'recorded', 'high', 'moderate', 'low' and 'none'. The likelihood of occurrence assessment was used to guide and inform the field surveys carried out for the Project
- Field surveys to identify the biodiversity values within the Project area prior to Project approval in accordance with requirements of the Framework for Biodiversity Assessment, including:
  - Vegetation surveys over 13 days between May and November 2017, August and September 2018 and in February 2019
  - Targeted flora surveys over 16 days during October, November 2017 and August 2018
  - Terrestrial fauna habitat assessments at 43 sites across the Project study area
  - Targeted fauna surveys for species with a moderate to high likelihood of occurrence carried out over 34 days between May 2017 and October 2018
  - Aquatic habitat assessments carried out on 18 and 19 June 2018 and 11 March 2019 at 14 waterway locations across the Project study area
  - Three additional days of field survey between 16 January and 29 January 2020 for the amended construction footprint.
- Additional field surveys were undertaken following Project approval, including:
  - Targeted *Pimelea spicata* surveys over three days between 2 February and 7 May 2021
  - Threatened species spring surveys for 12 threatened species over 11 days between 28 September and 16 December 2021 as required by NSW CoA E4, E5, and E6. Of the 12 species, *Dilwynia tenufolia* and *Pultenaea parviflora* were identified.
  - Several biodiversity surveys for consistency assessments were undertaken to address detailed design boundary changes, including:
    - Targeted flora and fauna surveys carried out on 17 June 2021 for M12 West Detailed Design Biodiversity Assessment (WSP, 2021)
    - Targeted flora and fauna surveys carried out in June 2021 for M12 Central Detailed Design Biodiversity Assessment (GHD, 2021)
    - Targeted flora and fauna surveys carried out on 3 February and 14 February 2022 for M12 Sydney Water Crossings Biodiversity Assessment (Arcadis, 2022a)
    - Targeted flora and fauna surveys carried out on 12 April 2022 for M12 Design Boundary Changes Biodiversity Assessment (Arcadis, 2022b)
    - Targeted flora and fauna surveys carried out in August 2022 for M12 Minor Boundary Changes and Temporary Signage Areas Consistency Assessment (Arcadis, 2022c).
- Identification and assessment of likely impacts on biodiversity arising from the project

- Mitigation measures for avoiding, managing or reducing impacts on biodiversity values during detailed design, construction and operation
- Identification of any residual impacts that cannot be avoided, minimised or mitigated which must be offset.

The following sections summarise existing flora and fauna within and adjacent to the Project area including species, communities and habitats.

4.1 Environmental aspects

4.1.1 Threatened ecological communities (NSW)

Threatened Ecological Communities (TECs) listed in NSW under the BC Act have been located in the study area and are listed below (the corresponding Plant Community Type (PCT)) and area of impact are detailed within Table 5 1:

- River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (endangered)
- Cumberland Plain Woodland in the Sydney Basin Bioregion (critically endangered)
- Swamp oak floodplain forest of the NSW North Coast, Sydney Basin and South East Corner bioregions (endangered).

Commonwealth listed EPBC Act listed TECs have been located in the Project study area and are listed below:

- Cumberland Plain Shale Woodlands (critically endangered)

The location of these TEC's in relation to the Project are depicted in

Figure 4-1 and in the Sensitive Area Plans included at Appendix A6 of the CEMP.

4.1.2 Threatened or otherwise significant flora species

Threatened flora species identified, or with the potential to occur within the Project corridor, and their conservation status, are listed in Table 4-1.

Table 4-1 Threatened or otherwise significant flora species

Common name	Scientific name	EPBC Act	BC Act	Occurrence
	Dillwynia tenuifolia	-	Vulnerable	-
Juniper-leaved Grevillea	*Grevillea juniperina subsp. juniperina*	-	Vulnerable	-
	Marsdenia viridiflora subsp. viridiflora	-	Endangered population	-
Spiked Rice-flower	*Pimelea spicata*	Endangered	Endangered	-
Sydney Bush Pea	*Pultenaea parviflora*	Vulnerable	Endangered	-

The location of these flora species in relation to the Project are shown in Figure 4-1 and the Sensitive Area Plans included at Appendix A6 of the CEMP. In accordance with NSW CoA E8 and Commonwealth CoA 1, additional surveys for the Spiked Rice-flower (*Pimelea Spicata*) were undertaken between February to May in 2021 in potential habitat for this species within the construction footprint to the north of Elizabeth Drive and west of the existing Wallgrove Road. No plants of Spiked Rice-flower were recorded during these surveys as per Commonwealth CoA 1. Documentation can be found at: https://roadswaterways.transport.nsw.gov.au/projects/01documents/m12-motorway/m12-pimelea-spicatasurvey-report-07-2021.pdf

Additional spring surveys were also undertaken for 12 threatened flora species in accordance NSW CoA E4, E5 and E6 between 28 September and 16 December 2021, based on the presence of previous records or potential habitat within and adjoining the Project footprint. Of the 12 targeted species, two threatened flora species were recorded east of Badgerys Creek: *Dillwynia tenuifolia* and Sydney Bush Pea (*Pultenaea parviflora).* A total of 660 of *Dillwynia tenuifolia* and 300 *Pultenaea parviflora* will be impacted by the Project. This has been further refined since the development of several consistency assessments for the Project .

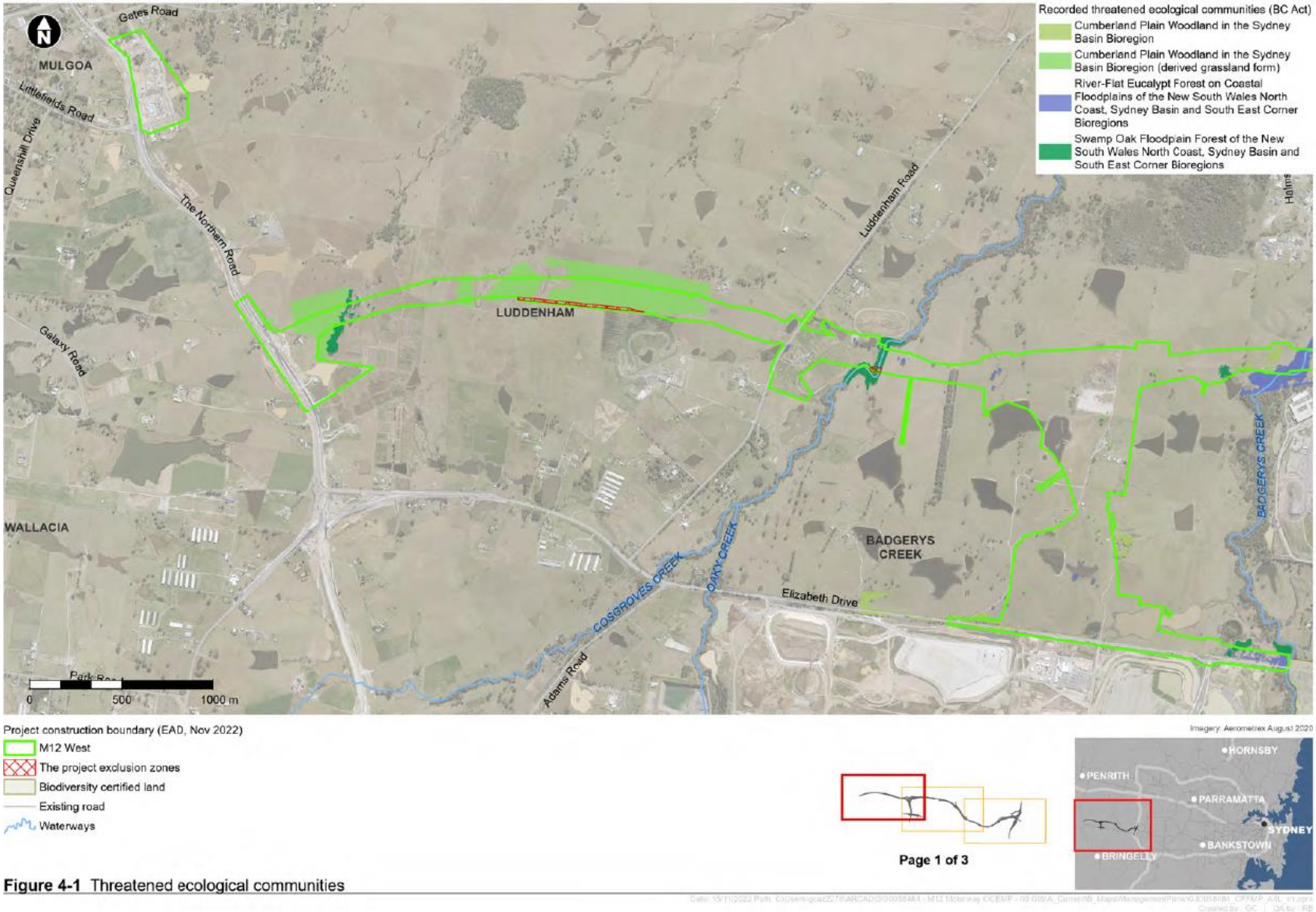

Figure 4-1 Threatened ecological communities

Figure 4-1 Threatened ecological communities

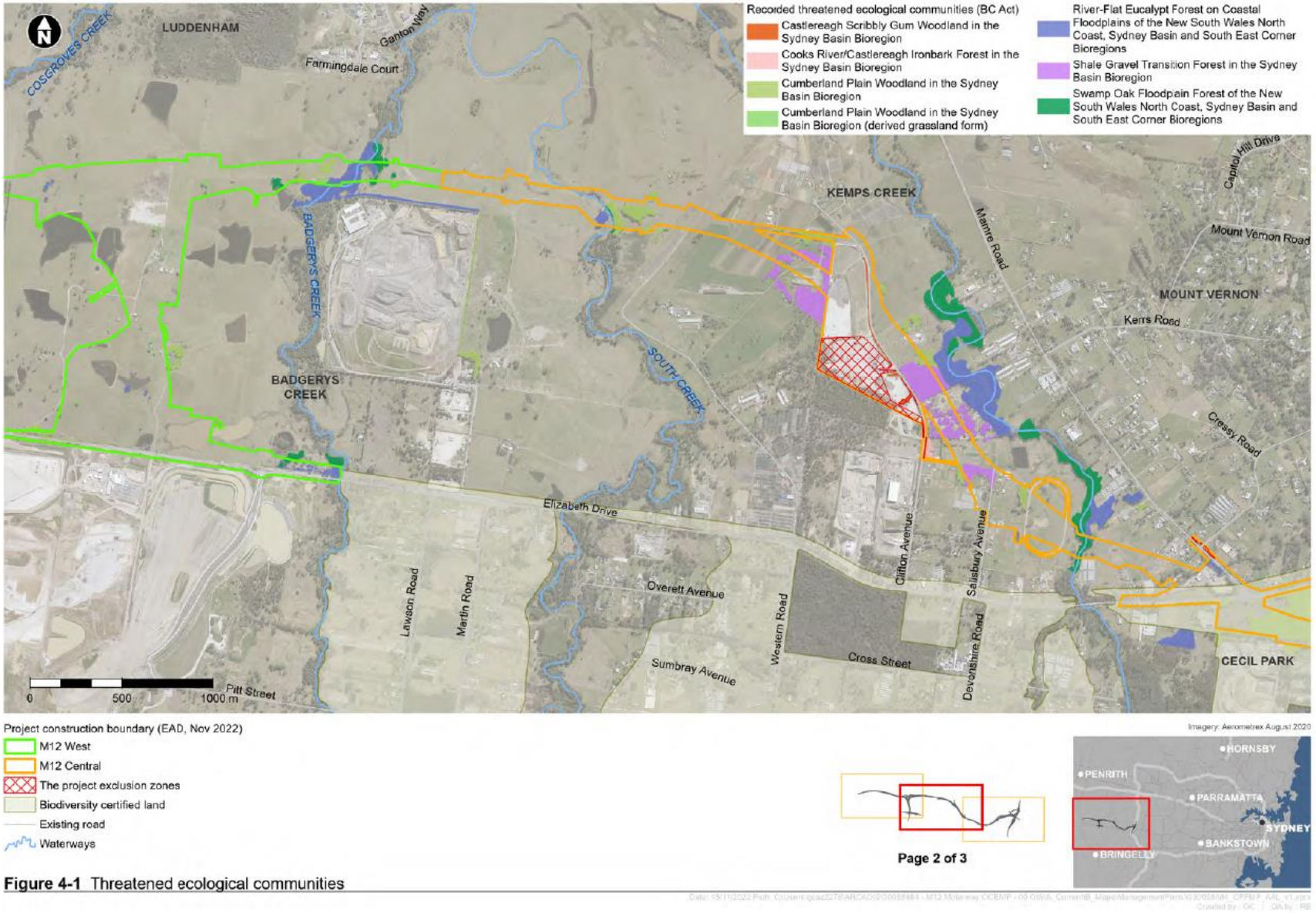

Figure 4-1 Threatened ecological communities

4.1.3 Fauna habitat

Four fauna habitat types were identified within the Project study area. These are listed in Table 4-2 and shown in Figure 4-2 and on the Sensitive Area Plans included at Appendix A6 of the CEMP. Only information relating to M12 West has been provided in the below section.

Table 4-2 Fauna habitat types

Name	Habitat description
Woodland	Dense understorey grasses, coarse woody debris and leaf litter provide shelter habitat for small terrestrial amphibians and reptiles. Large living or dead hollow-bearing trees are relatively scarce. Canopy trees in woodland habitat provide blossom resources for common nectivorous birds, small gliders and flying-foxes.
Riparian forest	This habitat typically occurs as linear strips of native vegetation surrounded by largely cleared grazing land. Wider patches of riparian forest (e.g. along some sections of Badgerys Creek (M12 West) support large mature Eucalyptus trees (some with small or medium sized hollows) and dense understorey vegetation able to support hollow-dependent fauna.
Grassland	This habitat is comprised almost entirely of land cleared of native forest or woodland for grazing, cropping and more recently for residential and industrial development. Large, scattered paddock trees and stags occur within grassland habitat in some sections of the Project study area, some supporting small, medium and large hollows. Hollows within the grasslands of the Project study area are likely to provide roosting habitat for common, adaptable microbats and were observed to provide nesting habitat for bird species including Little Corella, Long-billed Corella, Eastern Rosella and Red-rumped Parrot. Native fauna most frequently recorded from grassland habitat during surveys were highly adaptable species typically associated with cleared landscapes.
Wetlands and watercourses	Most dams are located within cleared grazing lands and provide limited habitat value for most wetland dependent fauna (e.g. Australasian Bittern). Some of these dams support emergent and/or submerged aquatic vegetation. Very few provide dense bankside vegetation and/or shelter habitat such as rocks and coarse woody debris. Dams may provide a water resource for woodland fauna such as birds, macropods and microbats. Most watercourses within the Project study area were heavily altered by earthworks, construction, pollution, vegetation clearing, erosion and sedimentation. Further detail regarding the watercourses and aquatic habitat present within the Project study area is provided in 'Aquatic habitat' below.

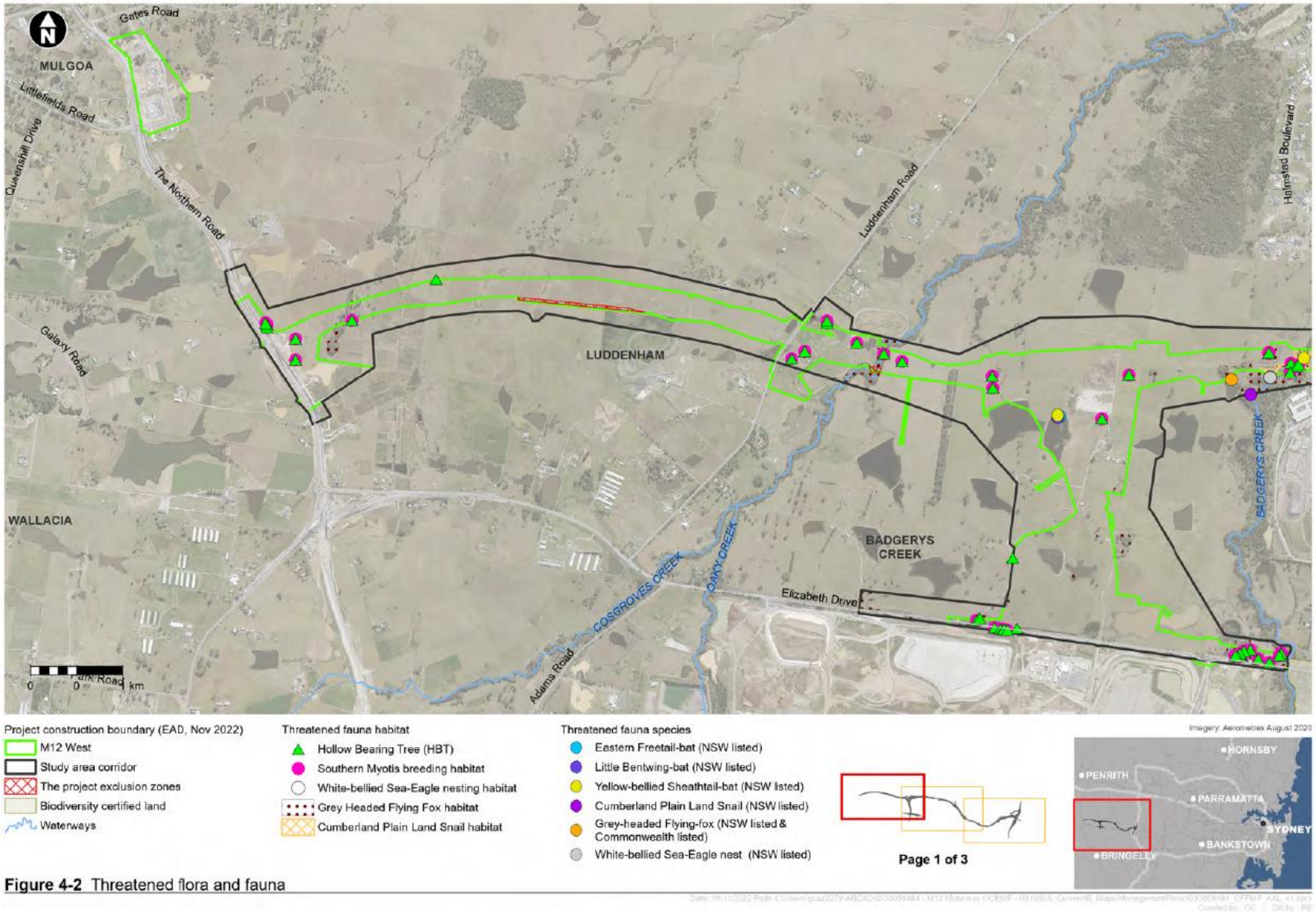

Figure 4-2 Threatened flora and fauna

Figure 4-2 Threatened habitat features (Source: EIS/Amendment report)

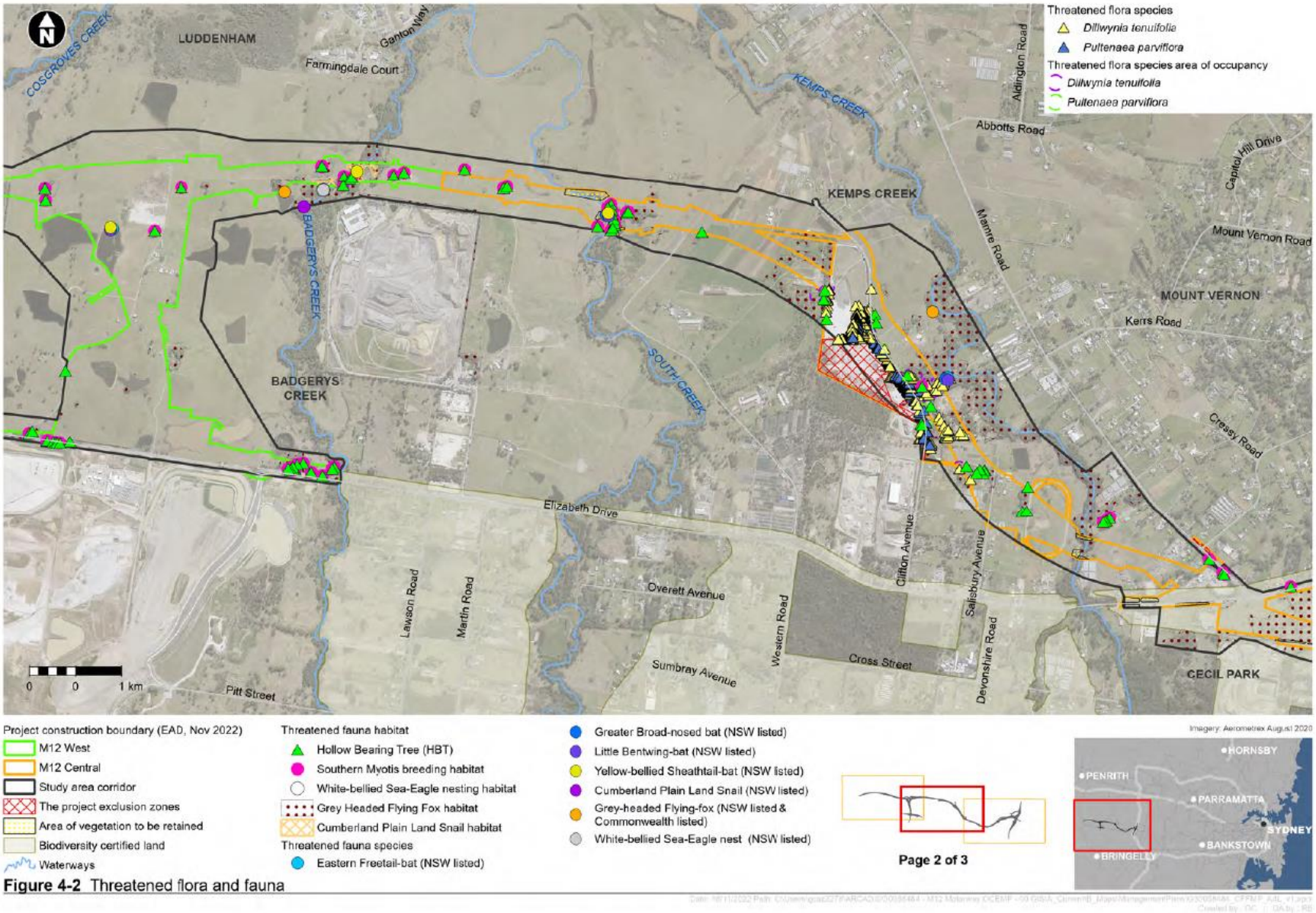

Figure 4-2 Threatened flora and fauna

Figure 4-3 Threatened habitat features (Source: EIS/Amendment report)

4.1.4 Threatened fauna

Threatened fauna species identified during survey (confirmed) and those which have been previously recorded in the M12 West area are listed in Table 4-3.

Table 4-3 Threatened fauna

Common name	Scientific name	EPBC Act	BC Act	Occurrence likelihood
Eastern Coastal Free-tailed Bat (formerly Eastern Freetail-bat)	*Micronomus norfolkensis*	-	Vulnerable	Recorded
Large Bent-winged Bat (formerly Eastern Bentwing-bat)	*Miniopterus orianae oceanensis*	-	Vulnerable	Recorded
Little Bent-winged Bat (formerly Little Bentwing-bat)	*Miniopterus australis*	-	Vulnerable	Recorded
White-bellied Sea-Eagle	*Haliaeetus leucogaster*	-	Vulnerable	Recorded
Yellow-bellied Sheathtail-bat	*Saccolaimus flaviventris*	-	Vulnerable	Recorded
Cumberland Plain Land Snail	*Meridolum corneovirens*	-	Endangered	Recorded
Eastern False Pipistrelle	*Falsistrellus tasmaniensis*	-	Vulnerable	Moderate
Southern Myotis (breeding)	*Myotis macropus*	-	Vulnerable	Moderate Potential breeding habitat recorded
Southern Myotis (forage habitat)				Moderate

4.1.5 Aquatic habitat

Aquatic habitat values for each waterway within the M12 West area are shown in Table 4-4. No potential habitat for threatened fish listed under the FM Act and EPBC Act occurs within the Project study area. Therefore, no threatened fish species are anticipated to occur within the Project study area.

DPI Fisheries defines 'Key Fish Habitats' (KFH) as those aquatic habitats that are important to the sustainability of the recreational and commercial fishing industries, the maintenance of fish populations generally and the survival and recovery of threatened aquatic species. KFH includes all marine and estuarine habitats up to highest astronomical tide level (that reached by 'king' tides) and most permanent and semi-permanent freshwater habitats including rivers, creeks, lakes, lagoons most permanent and semi-permanent freshwater habitats including rivers, creeks, lakes, lagoons, billabongs, weir pools and impoundments up to the top of the bank. Small headwater creeks and gullies (first and second order streams), that only flow for a short period after rain are generally excluded, as are farm dams constructed on such systems. Wholly artificial waterbodies such as irrigation channels, urban drains and ponds, salt and evaporation ponds are also excluded except where they are known to support populations of threatened fish or invertebrates.

DPI Fisheries has prepared mapping of KFH based on this definition. The location of key fish habitat is provided in

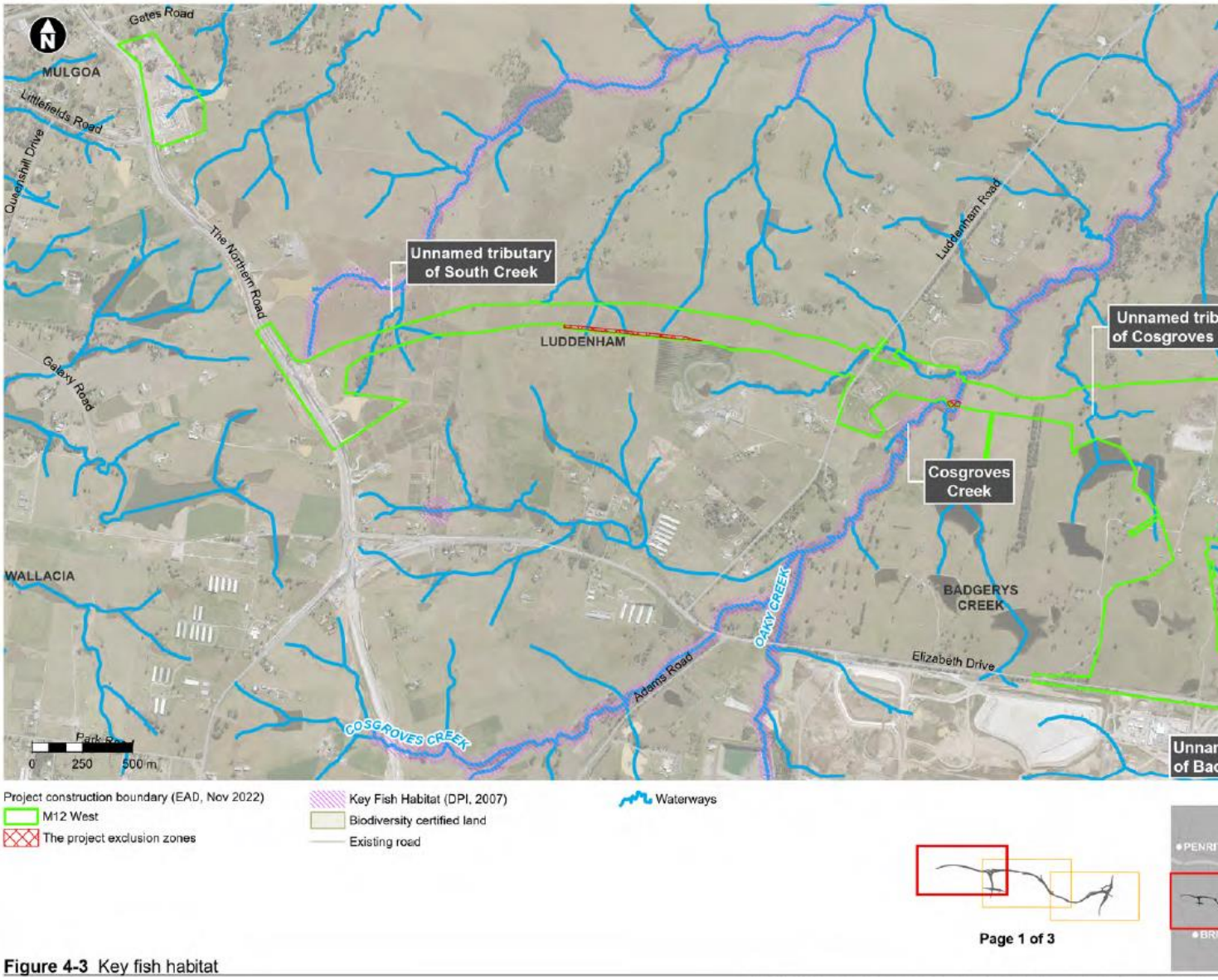

Figure 4-3 Key fish habitat

Figure 4-4.

Fish habitats were also assessed using the fisheries habitat classification set out in *Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003):

- **Class 1 – major fish habitat:** major permanently or intermittently flowing waterway (e.g. river or major creek), habitat of a threatened fish species.
- **Class 2 – moderate fish habitat:** named permanent or intermittent stream, creek or waterway with clearly defined bed and banks with semi-permanent to permanent waters in pools or in connected wetland areas. Marine or freshwater aquatic vegetation is present. Known fish habitat and/or fish observed inhabiting the area.
- **Class 3 – minimal fish habitat:** named or unnamed waterway with intermittent flow and potential refuge, breeding or feeding areas for some aquatic fauna. Semi-permanent pools form within the waterway or adjacent wetlands after a rain event. Otherwise, any minor waterway that interconnects with wetlands or recognised aquatic habitats.
- **Class 4 – unlikely fish habitat:** named or unnamed waterway with intermittent flow following rain events only, little or no defined drainage channel, little or no flow or free-standing water or pools after rain events.

Table 4-4 Aquatic habitat values for each waterway within the Project study area

Waterway	Stream order	Waterway class (Fairfull and Witheridge)	Key fish habitat (DPI Fisheries)	Sensitive receiving environment
Cosgroves Creek	4th	2 – moderate fish habitat	Key fish habitat (Type 2) - moderately sensitive key fish habitat. The creek is also currently mapped by DPI as key fish habitat (DPI, 2018).	Yes
Unnamed tributary of Cosgroves Creek	2nd	4 – unlikely fish habitat	Not mapped as key fish habitat.	No
Unnamed tributary of Badgerys Creek	3rd	4 – unlikely fish habitat	Not mapped as key fish habitat.	No
Badgerys Creek	4th	2 – moderate fish habitat	Key fish habitat (Type 2) - moderately sensitive key fish habitat. The creek is also currently mapped by DPI as key fish habitat (DPI, 2018).	Yes

Based on the aquatic habitat value above, the following sites are considered sensitive receiving environments:

- Cosgroves Creek (M12 West)
- Badgerys Creek (M12 West)

4.1.6 Listed migratory species

The Protected Matters Search Tool (PMST) report identified 16 listed migratory species with the potential to occur within 10 kilometres of the Project study area. Preliminary desktop assessments identified eight of the 16 species to have a moderate likelihood of occurrence and eight to have a low likelihood of occurrence in the Project study area. Subsequent habitat assessments and field surveys assessed that all 16 species have a low likelihood of occurrence in the Project study area.

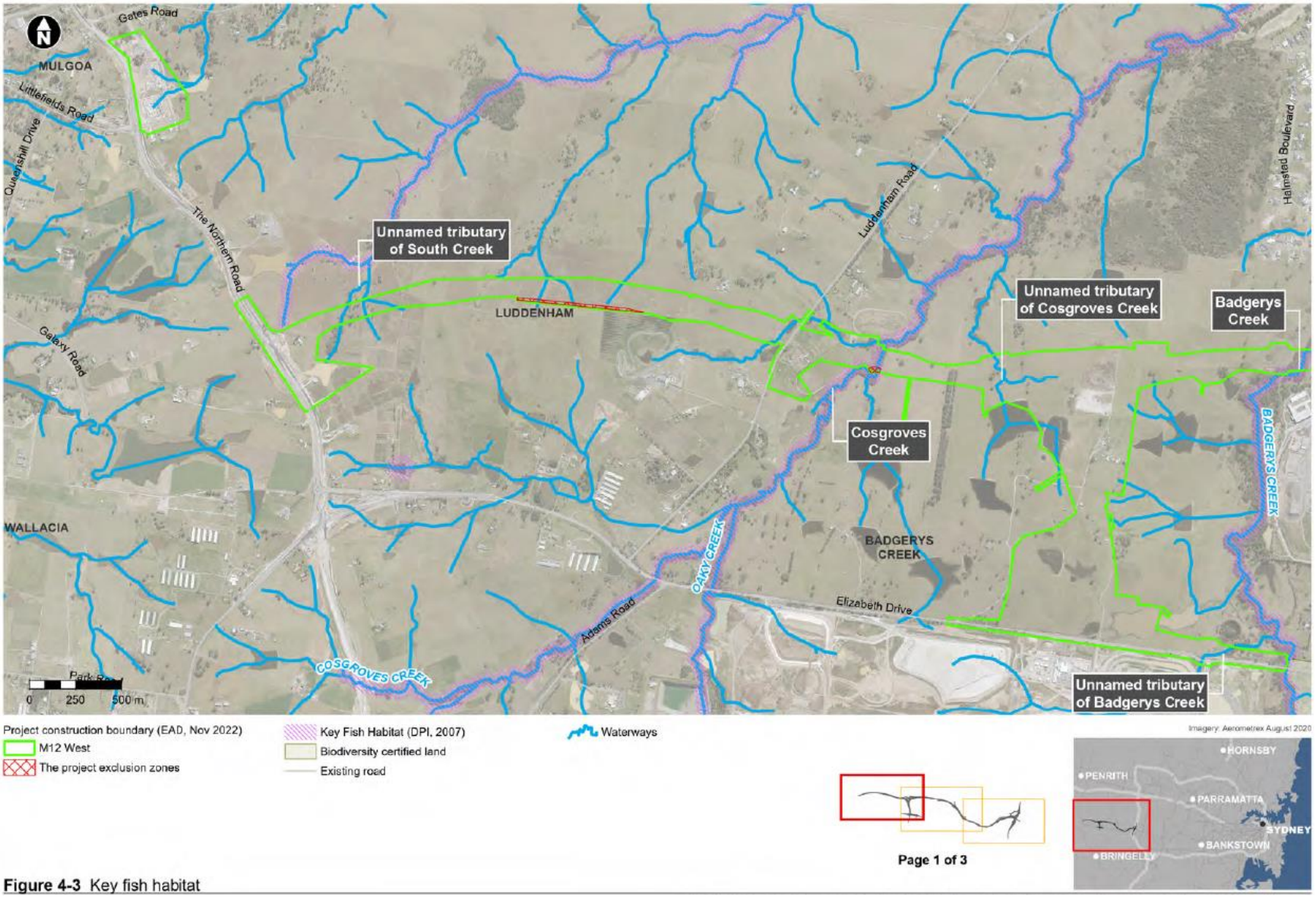

Figure 4-3 Key fish habitat

Figure 4-4 Key fish habitat (Source: EIS/Amendment report)

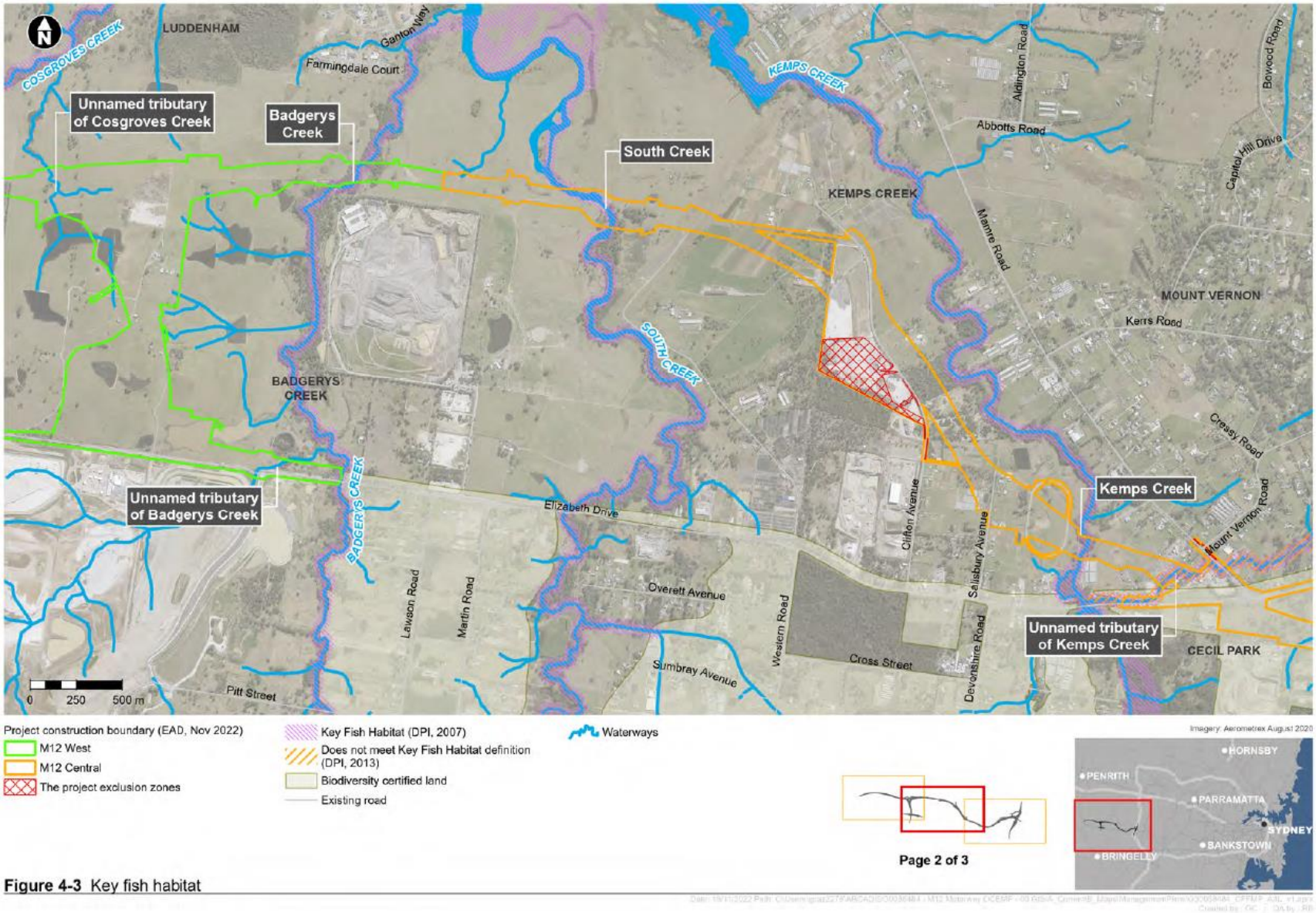

Figure 4-3 Key fish habitat

Figure 4-5 Key fish habitat (Source: EIS/Amendment report)

4.2 Matters of National Environmental Significance

4.2.1 Threatened species and ecological communities

One EPBC Act listed Threatened Ecological Community (TEC) has been located in the Project area and are listed below:

- Cumberland Plain Shale Woodlands (critically endangered)

As stated in Section 4.1.2 of this CFFMP, two EPBC listed threatened flora species are located within or in the immediate vicinity of the Project study area, the Sydney Bush Pea (*Pultenaea parviflora*) and Spiked Rice flower (*Pimelea spicata*). In accordance with NSW CoA E8 and Commonwealth CoA 1, additional surveys for the Spiked Rice-flower (*Pimelea Spicata*) were undertaken within the construction footprint to the north of Elizabeth Drive and west of the existing Wallgrove Road. No plants of Spiked Rice-flower were recorded during these surveys.

One EPBC listed fauna species, the Grey-headed Flying-fox (*Pteropus poliocephalus*), listed as Vulnerable, was recorded foraging within the Project area.

4.2.2 Migratory species

The Project study area does not contain any areas of important habitat for any of the listed migratory species.

4.2.3 Wetlands of international importance

There are no wetlands of international importance within 10 kilometres of the Project study area.

4.2.4 World and natural heritage

There is one world heritage locations within 10 kilometres of the Project study area. The Greater Blue Mountains Area is located approximately seven kilometres from the western most point of the Project study area. It is highly unlikely that this area will be impacted by the project.

4.2.5 National heritage

There is one national heritage locations within 10 kilometres of the Project study area. The Greater Blue Mountains Area is located approximately seven kilometres from the western most point of the Project study area. It is highly unlikely that this area will be impacted by the project.

5 Environmental aspects and impacts

The following section details ecological impacts to date incorporating results of the additional environmental assessments undertaken due to detailed design changes. Section 4 details the environmental assessment undertaken.

5.1 Construction activities

Key aspects of the Project that could result in impacts to terrestrial and aquatic flora and fauna include:

- Clearing of native vegetation (including habitat) and grubbing
- Works around and within watercourses
- Dewatering activities including activities where construction water may be discharged into natural waterways Noise, vibration and light impacts
- General earthworks near vegetation, resulting in disturbance of soils, consequential erosion and the mobilisation of sediment
- Establishment of ancillary facilities
- Demolition of built structures
- Vehicle movements
- Excavation works
- Drainage works
- Use of chemicals / fuels (potential for spills).

Refer also to the Aspects and Impacts Register included in Appendix A2 of the CEMP.

5.2 Ecological impacts

Construction of the Project will result in direct and indirect impacts to biodiversity, including:

- Loss of native vegetation, including threatened ecological communities
- Loss of habitat, including threatened and listed migratory fauna species habitat
- Loss of threatened flora species
- Direct and indirect impacts to terrestrial and aquatic fauna, including threatened species
- Changes in water quality, aquatic habitat loss and instream barriers to movement of fauna
- Direct injury and mortality of fauna (including vehicle strike)
- Edge effects on adjacent native vegetation and habitat
- Fragmentation of habitats and wildlife corridors
- Invasion and spread of weeds and pests
- Invasion and spread of pathogens and disease
- Noise, vibration, dust, light and contaminants
- Cumulative impacts in association with nearby projects
- Further detail of these impacts is provided in the following sections.

The aim of the environmental management measures provided in Section 6 is to minimise the potential impacts on flora and fauna of the project.

5.2.1 Clearing of native vegetation

Clearing of native vegetation for the Project will be in accordance with the impacts approved under the State Infrastructure Approval. The Environmental Assessment Documentation identified 23.25 hectares of native vegetation within the refined west construction footprint. This native vegetation is located within 6 vegetation zones. representing four PCTs (corresponding to four TEC).

The potential area of loss of vegetation and habitat due to construction of the Project is summarised in Table 5-1.

Table 5-2 presents the area of EPBC listed TECs impacted by the Project. It should be noted that these impacts are not additional to those listed in Table 5-1 but form an area within areas identified in Table 5-1.

The area of impact to native vegetation may be subject to change to reflect the final construction footprint. Consistency assessments will be undertaken by TfNSW to ensure impacts are generally consistent with the Environmental Assessment Documentation and in accordance with the Infrastructure Approval. Additional Consistency Assessments and associated threatened species surveys have been undertaken, the outcomes of these are detailed in Section 4.

Any changes of impact will be managed in accordance with NSW CoA E4 and the process outlined in Section 6.12 as required. No clearing will be undertaken outside the final construction footprint. In accordance with Commonwealth CoA 2, the final construction footprint, as outlined within the Federal Approval, of each stage will be submitted to DAWE (now DCCEEW) within six months of the final construction footprint for that stage being determined. Protected matters outside of the final construction footprint will not be cleared in accordance with Commonwealth CoA 3.

TfNSW with the assistance of the CPBGG JV are also required to undertake additional surveys. TfNSW will provide the results to DCCEEW as required by Commonwealth CoA 1 and NSW CoA E8.

Table 5-1 Approved area of impact to native vegetation

PCT No	Plant community type (PCT)	Veg zone code	Vegetation zone code within construction footprint	BC Act Status	Area directly impacted by Project (ha)[2]
835	Forest Red Gum – Rough - barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	5	835 – Moderate/Good_Poor	Endangered	2.94
849	Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion				
		7	849 - Moderate/Good_Poor	Critically endangered	0.74
		8	849 - Moderate/Good_Other (Derived Shrubland)	Critically endangered	0.90
850	Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion				
		10	850 - Moderate/Good_Medium	Critically endangered	0.62
		13	850 - Low	Critically endangered	16.37
1800	Swamp Oak open forest on riverflats of the Cumberland Plain and Hunter valley	15	1800 – Moderate/Good_Poor	Endangered	1.68
				TOTAL	**23.25**

[2] Figures to be updated once the TfNSW consistency assessments are approved where required.

Table 5-2 Area EPBC Act listed TECs impacted by the Project

PCT No	PCT Name	EPBC Act TEC	EPBC Status	Area directly impacted by Project (ha)
835	Forest Red Gum – Rough - barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland Plain Woodland in the Sydney Basin Bioregion	Critically Endangered	2.94
849	Grey Box – Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland Plain Woodland in the Sydney Basin Bioregion	Critically Endangered	2.26
850	Grey Box – Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	Cumberland Plain Woodland in the Sydney Basin Bioregion	Critically Endangered	16.37
1800	Swamp Oak open forest on riverflats of the Cumberland Plain and Hunter valley	Swamp Oak open forest of the NSW North Coast, Sydney Basin and South East Corner bioregions	Endangered	1.68
			TOTAL	**23.25**

5.2.1.1 Removal of threatened plants

No threatened plants were recorded within the proposed vegetation clearing zones associated with the Project. Impacts to threatened plants from vegetation clearing activities for the Project are therefore considered unlikely.

In the event that additional individual plants of listed species or populations are discovered during Pre-construction surveys or during construction, the Unexpected Threatened Species or EEC Finds Procedure will be followed (refer Appendix D). The procedure includes provisions for implementing exclusion zones to ensure plants are protected during clearing activities and construction.

5.2.1.2 Removal of threatened fauna species habitat and habitat features

Clearing for construction of the Project will have indirect impacts on fauna due to removal of foraging and/or breeding habitat. The predicted impact to species credit threatened fauna due to removal of habitat is outlined in Table 5-3.

The BC Act listed endangered Cumberland Plain Land Snail has been recorded within the Project construction boundary; clearing of native vegetation will remove approximately 1.74 ha of suitable habitat for this species. Clearing of native vegetation would also remove approximately 0.34 ha of breeding habitat for the BC Act listed Southern Myotis.

The removal of about 6.88 hectares of Woodland and Riparian Forest would also remove habitat for seven 'ecosystem credit' threatened bat species including:

- Grey-headed Flying-fox (forage habitat only) (M12 West and Central)
- Eastern Bentwing-bat (forage habitat only)
- Little Bentwing-bat (forage habitat only)
- Eastern Freetail-bat
- Eastern False Pipistrelle
- Greater Broad-nosed Bat
- Yellow-bellied Sheathtail-bat.

Table 5-3 Impacts to species credit threatened fauna

Threatened species	Status		Habitat area impacted by Project (ha)[3]
	BC Act	EPBC Act	
Cumberland Plain Land Snail	Endangered	Not listed	1.74
Southern Myotis	Vulnerable	Not listed	0.34 (breeding habitat)

The Woodland and Riparian Forest habitats of the Project study area were also considered to provide potential foraging habitat for the Swift Parrot (*Lathamus discolor*) given the occurrence of preferred blossom trees Spotted Gum and Forest Red Gum.

Initial habitat assessments were performed throughout the Project study area to identify key foraging trees and identity blossoming events. The Swift Parrot was not recorded within the Project study area during the surveys.

The foraging habitat available in the Project study area is disturbed, fragmented and often immature and is unlikely to provide a valuable resource for the Swift Parrot. Although the Project will result in the removal of this marginal habitat (see Table 5-4). it is not considered likely to impact the species significantly. The Federal Approval has provided a definition of foraging habitat for both the Swift Parrot and the Grey-headed Flying-fox which are outlined in Table 5-4.

[3] Figures to be updated once the TfNSW consistency assessments are approved where required.

Table 5-4 Foraging habitat as defined by the Federal Approval and specified amounts for clearing

Threatened species	Foraging habitat as per by the Federal Approval	Specified Amount (ha)[4]
Swift Parrot	The PCTs,835,849,850 and 1800 within the meaning of the NSW Bionet Vegetation Information Systems classification database.	23.26[2]
Grey headed Flying Fox	The PCTs724, 830, 835, 849, 850 and 1800 within the meaning of the NSW Bionet Vegetation Information Systems classification database.	5.20

[2] it is noted that the Environmental Assessment Documentation states that removal of the Swift Parrot habitat equates to 62.71 ha. However, as the Federal Approval has identified a larger area of habitat (80.21 ha), this number has been adopted for the entire M12 Project.

CPBGG JV will not clear more than the specified amount, or another specified amount determined in consultation with TfNSW.

5.2.2 Impacts to aquatic biodiversity

Construction of the Project would involve the following activities relevant to aquatic habitat:

- Construction of bridges: Cosgroves Creek (M12 West), Badgerys Creek (M12 West),
- Installation of pipe culverts at three waterways which were assessed as unlikely fish habitat, these being unnamed tributaries of Cosgroves Creek (M12 West)
- Potential installation of temporary waterway crossings for some or all waterways traversed by the project
- Temporary working platforms at bridge sites
- Minor redirection of localised drainage lines.

Impacts on aquatic habitats may occur during construction as a result of the following:

- Instream works, including bridge and culvert construction
- Removal of aquatic vegetation and snags during bridge and culvert works
- Increased flow velocities in the local area and altered timing of water flows reaching creeks due to minor redirection of localised drainage lines
- Temporary work platforms could disrupt flow, detain water and increase inundation and disturb creek beds resulting in sedimentation downstream
- Changes in shading regime and temperature
- Potential for sedimentation and spills to affect water quality in the waterways.

5.2.3 Habitat fragmentation

The Project has the potential to impact habitat corridors as follows:

- Reduce the area of vegetation comprising habitat corridors
- Reduce the width of habitat corridors
- Increase the width of existing gaps in habitat corridors
- Create new gaps in habitat corridors
- Introduce or move edge effects in corridors.

Two areas mapped as regional corridors would be impacted by the Project:

- Woodland habitat along the eastern and western sides of the M7 Motorway
- Riparian Forest and adjacent Woodland habitat associated with Badgerys Creek (M12 West).

Only one threatened fauna species, Cumberland Plain Land Snail, may be affected by further fragmentation of the riparian corridor along Badgerys Creek (M12 West). Other threatened fauna

[4] Figures to be updated once the TfNSW consistency assessments are approved where required.

recorded or assumed present within the Project study area are highly mobile flying species. Therefore, the Project is not anticipated to result in impacts on movement and/ or dispersal pathways for any threatened species or population.

5.2.4 Injury and mortality of fauna

Fauna injury and mortality during the construction stage of the Project would be related to vegetation clearing prior to construction and also potentially vehicle strikes during construction activities.

5.2.5 Invasion and spread of weeds and pests

Large areas of the Project study area have a high abundance of exotic species. Typically, weed invasion and spread is an indirect impact of projects that is often generated during construction by clearing vegetation and moving plant throughout the Project study area. Other Project activities, including earthworks and movement of soil, can also result in the dispersal and introduction of weeds throughout the Project study area.

A total of 14 introduced vertebrate fauna species were recorded within the Project study area during surveys. In addition to the 14 exotic fauna species, two additional native species recorded within the Project study area, Noisy Miner (*Manorina melanocephala*) and Bell Miner (*Manorina melanophrys*), are also considered pest species.

Project activities (e.g. vegetation clearing, habitat removal, increased noise and human presence) have the potential to disperse pest species across the surrounding landscape and increase the ability of such species to utilise habitats during construction and operation phases due to vegetation clearing, habitat removal, increased noise and human presence. While the pest species listed above are likely to capitalise on the disturbance associated with construction and development activities, the Project is unlikely to significantly increase the overall impact of pest species within the Project study area.

The aggressive exclusion of birds from potential woodland and forest habitat by over-abundant Noisy Miners was listed as a Key Threatening Process (KTP) under the EPBC Act. As Project activities would increase fragmentation in the Project study area, it is likely that the Project would increase the abundance of Noisy Miner in the Project study area and exacerbate this KTP.

Within the Project study area and construction footprint, there is also evidence of Bell Miner Associated Dieback (BMAD). This is caused by an overabundance of psyllids (sap-sucking insects that create a sugary excretion known as a lerp) in conjunction with Bell Miners (who feed on both the psyllids and lerp). As the Project would result in further vegetation clearing and localised fragmentation, it could increase the prevalence and severity of BMAD in the locality. However, impacts are likely to be insignificant when compared to the broad-scale clearing that has occurred in the past as a result of agriculture and urban development.

5.2.6 Invasion and spread of pathogens and disease

Project construction has the potential to increase the spread of pathogens that threaten native biodiversity values. Pathogens specific to the project include:

- Soil-borne pathogen *Phytophthora cinnamomi* (Phytophthora)
- *Austropuccinia psidii* which causes the disease Myrtle rust
- *Batrachochytrium dendrobatidis* (Chytrid fungus)
- Psittacine beak and feather disease (PBFD).

All four of these pathogens are listed as KTPs under the BC Act. The Project may increase the risk of dispersal of Phytophthora and Myrtle rust, from soil disturbance and plant movement during construction. Chytrid fungus causes the infectious disease Chytridiomycosis (amphibian chytrid fungus disease) which affects amphibians. No threatened frogs are considered likely to occur within the Project study area, and chytrid fungus is therefore considered unlikely to have a significant impact within the Project study area. As there are no threatened parrot species likely to occur within the Project study area, PBFD is unlikely to have a major impact within the Project study area.

5.2.7 Water pollution

There is potential for sedimentation and spills to affect water quality in the waterways during the construction phase which could also affect native fish and frogs, including downstream of the construction footprint.

Water pollution may also result from hydrocarbon leaks or spills from vehicles or equipment used during construction adjacent to waterways.

5.2.8 Noise, vibration, dust, light and contaminants

Impacts from noise and vibration are likely to be localised to the construction footprint, existing roads and new roads. Construction noise is likely to create short term impacts on fauna, however remaining vegetation would provide refuges for fauna to retreat to, and impacts would be reduced after construction. These impacts are not considered to have a significant, long-term impact on fauna, including threatened fauna.

During night-time works there would be an increase in artificial lighting within the Project study area and surrounds. As such, the Project may potentially affect nocturnal fauna by interrupting their life cycle or impacting on species that can be more vulnerable to predation (e.g. some small mammals).

Roads within the locality are currently lit and the existing M7 Motorway and Elizabeth Drive experience increased photo pollution due to heavy traffic and regular roadworks. Fauna within the area would already be adapted to photo pollution (on the M7 Motorway and Elizabeth Drive) and the increased artificial lighting associated with the Project is unlikely to have a significant effect on fauna in the locality of the project. Shading impacts of bridge and culvert structures will be minimised through detailed design.

Dust emitted during earthworks, vegetation clearing and due to vehicle movements may deposit on plant foliage, however the impact of dust pollution is likely to be localised, intermittent, and temporary in nature.

Adverse impacts to flora and fauna due to accidental release of contaminants to the environment may occur.

5.3 Cumulative impacts

The multitude of other projects in the area including The Northern Road, the Western Sydney International Airport, work associated with the Aerotropolis, Sydney Metro – Western Sydney Airport and other residential and retail developments may lead to increased ecological impacts. Cumulative impacts identified in the Environmental Assessment Documentation during construction of the Project included the clearing of large amounts of TECs, native vegetation and fauna habitat.

Interagency communication between government departments undertaking work in the area is required to manage the cumulative impacts of the extensive work that will be happening in the area with the aim of combining messages when possible and minimising impacts to the local community.

Consultation will be undertaken with neighbouring properties and with personnel who will be undertaking work on other projects within the vicinity of the M12 Motorway construction to ensure they are aware of any exclusion zones or sensitive areas identified for the Project.

6 Environmental mitigation and management measures

6.1 Pre-clearing process

Pre-clearing processes will be carried out in accordance with Guide 1 of the Biodiversity Guidelines (RTA, 2011).

The Vegetation Clearing Procedure provided in Appendix A has been prepared in accordance with the requirements of Guide 1 of the *Biodiversity Guidelines* (RTA, 2011) and TfNSW specifications. The purpose of the Procedure is to:

- Outline environmental control measures to minimise clearing of vegetation
- Identify management measures to minimise impacts on biodiversity and the surrounding environment
- Provide a framework for the management of vegetation to be retained or removed
- Outline steps for the minimisation of loss of habitat and harm to associated fauna.

The Procedure will include, but not be limited to:

- Flora and fauna management strategies for pre-clearing, clearing and post-clearing construction activities including environmental control measures
- Pre-clearing survey form
- Delineation methods for clearing
- Measures to minimise clearing of native vegetation
- Measure to protect vegetation and habitat during clearing activities
- Measures to identify where it is practicable to reuse native trees and vegetation, including a process for consulting with community groups, Council, Western Sydney Parklands Trust, Landcare groups and relevant government agencies to determine if hollows, tree trunks, mulch, root balls collected plant material, seeds and/or propagated plants could be used for habitat enhancement, beneficial re-use and rehabilitation work, before pursuing other disposal options (refer also Appendix D)
- Specific procedures to protect threatened flora species and populations, including:
  - White-bellied Sea-Eagle
  - Cumberland Plain Land Snail
  - Southern Myotis
  - Grey-headed Flying-fox
- Specific reporting requirements associated with additional survey work and control of clearing activities.

The CPBGG JV will update the Vegetation Clearing Procedure as required prior to the commencement of any pre-clearing activities..

The CPBGG JV will also prepare a stage-specific Clearing and Grubbing Plan

in accordance with Specification TfNSW G40 and its associated annexures, which must include, but not be limited to, the following information:

- Methods used to identify and mark areas of weeds to be removed and methods for their removal
- Procedure for the disposal of weeds and exotics
- Procedure for protecting threatened flora species and trees marked for preservation
- Methods used for identifying, marking and removing or pruning unsound trees likely to fall upon the roadway or onto private property
- Procedure for identifying and removing trees, stumps and logs above the specified size and within the hazard line.

Furthermore, a site-specific Clearing and Grubbing EWMS will be prepared by the CPBGG JV in accordance with Specification TfNSW G36 within the Clearing and Grubbing Plan, as required.

The CPBGG JV will document the results of pre-clearing surveys and will update their Sensitive Area Plans accordingly.

The pre-clearing process will include a pre-clearing survey which will identify the quantity, quality and size of the tree hollows to be removed and the hollow-dependent fauna species inhabiting the area. The survey will identify habitat trees to be felled in a staged approach.

An inventory of hollow bearing trees will be developed as part of the pre-clearing surveys to inform the Habitat Compensation Plan (HCP). The inventory will include details of the location of each hollow bearing tree and their characteristics such as species, height and diameter at breast height (DBH), number of hollows on the tree, their position and size.

Fauna identified using hollows during surveys will further inform the CPBGG JV's HCP.

6.1.1 Post-Clearing Report

At the completion of clearing, the CPBGG JV's Project Ecologist will complete post-clearing surveys and prepare a Post-Clearing Report. The report will confirm the final area cleared, the number and identity of all vegetation removed, and specifically, the post-clearance abundance and density count of hollow-bearing trees. The Post-Clearing Report will also identify if any fauna, nests or other fauna habitats were impacted by clearing works and provide fauna capture and relocation data. Any reuse, relocation or disposal of snags, hollows or coarse woody debris will be included within the post-clearing report.

Further details regarding responsibilities, timing and other requirements for preparation of Post-Clearing Reports is provided in Section 7.1 and Appendix A, Appendix D and Appendix E of this CFFMP.

The CPBGG JV Vegetation Clearing Procedures will be reviewed by TfNSW for consistency with the requirements of this overarching CFFMP, the CoA and the REMMS and appended to the CPBGG JV CFFMPs.

6.2 Hollow Replacement

Clearing activities for the Project may result in the removal of hollow bearing trees that provide shelter and nesting sites for fauna. To compensate for the loss of habitat trees within the cleared area, the CPBGG JV will include measures for the installation of hollow replacements within the Habitat Compensation Plan (Appendix D) to outline the specific measures to be implemented to mitigate the impacts of vegetation clearing on hollow-dependent fauna.

Hollow replacement will be based on the results of the pre-clearing survey (Section 6.1) and prepared in consultation with the Project Ecologist. The strategy will include:

- Target species
- Design and quantity of hollow replacement i.e. fabricated nest boxes, bored hollows etc. according to the target species and number of hollows removed (the hollows: nest box ratio replacement ratio will be 1:1)
- Types and location for installation of replacement hollows
- Timing for installation - up to one month prior to clearing, where possible, to provide alternative shelter for hollow-dependent fauna displaced during clearing and following clearing once the abundance/density of tree hollows removed is confirmed
- A monitoring program to coincide with nesting seasons for target species and at least annually
- Inspections of hollow replacements for maintenance requirements and replacement where required.

6.3 Exclusion zones

The CPBGG JV will install exclusion zones and fencing or other means to demarcate vegetation to be retained. Exclusion zones will be set up at the limit of clearing in accordance with Biodiversity Guidelines (RTA, 2011) (Guide 2: Exclusion zones). Exclusion zones will be mapped out by a qualified surveyor in accordance with the Flagging Protocol in Section 2.2.7 of the Vegetation Clearing Procedure (Appendix A) and Specification TfNSW G40.

The CPBGG JV will install environmental protection area signage on exclusion zone fencing at regular intervals agreed to by the TfNSW Environment and Sustainability Manager (or delegate). The fencing will only be removed following agreement by the TfNSW Environment and Sustainability Manager (or delegate). The exclusion zones are shown on Figure *6-1* and will also be clearly illustrated on Sensitive Area Plans.

Connectivity measures will be implemented in accordance with *Wildlife Connectivity Guidelines for Road Projects* (TfNSW, under preparation). Where practicable, exclusion zones will be maintained below the Badgerys Creek and Cosgroves Creek bridges to maintain fauna passage. Fencing will be located to reduce roadkill of fauna species and funnel animals to creek crossings where safe passage will be available.

Permanent fencing will be installed in accordance with the requirements of R021.

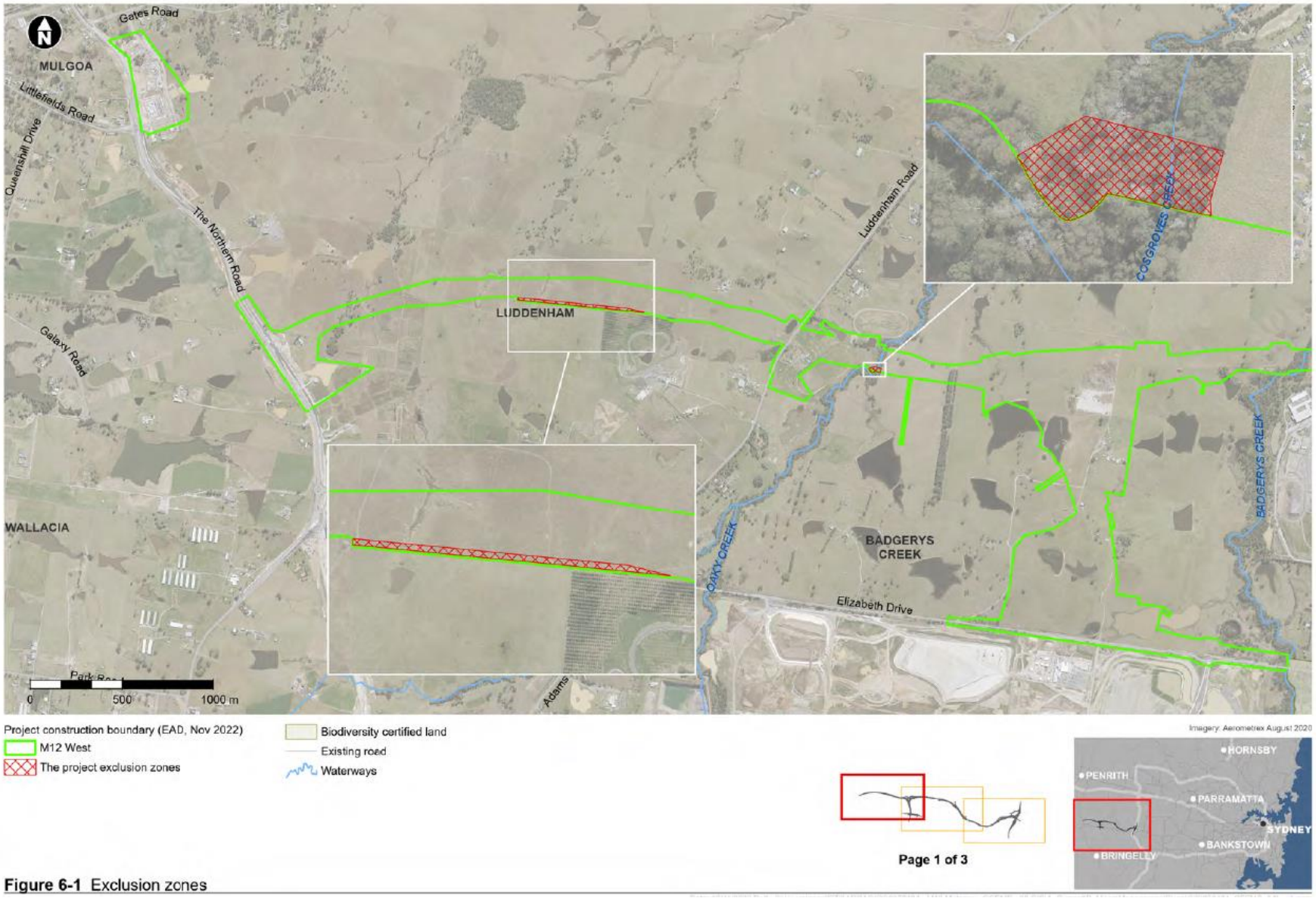

Figure 6-1 Exclusion zones

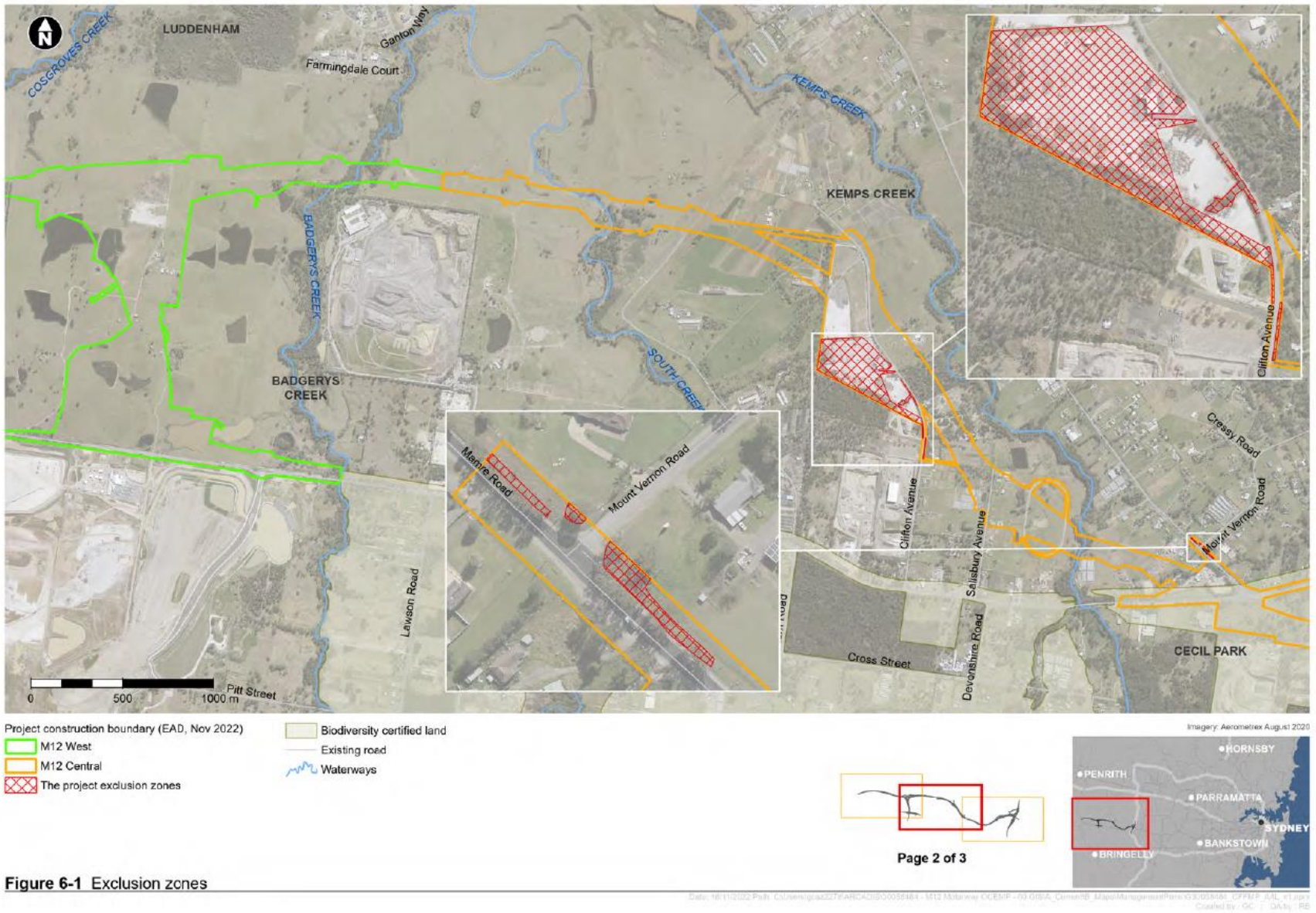

Figure 6-1 Exclusion zones

Figure 6-2 Exclusion zones

6.4 Habitat and Timber Reuse (including coarse woody debris and snags

Vegetation to be cleared, woody debris and snags (branches, root balls, trunks and whole trees that fall into rivers and streams) provide important potential habitat for aquatic and terrestrial flora and fauna. Construction activities adjacent to watercourses may result in the need to remove or relocate woody debris or snags. Snag removal and relocation at Badgerys Creek (M12 West) will be in accordance with the Snag Management Plan (Appendix E) and the *Policy and guidelines for fish habitat conservation and management* (DPIE, 2013) and REMM B12. The management plan provides details of the snags to be relocated (such as numbers and locations) and relocation methods. Coarse woody debris will be managed in accordance with Guide 5 of the Biodiversity Guidelines (RTA, 2011) and the Habitat Compensation Plan (Appendix D).

During clearing activities, the CPBGG JV in liaison with the Project Ecologist will ensure that:

- All woody debris is reused in a manner that enhances habitat for native fauna
- Avoid creating conditions where the distribution, total volume, age, species or size class, exceeds the benchmark values for that PCT
- Snags are relocated from one location in the waterway to another location within the waterway to minimise disturbance to the riparian bed or nearby sensitive aquatic habitats.
- Removal, stockpiling, transportation and relocation of woody debris and/or snags will be carried out in a manner that minimises disturbance to native vegetation

The CPBGG JV may consult with DPI Fisheries prior to vegetation clearing to identify any trees proposed to be removed that could potentially be used for re-snagging of a waterway.

Coarse woody debris will be retained where felled for construction and reused as described in Table 6-1.

Table 6-1 Classification of woody debris and proposed uses

Woody debris size	Use
Logs > 500 mm diameter	Re-snagging of creeks
Logs 250-500 mm diameter Logs up to 2000 mm length[3] (preferred for habitat enhancement)	Priority to use as habitat for Cumberland Plain Land snail. Alternatively, used as habitat for other native fauna
Logs 100-250 mm diameter	Habitat improvement/replacement, erosion and sediment control, fauna furniture for culverts
Debris <100 mm diameter	Mulched/chipped and re-used on site for revegetation or erosion and sediment control

[3] *It should be noted that logs greater than 2000mm in length are preferred for habitat enhancement based on the logistical and financial benefits of moving and installing shorter logs. However, logs greater than 2000mm may still be used where appropriate, especially where felled trees can be reused on the same site.*

Prior to the commencement of vegetation clearing, if it is not possible to reuse all removed native trees and vegetation onsite, TfNSW have initially consulted with the relevant council(s), Western Sydney Parklands Trust, Landcare groups and relevant government agencies to determine possible off-site reuse in accordance with NSW CoA E15. CPBGG JV will continue to consult with these groups on potential reuse options.

6.5 Aquatic and riparian habitat

The CPBGG JV will manage aquatic and riparian habitat in accordance with Guide 10 of the Biodiversity Guidelines (RTA, 2011) and Section 3.3.2 of the *Policy and Guidelines for Fish Habitat Conservation and Management Update* (DPI, 2013) including:

- Consideration of timing of clearing to avoid flooding risks
- Retaining of tree roots or staged removal on the bank of a waterway in order to maintain bank stability
- Existing trees, grasses and other ground cover will be retained within 15 metres of rivers, creeks and watercourses and in all drainage lines until immediately before construction commences in the area

- Maintaining minimum flows and preventing barriers to fish passage
- Developing a process for de-watering farm dams and the relocation of aquatic fauna
- Progressive stabilisation of banks in accordance with Specifications TfNSW R178 and TfNSW R179
- Avoidance of activities in aquatic habitats and riparian zones as much as practicable
- Establishment of exclusion zones for vehicles, plant and equipment, and provision of exclusion fencing around sensitive areas
- Keeping vehicles and machinery away from the banks of a waterway where possible
- Preventing refuelling of vehicles and plant, and chemical storage and decanting within 50 metres of aquatic habitats
- Temporary application of mulch will be managed to avoid the potential for material and tannin run-off into waterways, including limiting the application of mulch near waterways where practicable
- Removal of all temporary works, flow diversion barriers and sediment control barriers within aquatic habitats as soon as practicable and in a manner that does not promote future channel erosion.

Works on waterfront land will be carried out in accordance with controlled activity guidelines.

Where work is required within waterways, an EWMS for the work(s) will be prepared. The EWMS will detail the control measures to avoid or minimise erosion and any adverse impact on water quality and riparian fauna and flora as detailed in the CSWMP.

Discharged water quality will be managed in accordance with the CSWMP. The Project will be subject to EPL No. 21595 which requires that any water discharged from site must align with the following discharge water criteria:

- Oil and Grease: Not visible
- pH:6.5-8.5
- Turbidity: 50 NTU

Furthermore, impacts to KFH as defined in Policy and Guidelines for Fish Habitat Conservation and Management (DPI, 2013 update) must be minimised; residual impacts will be offset at a ratio of 2:1 habitat offset requirement and in consultation with DPI Fisheries.

Bridge designs were altered during detailed design to avoid creek realignments. The CPBGG JV will implement the detailed design to retain fauna passage at all two main creek lines, Cosgroves and Badgery's Creeks.

Clearing within riparian corridors impacted by the Project will be undertaken in accordance with the Vegetation Clearing Procedure (refer to Section 6.1 and Appendix A). Furthermore, revegetation of the riparian corridor and banks of watercourses impacted by the Project will occur in accordance with NSW CoA E109 (refer to Section 6.10). Additionally, the Snag Management Plan (Appendix E) prepared to minimise the impacts of snag relocation activities on riparian and aquatic habitat must be implemented.

A dewatering procedure outlining methods for aquatic fauna relocation is provided in Appendix F. The dewatering procedure also includes measures to prevent potential release and potential disposal of exotic aquatic fauna/ flora and pathogens during dewatering into waterbodies in accordance with G38.

No works will be undertaken in KFH until payment of habitat offset requirements have been made to the DPI Fish Conservation Trust Fund. TfNSW will be responsible for the payment of habitat offset requirements. TfNSW will submit to the Planning Secretary a receipt confirming payment to the DPI Fish Conservation Trust Fund within one month of making the payment as per NSW CoA E13.

6.5.1 Permanent and temporary waterway crossings

Temporary waterway crossings will be required for the Project. The CPBGG JV will design, construct and maintain temporary waterway crossings consistent with *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004) and maintain fish passage in accordance with DPI Fisheries guideline *"Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings.*

The design of temporary waterway crossings, stream diversions, drainage swales and depressions in key fish habitat will be carried out by a suitably qualified and experienced professional in consultation with DPI Fisheries.

During construction of permanent waterway crossings, the CPBGG JV will ensure that all reasonable and practicable measures are taken to prevent or minimise environmental harm including:

- Minimising restrictions of fish passage
- Minimising the release of sediment into the stream
- Minimising damage to, or the removal of, bank vegetation, particularly vegetation that shades the low-flow channel.

Where practical, construction works across the bed of a waterway should be staged to minimise the total disturbance at any given time and to allow the full bypassing of stream flows around the works to maintain fish passage.

6.6 Weed and pathogen control

Weed and pathogen management and control practices will be implemented throughout construction to minimise the risk of spread into and out of the Project and between construction sites during construction of the Project.

The CPBGG JV has prepared a Weed and Pathogen Management Plan in accordance with the requirements of Guides 6 and 7 of the *Biodiversity Guidelines* (RTA, 2011), TfNSW specifications, and the Weed and Pathogen Management Plan provided in Appendix C of this CFFMP. The purpose of the Plan is to:

- Identify the pathogens and key weed species and their distribution across the Project sites
- Prevent the introduction and spread of weeds and pathogens throughout the construction of the Project and in particular onto, and adjacent to, the Defence Establishment Orchard Hills site
- Establish an inspection and reporting framework for weeds and pathogens
- Set out performance criteria for the management of weeds and pathogens for the Project.

The Plan will include, but not be limited to:

- Identification and mapping of weeds and pathogens at each site
- Site assessment process
- Measures to prevent the introduction and spreading of weeds and pathogens caused by the Project using a precautionary approach
- Hygiene protocols including vehicle and footwear wash down facilities and requirements for all vehicles and footwear to be washed down before entering or of exiting the site
- Weed and pathogen control methods
- Disposal methods
- Arrangements for monitoring.

The Weed and Pathogen Management Plan will be updated throughout construction of the Project to include any new weed or pathogen findings and subsequent management measures required. The Weed and Pathogen Management Plan will be reviewed annually, or as required in accordance with the continuous improvement process described in Section 8 of this CFFMP and Section 3.12 and 3.13 of the CEMP.

6.7 Unexpected threatened species finds

The CPBGG JV will implement the Unexpected Threatened Species or TEC Finds Procedures in Appendix B of this CFFMP, it has been developed in accordance with Guide 1 of the *Biodiversity Guidelines* (RTA, 2011), TfNSW specifications, and the Procedure provided in Appendix D of this CFFMP. The purpose of the Procedure is to outline the process to follow in the event of an unexpected species or EEC find during construction. The Procedure will include, but not be limited to:

- Stop work arrangements in the immediate area of the threatened species
- A notification and communication protocol
- The consultation process with appropriate specialists to assess the significance of the find and develop management options
- Notification process for EES, DPI, DPE and DAWE (now DCCEEW) as appropriate

- A procedure to obtain approvals, licences or permits prior to recommencement of works
- Requirement for impact assessment and calculation of additional off-sets will be calculated to account for the impact.

The Unexpected Threatened Species and TECs Finds Procedure will be updated by the CPBGG JV ESR in consultation with the Project Ecologist and reviewed by the TfNSW ESM (or delegate) prior to commencement of construction of the Project.

The Unexpected Threatened Species and TECs Finds Procedure will be reviewed annually, or as required in accordance with the continuous improvement process described in Section 8 of this CFFMP.

6.8 Fauna rescue and release procedure

Handling of fauna during the Project may be required if fauna is encountered during construction and is required to be relocated or transported to a vet or wildlife carer in the case of injury.

The CPBGG JV will prepare a stage-specific Fauna Handling and Rescue Procedure prior to commencement of construction in accordance with the requirements of Guide 9 the *Biodiversity Guidelines* (RTA, 2011) and TfNSW specifications.

The purpose of the Procedure is to detail the actions to be implemented in the event that fauna (including injured, shocked, dependent juvenile or other) is discovered that requires handling during construction of the Project.

The Procedure will include, but not be limited to:

- Steps to be followed when rescue or relocation of fauna is required
- A process to ensure that, if native fauna is captured during vegetation clearing or other construction activities, it is released into a suitable nearby habitat that has been identified as such by an ecologist
- Fauna rescue and release management measures for aquatic fauna and fish
- A procedure for handling of fauna by a licensed fauna handler such as a fauna spotter/catcher, fauna ecologist or wildlife carer with specific animal handling experience
- The responsibilities of the Project Ecologist
- A process to keep records of fauna captured and relocated
- A process to report any injury or death of threatened species.

The Fauna Rescue and Release Procedure will be updated by the Environmental Site Representative and reviewed by the TfNSW Environment and Sustainability Manager (or delegate) prior to commencement of Construction of the Project.

The Fauna Rescue and Release Procedure will be updated throughout Construction of the Project to include any new fauna findings and subsequent management measures required. This Procedure will be reviewed annually, or as required in accordance with the continuous improvement process described in Section 8 of this CFFMP.

6.9 Fauna mortality monitoring

Vehicle strikes is a major cause of fauna injury and mortality during construction, therefore mortality video surveys on the Project's haulage roads (public and internal) will be required. Data captured from the surveys will be maintained in a fauna mortality register and provided to TfNSW.

The purpose of the surveys is to undertake rapid assessment of fauna mortality on the Project's haulage roads to inform adaptive management strategies where practicable to reduce the incidence of native fauna mortality in proximity to the Project.

The CPBGG JV will prepare a methodology for carrying out the native fauna mortality video surveys in accordance with TfNSW specifications. The methodology will include, but not limited to:

- A safe process to undertake the surveys
- Frequency of surveys
- Roles and responsibilities
- A process to keep records of the surveys
- A process to report on the findings of the surveys.

The survey methodology will be prepared in consultation with TfNSW and implemented throughout Construction. A draft has been provided in Appendix I. Surveys will be required regularly following rainfall events, as well as during and following high risk activities such as vegetation clearing and dam dewatering.

6.10 Vegetation rehabilitation

Revegetation will be carried out in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 3: Re-establishment of native vegetation) and the Place, Design and Landscape Plan (PDLP) prepared for the Project. In accordance with NSW CoA E71, revegetation and the provision of replacement trees will be informed by the Tree Survey which has been undertaken for the Project. Habitat trees have been identified in the Tree Survey and are included in the Sensitive Area Plan provided in Appendix A6 of the CEMP. Where practicable, local provenance native species from the relevant native vegetation community (or communities) that occur, or once occurred in these locations will be used. Where trees are to be removed, they will be replaced at a ratio of 2:1, except trees that are offset under NSW CoA E3.

Revegetation for the Project will consider the land use requirements of the National Airports Safeguarding Framework (NASF) (National Airports Safeguarding Advisory Group, n.d.) to minimise the risk of wildlife strikes at the Western Sydney International Airport.

As required by NSW CoA E109, rehabilitation and revegetation of the riparian corridor and banks of watercourses impacted by the Project will be commenced within three (3) months of the completion of any construction activity required in these areas. Creek corridors will be revegetated with locally native riparian vegetation, in accordance with the requirements of the Policy and guidelines for fish habitat conservation and management (DPI, 2013) and in consideration of the Guidelines for instream works on waterfront land (DPI, 2012). The creek channels will be rehabilitated to preconstruction conditions or better.

The CPBGG JV will engage a landscape subcontractor to carry out all landscape planting and maintenance work until completion. Landscaping work will be carried out by qualified personnel in accordance with TfNSW Specification R179 (Landscape Planting). The CPBGG JV landscape subcontractor will undertake the revegetation and landscaping for the Project in accordance with the Landscape Drawings, which identify the locations of areas to be revegetated.

The Landscape Drawings identify the locations for planting, the species, planting mixes, plant sizes, quantities and densities to be adopted.

During revegetation, the CPBGG JV will comply with the requirements of TfNSW Specifications R178 (Vegetation) and R179, including implementation of measures to avoid compaction of soils in revegetation areas and ensuring suitable moisture requirements are maintained. The CPBGG JV will regularly inspect, monitor and maintain revegetated areas in accordance with the requirements of R178 and R4.

Habitat vegetation will also be reinstated in accordance with the Habitat Compensation Plan in Appendix D.

6.11 Tree management strategy

In accordance with the requirements pf REMM LVIA15, CPBGG JV have prepared a tree management strategy. The strategy is outlined in the following sections.

6.11.1.1 Tree Management

The Project will be constructed to retain as many existing trees as possible. The following procedure will be implemented to ensure this occurs:

- A qualified ecologist, as part of the pre-clearing assessment will assess the location of all trees within the project area with potential to be impacted by the project. This assessment will also include those trees to be retained, or those with the potential to be retained. This assessment will be documented in the pre-clearance survey report.
- A qualified arborist will undertake an assessment of existing trees within the road reserve that are to be retained and identify techniques to maximise tree health and longevity.

- Trees to be retained within the construction footprint are to be protected in accordance with AS4970-2009 Protection of trees on development sites
- A suitably qualified person will prune any trees requiring pruning in accordance with AS 4373-2007 Pruning of amenity trees. Any pruning will be carried out by an arborist using only the appropriate tools.
- The Project Ecologist will supervise vegetation clearing (and capture and relocate fauna), as required

TfNSW have carried out a Tree Survey as required by NSW CoA E71 identifying the number, type and location of trees to be removed as part of the project. This survey will be used as the basis for the creation of a tree register, which will be maintained to record the fate of the trees within and adjacent to the Project area.

The outcomes of this procedure will inform the final clearing plans submitted to TfNSW for consideration prior to clearing of trees being undertaken.

6.11.1.2 Tree Register

A tree register will be maintained to record the fate of the trees within and adjacent to the Project area.. The tree register will include as a minimum:

- Number of trees removed
- Tree species
- Tree status (local native/non-local native/weed)

Trees will be retained and protected where possible to minimise clearing and screen construction sites. Trimming will be preferred to tree removal where feasible and will be informed by arborist advice. Early planting works will be considered where feasible to provide a screening buffer

6.11.1.3 Place, Design and Landscape Plan (PDLP)

A Place, Design and Landscape Plan (PDLP) is required to be developed and implemented in accordance with NSW CoA E68-70.

Where tree removal is still required after implementation of the procedures in sections 6.11.1.1 and 6.11.1.2, replacement trees and plantings will be provided at a ratio of 2:1 to increase the tree canopy except trees that are offset under NSW CoA E3. The replacement trees will consist of local native provenance species from the vegetation communities that once occurred in the locality (rather than plant exotic or non-local native trees) where available and subject to the PDLP. Replacement trees will also consider maintenance requirements and safety standards. A progressive rehabilitation program will also be included to allow for the early establishment of landscaping wherever possible.

Replacement trees will:

a) be located on public land and prioritised within 500 metres of the Construction Boundary, that delivers increased shading to constructed areas (eg shared user paths);
b) be of a species suitable to the location, having regard for local ecology;
c) meet the requirements for quality tree stock specified in the AS2303:2018: Tree Stock for Landscape Use;
d) be provided no later than six months following the commencement of operation;
e) have a minimum pot size consistent with part 3.2.1 (Rural road reserves) in the TfNSW Landscape Guideline (2018) subject to long-term viability of the plant.

In addition to the above, in the case of any areas that have been disturbed by construction will be restored to their existing condition. As described in Section 6.9 habitat trees have been identified in the Tree Survey and are included in the Sensitive Area Plan provided in Appendix A6 of the CEMP.

6.12 Biodiversity offsets

As required by NSW CoA E3-E7 and REMM B4, biodiversity offsets are proposed and these are documented separately in the Biodiversity Offset Strategy prepared for the Project.

TfNSW will ensure that biodiversity offset obligations as set out in the State Infrastructure Approval are met within 12 months of construction commencing. Amendments to the ecosystem and species credit requirements will be undertaken by TfNSW in consultation with EHG and DCCEEW and submitted to the

Planning Secretary for approval, within six months of determining the final construction footprint for each stage.

Where verification surveys are required they will be undertaken by TfNSW in consultation with EHG. TfNSW will notify the DCCEEW in writing within two business days of formally proposing any change to the that biodiversity offset obligations as set out in the State Infrastructure Approval. TfNSW will notify DCCEEW in writing of any change to biodiversity offset obligations within five days of the change being finalised.

6.13 Seed collection and propagation

The CPBGG JV will manage seed collection and propagation in accordance with TfNSW Seed Collection Program. The program prioritises the use of Cumberland Plain Woodlands and local native species sourced from locally sourced seed.

Once on-site construction starts TfNSW may request that the CPBGG JV set up a site nursery. If this is case, the CPBGG JV will be required to set up and maintain this site nursery and TfNSW will provide access points for power and water at the site nursery.

During construction plants, rhizomatous material and seeds may be taken from disturbed vegetation within the construction boundary. Collected seeds could be used for direct seeding and hydroseeding as well as be propagated for planting on the Project. The CPBGG JV may choose to utilise seed production areas to increase efficiency in seed collection and will store all seeds and plants until requested by TfNSW.

The CPBGG JV will provide regular reports on seed collection activities, testing and any issues encountered to TfNSW.

6.14 Emergency Response

All environmental emergencies and incidents are to be managed in accordance with section 3.8 of the CEMP.

6.15 Bushfire

Bushfire is an established natural hazard within this landscape and can occur in south-western Sydney frequently during the summer months. Prolonged dry conditions, hot temperatures, and low humidity during spring, summer and early autumn are experienced regularly at the Project site. Along with wind, these climate features contribute significantly to the behaviour of a fire.

A bushfire hazard exists where there is fuel in the form of vegetation, including grass, scrub, bushes and trees. Construction activities have the potential to generate bushfire risk. Activities identified as likely to cause a fire or generate sparks include:

- Smoking
- Plant Maintenance
- Driving on site
- Hot works.

Management measures will include a Permit to perform hot works, minimising smoking occurring on site, the regular turning over of mulch stockpiles to avoid spontaneous combustion and ensuring that works during total fire ban days (TOBAN days) limit any potential ignition sources. Consultation will be undertaken with the local Rural Fire Service (RFS) during TOBAN days. If required, an exemption permit may be sought from the local RFS to undertake hot works. Further management measures are outlined in Table 6-2.

6.16 Management Measures

Management actions prescribed by this CFFMP aim to avoid and minimise impacts on biodiversity and are summarised in Table 6-2.

Table 6-2 Flora and fauna mitigation and management measures

ID	Management Measure	When to implement	Responsibility for implementation	Applicability M12 West	Reference or source	Evidence of implementation
Pre-Construction Management Actions						
FF1	A Clearing and Grubbing Plan will be prepared in accordance with the requirements of Specification TfNSW G40 and TfNSW publication "Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects". A site-specific Clearing and Grubbing EWMS within the Clearing and Grubbing Plan will be prepared if required in accordance with Specification G36.	Prior to clearing	CPBGG JV	✓	G36 G38 G40	Hold Point Release
FF2	Where work is required within waterways, an Environmental Work Method Statement (EWMS) will be prepared for the work(s).	Prior to works in waterways	CPBGG JV	✓	G38	Hold Point Release
FF3	Pre-clearing surveys will be undertaken by a qualified and experienced ecologist prior removal of any vegetation, or the demolition of structures identified as potential roosting sites for microbats in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 1: Pre-clearing process).	Prior to clearing and demolition	Project Ecologist	✓	NSW CoA C8 REMM B05	Pre-clearing report
FF6	**White-bellied Sea-Eagle** Exclusion zones will be established to demarcate the location of the White-bellied Sea-Eagle nest. All site personnel will be informed of the location of the White-bellied Sea-eagle nest location during induction.	Prior to construction	Project Ecologist	✓	NSW CoA C8 REMM B05	Site inspection Report Induction records
FF7	**Cumberland Plain Land Snail** Cumberland Plain Land Snail procedure will be followed in all vegetated areas to be disturbed that are identified as known or potential habitat for Cumberland Plain Land Snail. Pre-clearance surveys and subsequent translocation will be carried out immediately before clearing works by a qualified ecologist in accordance with the procedure.	Prior to clearing known or potential Cumberland Plain Land Snail habitat	Project Ecologist	✓	REMM B05	Ecologist report
FF8	**Southern Myotis** Southern myotis procedure to be followed prior to clearing of habitat trees. Anabat surveys will be undertaken to determine presence of southern myotis. Should they be present, tree removal will be undertaken at night once bats have left the roost. No clearing of habitat will occur during winter torpor and breeding in October to January.	Prior to Southern Myotis Habitat tree removal	Project Ecologist	✓	REMM B05	Ecologist report

ID	Management Measure	When to implement	Responsibility for implementation	Applicability M12 West	Reference or source	Evidence of implementation
FF9	**Grey-headed Flying Fox** If nightworks in foraging habitat is to be undertaken, supervision by an ecologist is required as per standard clearing procedure.	During night works in Grey-headed Flying-fox foraging habitat	Project Ecologist	✓	Best practice	Ecologist report
FF10	The relocation of fauna and associated management/offset measures, will be undertaken under the guidance of a suitably qualified and experienced ecologist.	During Pre-Clearing Surveys and/ or construction	Project Ecologist	✓	NSW CoA C8	Ecologist report
FF11	Prior to the commencement of vegetation clearing, if it is not possible to reuse all removed native trees and vegetation including hollows, tree trunks, mulch, bush rock, root balls, coarse woody debris, collected plant material seeds and/or propagated plants, TfNSW will consult with Council, Western Sydney Parklands, Landcare groups and government agencies (including NSW National Parks & Wildlife Service (Scheyville Office), Greater Sydney Local Land Services and DPI Fisheries) to determine whether this material could be used by others in habitat enhancement, beneficial re-use and rehabilitation work before pursuing other disposal options. Where offsite reuse is proposed, an Ecologist will examine the material prior to clearing, as per the EPA Mulch Order 2016. This will be subject to Section 143 Notice and Biosecurity Assessment, EPA Mulch Order 2016 or any other suitable document to support the Section 143 Notice.	Prior to construction	TfNSW	✓	NSW CoA E15	Consultation records Section 143 Notice Assessment Report
FF12	A report will be developed which: • includes a statement from an Ecologist that identifies the species and location of any weeds growing anywhere in the road reserve over the length to be cleared and grubbed • identifies all locations of threatened flora species and trees which have been marked or otherwise identified for preservation; and • lists any trees outside the limits of clearing which are unsound and likely to fall upon the roadway or onto private property.	Prior to construction	Project Ecologist/ Arborist	✓	G40	Ecologist report
FF13	Trees outside the limits of clearing which are unsound and likely to fall upon the roadway or onto private property will be marked and identified in the Clearing and Grubbing Plan and whether pruning or removal is recommended. Pruning will be undertaken in accordance with AS 4373-2007 Pruning of amenity trees.	Prior to construction	Arborist	✓	G40	Arborist report

ID	Management Measure	When to implement	Responsibility for implementation	Applicability M12 West	Reference or source	Evidence of implementation
FF14	Areas of weed infestation identified in the ecologist report will be marked in the Clearing and Grubbing Plan.	Prior to construction	Project Ecologist	✓	G40	Ecologist report, Clearing and Grubbing Plan
FF15	Prior to commencing clearing and grubbing all soil erosion and sedimentation controls will be installed in accordance with TfNSW G38 and the Construction Soil and Water Management Plan.	Prior to clearing and grubbing	CPBGG JV	✓	G38	Site inspection report
FF16	Exclusion zones will be set up at the limit of clearing in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 2: Exclusion zones) and Flagging Protocol in Section 2.2.7 of the Vegetation Clearing Procedure (Appendix C).	Prior to clearing	CPBGG JV	✓	NSW CoA E2 REMM B24 G40	Site inspection report
FF17	Prior to clearing, the limits of clearing will be mapped out by a qualified surveyor and identified by clearly visible markers placed at 25 m intervals on each side of the road formation and bridges. Clearing limits will be flagged at least seven working days prior to the proposed commencement of clearing.	Prior to clearing	Site surveyor	✓	REMM B24 G40	Site inspection report
FF18	Environmental protection area signage will be placed on exclusion zone fencing at regular intervals	Prior to clearing	CPBGG JV	✓	Best Practice	Site inspection report
FF19	Clearing limits will be identified on Sensitive Area Plans	Prior to clearing	CPBGG JV	✓	Best Practice	Sensitive Area Plans
FF20	Clearing will be undertaken in accordance with the Vegetation Clearing Procedure (Appendix C)	During Construction	CPBGG JV	✓	REMM B01	Ecologist report
FF21	Existing trees, grasses and other ground cover will be retained within 15 metres of rivers, creeks and watercourses and in all drainage lines until immediately before construction commences in the area. If an access track is required within these areas, it will be constructed on an alignment that will minimise erosion in accordance with Managing Urban Stormwater: Soils and Construction (the Blue Book) (Landcom, 2004). All trees in these areas will be felled manually, leaving grasses and small understorey species wherever possible.	Prior to and During Construction	CPBGG JV	✓	G40 REMM B10	Ecologist Report
FF22	Removal of riparian vegetation at creek crossings will be minimised and vegetation connectivity across the riparian zone will be maintained where possible.	During construction	CPBGG JV	✓	REMM B10 G40	Clearing Reports
FF23	Vegetation and habitat removal will be carried out in accordance with Biodiversity Guidelines: Protecting and managing biodiversity	During construction	CPBGG JV	✓	REMM B07	Ecologist Report

ID	Management Measure	When to implement	Responsibility for implementation	Applicability M12 West	Reference or source	Evidence of implementation
	on RTA projects (RTA, 2011) (Guide 4: Clearing of vegetation and removal of bushrock).					
FF24	All construction activities will be planned and carried out within the Project boundary to ensure that there is no damage to any vegetation outside the specified clearing limits. The clearing limits, project boundary and any exclusion zones are to be clearly delineated and protected.	During construction	CPBGG JV	✓	G40 – Section 2.4	Site inspection report
FF25	Damage or destruction of threatened flora species and trees which have been identified for preservation will be minimised by: (i) installing fencing around trees clear of the canopy line (ii) ensuring no materials are stockpiled and no vehicles are parked under the canopy (iii) avoiding excavation or the placing of fill near any tree without advice from an ecologist (iv) routing haul roads and access tracks clear of the canopy.	During construction	CPBGG JV	✓	G40 – Section 2.4	Site inspection report
FF26	Trees remaining within the road reserve, but outside the limits of clearing, which the Principal has agreed to be unsound and are likely to fall upon the roadway or onto private property, will be cleared or pruned in accordance with AS 4373.	During construction	CPBGG JV	✓	G40	Post clearing report
FF27	Any branch, which overhangs the road formation, will be cut back flush with the tree trunk in accordance with AS 4373.	During construction	CPBGG JV	✓	G40 AS 4373	Post clearing report
FF28	Damage of any kind, including damage to fencing or trees or other vegetation outside the limits of clearing, which occurs during clearing operations, will be rectified.	During construction	CPBGG JV	✓	G40	Post clearing report
FF29	Holes left following the removal of trees and stumps will be backfilled and vegetated as described in Clause 3 of G40.	During construction	CPBGG JV	✓	G40 – Section 2.4	Site diary
FF30	Fauna will be managed in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 9: Fauna handling) and the Fauna Handling and Rescue Procedure.	During construction	CPBGG JV	✓	REMM B25	As built drawings
FF31	Connectivity measures will be implemented in accordance with Wildlife Connectivity Guidelines for Road Projects (TfNSW, under preparation).	During construction	CPBGG JV	✓	REMM B23	Ecologist report
FF32	Fencing will be located to reduce roadkill of fauna species and funnel animals to creek crossings where safe passage will be available.	During construction	CPBGG JV	✓	REMM B23	Arborist report

ID	Management Measure	When to implement	Responsibility for implementation	Applicability M12 West	Reference or source	Evidence of implementation
FF33	The CPBGG JV will implement the detailed design to retain fauna passage at all four main creek lines (Cosgrovesand Badgerys Creek (M12 West). A minimum width of three (3) metres and minimum height of 1.5m must be provided.	During construction	CPBGG JV	✓	REMM B23	Ecologist report, Clearing and Grubbing Plan
FF34	The CPBGG JV will prepare a fauna mortality monitoring methodology in consultation with TfNSW.	Prior to construction, During construction	CPBGG JV	✓	G36	Fauna mortality register
FF35	The CPBGG JV will undertake fauna mortality video surveys on haulage roads (public and internal) regularly during rainfall events and following high risk activities including vegetation clearing and dam dewatering maintain a native fauna mortality register.	During Construction	CPBGG JV	✓	G36	Fauna mortality register
FF36	The results for the native fauna mortality register must be provided to the Principal with the Project Report. Results of the surveys will be recorded in the native fauna mortality register and used to inform adaptive management strategies where practicable to reduce the incidence of native fauna mortality in proximity to the Works Under the Contract.	During Construction	CPBGG JV	✓	G36	Fauna mortality register
FF37	Any injury or death of threatened species will be reported to the Principal.	During construction	CPBGG JV	✓	G36	Incident Report
FF38	Weed species will be managed in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 6: Weed management) and the Weed and Pathogen Management Plan (Appendix D).	During construction	CPBGG JV	✓	REMM B26	Ecologist report
FF39	All staff will be made aware of the Priority Weeds present on-site and requirements	During construction	CPBGG JV	✓	G40	Site induction records
FF40	Weeds will be removed and disposed of in accordance with the requirements of the local Council.	During construction	CPBGG JV	✓	G40	Waste Management Register
FF41	Pathogens will be managed in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 2: Exclusion zones).	During construction	CPBGG JV	✓	REMM B27	Ecologist report
FF42	Works will be carried out such that no noxious weeds are imported to the site or around the site, including the washing of wheels of all plant prior to transportation to site.	During construction	CPBGG JV	✓	G40	Site inspection report and daily diary
FF43	Weeds and topsoil will be treated and disposed of in accordance with their category under the Biosecurity Act.	During construction	CPBGG JV	✓	G40	Waste Management Register

ID	Management Measure	When to implement	Responsibility for implementation	Applicability M12 West	Reference or source	Evidence of implementation
FF44	Where works are undertaken at night, direction lighting will be used and directed away from vegetated areas where practicable.	During construction	CPBGG JV	✓	REMM B28	Site inspection report
FF45	Works to be undertaken in accordance with the Snag Management Plan and Habitat Compensation Plan	During construction	CPBGG JV	✓	REMM B2 and B12	Ecologist report
FF46	Where water abstraction from local waterway is proposed a qualified aquatic ecologist will be engaged to assess if it is suitable for water abstraction and for when pumping should cease.	During construction	CPBGG JV	✓	NSW CoA E121	Ecologist report
FF47	Minimum flows will be maintained to assist in maintaining the viability of aquatic communities and preventing barriers to fish passage.	During construction	CPBGG JV	✓	REMM SWH12	Permit to pump
FF48	Fish passage will be maintained in accordance with DPI Fisheries guideline “Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings”.	During construction	CPBGG JV	✓	G38	As built drawings Design Reports
FF49	Large woody debris will be retained for creek crossing works where practicable. Any large woody debris placed in the realigned waterways will be relocated in consultation with an ecologist and undertaken in accordance with the Snag Management Plan.	During construction	CPBGG JV	✓	REMM B16	Ecologist report
FF50	Stumps in riparian zones and aquatic habitats will be retained, where practicable, to reduce the potential for bank erosion.	During construction	CPBGG JV	✓	G38	Ecologist report
FF51	No works will be undertaken in KFH until payment of habitat offset requirements have been made to the DPI Fish Conservation Trust Fund by TfNSW. Impacts to KFH, as defined in *Policy and Guidelines for Fish Habitat Conservation and Management* (DPI, 2013 update) will be minimised. Residual impacts to KFH will be offset at a ratio of 2:1 habitat offset requirement in accordance with the *Policy and Guidelines for Fish Habitat Conservation and Management* (DPI, 2013 update) and in consultation with DPI Fisheries.	Prior to commencement of work in KFH	CPBGG JV	✓	NSW CoA E11 NSW CoA E12	Consultation records
FF52	Carry out any refuelling of plant and equipment, chemical storage and decanting at least 50 metres away from aquatic habitats unless otherwise approved by the Principal.	During construction	CPBGG JV	✓	G38	Site inspection report
FF53	Boats or other watercraft will be operated in a manner that prevents boat wash which could cause erosion of the banks, and propeller damage to seagrass beds.	During construction	CPBGG JV	✓	G38	Site inspection report

ID	Management Measure	When to implement	Responsibility for implementation	Applicability M12 West	Reference or source	Evidence of implementation
FF54	The use of pesticides will be in accordance with the *Pesticides Act 1999* (NSW), other relevant legislation, label directions and any relevant industry codes of practice. Herbicides and pesticides must be currently registered for their intended use by the Australian Pesticides and Veterinary Medicines Authority (APVMA).	During construction	CPBGG JV	✓	G36 G179	Records Sheet
FF55	A Records Sheet will be completed within 24 hours of applying a pesticide; a copy will be submitted to TfNSW. A Records Sheet is not required when all of the following are satisfied: (a) The pesticide is, or is part of a product that is widely available to the general public at retail outlets. (b) The pesticide is only applied by hand or by using hand-held equipment. (c) If applied outdoors on any single occasion, in quantities of no more than 5 litres/5 kilograms of concentrated product or 20 litres/20 kilograms of the ready-to-use product; or if applied indoors, in quantities of no more than 1 litre/1 kilogram of concentrated product or 5 litres/5 kilograms of the ready-to-use product.	During construction	CPBGG JV	✓	G36	Records Sheet
FF56	All personnel managing and using pesticides will receive appropriate training and hold appropriate licence prior to commencing work. Only pesticides registered for use near water will be used near water.	During construction	CPBGG JV	✓	G36	Records Sheet
FF57	Public notification of pesticide use will be in accordance with Appendix G36/H. Implement the following measures whenever pesticides are to be used adjacent to, or across the road from, a "sensitive place" (refer to Clause 1.3 for definition): • Use of mechanical means of pest control (such as mowing or slashing) where feasible; or • Use of hand-held application of pesticides where mechanical means of pest control are not feasible.	During construction	CPBGG JV	✓	G36	Records Sheet
FF58	Avoid applying pesticide: (i) on hot days when plants are stressed; (ii) after the seed has set; (iii) within 24 hours of rain or when rain is imminent; (iv) when winds will cause drift of pesticides into non-target areas.	During construction	CPBGG JV	✓	G36	Records Sheet

ID	Management Measure	When to implement	Responsibility for implementation	Applicability M12 West	Reference or source	Evidence of implementation
FF59	Stockpiles will be located outside of the tree protection zone of trees or native vegetation identified for retention. Tree protection zones will be delineated in accordance with AS 4970 – Protection of Trees on Development Sites.	During construction	CPBGG JV	✓	G38	Site inspection report
FF60	Stockpiles will be located at least 5 metres from likely areas of concentrated water flows and at least 10 metres from waterways that are classified as Class 1 and Class 2 from the DPI Fisheries guideline “Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings”.	During construction	CPBGG JV	✓	G38	Site inspection report
FF61	Topsoil that is not contaminated by priority weeds will be kept in stockpiles for later spreading on fill batters and other areas. Other stockpiled material will be kept separate from the topsoil stockpiles.	During construction	CPBGG JV	✓	G38	Site inspection report
FF62	Stockpiles will be seeded with a sterile cover crop in accordance with Specification TfNSW R178, to encourage vegetation cover. Seeding will be carried out progressively within seven days of completion of each 500 m^2 of exposed batter face.	During construction	CPBGG JV	✓	R44 G38	Site inspection report
FF63	Stockpiles will be set up in a manner that minimises any damage to natural vegetation and trees such that the stockpiled material is accessible for carting away at any time.	During construction	CPBGG JV	✓	R44	Site inspection report
FF64	Following completion of the Works, restoration of the stockpile areas will be carried out in accordance with Specification TfNSW R178.	Post Construction	CPBGG JV	✓	R44 G40	Site inspection report
FF65	Where the native vegetation is insufficient to provide the quantities of mulch needed during landscape planting, native trees removed during clearing and grubbing, with the exception of logs and rootballs, will be mulched and stockpiled Where possible, woody debris (defined as consisting of trees and wood, whether living or dead, but at least 100 mm in diameter) will be retained to be distributed in suitable nearby vegetation to enhance habitat.	During construction	CPBGG JV	✓	G40	Post clearing report
FF66	Stockpiles will be monitored and turned over as required to avoid spontaneous combustion.	During construction	CPBGG JV	✓	G40	Site inspection report
FF67	Mulch in excess of the quantity required for landscape planting will not be stockpiled on site.	During construction	CPBGG JV	✓	G40	Site inspection report
FF68	The temporary application of mulch during construction will be managed to avoid the potential for material and tannin run-off into waterways. This will include limiting the application of mulch near waterways where practicable.	During construction	CPBGG JV	✓	REMM B18	Site inspection report

ID	Management Measure	When to implement	Responsibility for implementation	Applicability M12 West	Reference or source	Evidence of implementation
	The application of mulch for permanent landscaping will be designed and planned to avoid material and tannin runoff.					
FF69	No smoking (including e-cigarettes) will be allowed on site except at designated areas. Dedicated butt disposals will be located in all designated smoking areas.	During Early Works	CPBGG JV	✓	Best practice	Induction and Toolbox talks records
FF70	All works involving a fire source will have a hot works permit in place with specific controls to prevent fire risk.	During Early Works	CPBGG JV	✓	Best practice	Safe Work Method Statement
FF71	The CPBGG JV will not undertake cutting, welding or grinding on total fire ban days, unless the works takes place in an area at least 50 metres away from an ignition source and appropriate fire controls are in place. Consultation with the local RFS is required.	During Early Works	CPBGG JV	✓	Best practice	Safe Work Method Statement
FF72	Vehicles will not be driven or idled in areas of long grass on fire ban days or after prolonged periods of dry weather.	During Early Works	CPBGG JV	✓	Best practice	Induction and Toolbox Talks records
FF73	All entry points into the site will be kept shut to prevent unauthorised vehicle access and torching.	During Early Works	CPBGG JV	✓	Best practice	Induction and Toolbox Talks records
FF74	A supply of water will be available at all times for firefighting purposes and supply point will be communicated with local firefighting authorities.	During Early Works	CPBGG JV	✓	Best practice	Safe Work Method Statement
FF75	Fire extinguishers will be available on all plant and equipment.	During Early Works	CPBGG JV	✓	Best practice	Safe Work Method Statement
FF76	Revegetation will be carried out in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 3: Re-establishment of native vegetation) and the Landscape Plan prepared for the Project.	During construction	CPBGG JV	✓	REMM B08	Site inspection report
FF77	Habitat will be replaced or re-instated in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 5: Re-use of woody debris and bushrock and Guide 8: Nest boxes) and the Habitat Compensation Plan.	During construction	CPBGG JV	✓	REMM B02 and B09	Post clearing report
FF78	Revegetation and the provision of replacement trees will be informed by the Tree Survey undertaken during detailed design of the Project.	During construction	CPBGG JV	✓	NSW CoA E71	Tree survey report
FF79	Rehabilitation and revegetation of the riparian corridor and banks of watercourses impacted by the Project will be commenced within three months of the completion of watercourse work, bridge works and any other construction work required in the corridor.	During construction	CPBGG JV	✓	NSW CoA E109	Tree survey report

ID	Management Measure	When to implement	Responsibility for implementation	Applicability M12 West	Reference or source	Evidence of implementation
FF80	Creek corridors will be revegetated with locally native riparian vegetation, in accordance with the requirements of the Policy and guidelines for fish habitat conservation and management (DPI, 2013) and in consideration of the Guidelines for instream works on waterfront land (DPI, 2012). The creek channels will be rehabilitated to preconstruction conditions or better.	During construction	CPBGG JV	✓	REMM B14	Fauna mortality register
FF81	Seed collection will be carried out in accordance with Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA projects (RTA, 2011) (Guide 3: Re-establishment of native vegetation) under the Seed Collection Program.	During construction	CPBGG JV	✓	TfNSW	Fauna mortality register
FF82	Local native seedlings will be obtained where available, as per EES guidelines as the main source of revegetation. If unavailable, seeds will be sourced from the local region.	During Construction	TfNSW	✓	Seed Collection Program	Fauna mortality register

7 Compliance management

7.1 Roles and responsibilities

The Project organisational structure and overall roles and environmental responsibilities are outlined in Section 3.3 of the CEMP. Specific responsibilities for the implementation of flora and fauna management are detailed in Section 6 of this CFFMP.

The CPBGG JV will engage a Project Ecologist to provide advice throughout construction and to supervise and lead the implementation of processes and management measures for ecologically sensitive activities. These activities will include, but not be limited to;

- Review and input to fauna handling procedures and relevant EWMS;
- Undertaking of pre-clearance surveys and provision of clearing supervision in accordance with TfNSW G40;
- Fauna handling and relocation where required;
- Undertaking of flora and fauna surveys, weed surveys, ecological constraints assessments, monitoring and trapping where required;
- Preparation of detailed pre-clearing and post-clearing reports;
- Review and provision of advice on Clearing and Grubbing Plans;
- Provision of advice on reuse opportunities for hollows, tree trunks, mulch, bush rock and root balls required to be cleared for the project prior to clearing activities;
- Provision of expert advice on biodiversity related issues; and
- Other activities as outlined in Sections 1.4, 2.2.1, and 6.

The Project Ecologist will demonstrate that they hold appropriate qualifications and all licenses relevant to the work being undertaken, in addition to specific experience in working in environmentally sensitive areas of a similar nature to the Project.

The CPBGG JV's Construction Environmental Management Plan must be reviewed and approved by TfNSW and must include details of the role, qualifications and responsibilities of the Project Ecologist and any critical site activities that require the presence of the Project Ecologist

The Project Ecologist will maintain responsibility for tracking the area of native vegetation cleared during construction. This information will be included in the CPBGG JV compliance report.

7.2 Training

All site personnel (including sub-CPBGG JV) will undergo site induction training relating to flora and fauna management issues prior to the commencement of work onsite. The induction training will address elements related to flora and fauna management, including:

- Existence and requirements of this overarching CFFMP, the CPBGG JV CFFMP and all plans and procedures prepared under the CFFMPs
- Relevant legislation, regulations and Environment Protection License (EPL) conditions
- Incident response, management and reporting
- Environmentally sensitive locations and exclusion zones
- Specific species likely to be affected by the construction works and how these species can be recognised
- Mulch stockpile location and management measures
- Site flagging protocol
- Fauna rescue requirements
- Boundaries for vegetation clearing
- Fauna and fauna habitat management
- Weed control measures
- General flora and fauna management measures

- Specific responsibilities for the protection of flora and fauna
- All requirements of Appendices contained within this CFFMP.

Targeted training in the form of toolbox talks or specific training will also be provided to personnel with a key role in flora and fauna management or those undertaking an activity with a high risk of environmental impact. Site personnel will undergo refresher training at not less than six monthly intervals.

The ER will review and approve the induction and training program prior to the commencement of construction and monitor implementation.

Daily pre-start meetings conducted by the CPBGG JV Foreman/ Site Supervisor will inform the site workforce of any environmental issues relevant to flora and fauna that could potentially be impacted by, or impact on, the day's activities.

Further details regarding staff induction and training are provided in Section 3.5 of the CEMP.

7.3 Monitoring and inspections

Inspections of sensitive areas and activities with the potential to impact flora and fauna will occur for the duration of the Project. All identified inspections will be undertaken as stated within this FFMP and the Appendices.

Requirements and responsibilities in relation to monitoring and inspections are documented in Section 3.9 and Appendix A8 of the CEMP.

7.4 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this sub plan, CoA and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 3.9.3 and Appendix A8 of the CEMP.

7.5 Reporting and identified records

Reporting requirements and responsibilities are documented in Section 3.9.5 and Appendix A8 of the CEMP.

Specific reporting requirements associated with additional survey work and control of clearing activities are outlined in Table 7-1. All other records/reports will be provided as stated within this FFMP and the Appendices.

Table 7-1 Reporting requirements relevant to flora and fauna management

Report	Frequency	Responsibility
Report on the presence of weeds and unsound trees together with written notice that limits of clearing and areas of weed infestation identified in the Ecologist report have been marked	At least seven working days prior to commencement of clearing	Contractor Site Environmental Representative Project Ecologist
Pre-clearing Survey Report Survey methodology, targeted species, habitat trees to be removed, fauna rescue events and relocations	Prior to undertaking clearing	Contractor Site Environmental Representative Project Ecologist
Post Clearing Report Summary of the results of surveys, vegetation cleared, fauna rescues, fauna injury and mortality during clearing activities. Summary of areas of vegetation cleared and areas approved for clearing for the Project to be included in the Construction Compliance Reports. Summary of the reuse, relocation or disposal of hollows, coarse woody debris and snags. Ongoing reporting on nest box inspections and required maintenance.	Weekly, and a final report within 21 days from the completion of substantial clearing Six monthly	Contractor Site Environmental Representative Project Ecologist
Compliance Reports Summary of areas of vegetation cleared and areas approved for clearing for the Project.	Three monthly	Contractor Site Environmental Representative Project Ecologist

The CPBGG JV will be required to maintain accurate records substantiating all construction activities associated with the Project or relevant to the conditions of approval, including measures taken to implement this CFFMP. Records will be made available to the DPE and DAWE (now DCCEEW) upon request, within the timeframe nominated in the request.

In addition, key identified records relevant to this CFFMP as specified by TfNSW QA G36, G38 and G40 are to be maintained by the CPBGG JV.

8 Review and improvement

8.1 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. 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
- Make comparisons with objectives and targets.

The CPBGG JV will be responsible for ensuring Project environmental risks are identified and included in the risk register and appropriate mitigation measures implemented throughout the construction of the Project as part of the continuous improvement process. The process for ongoing risk identification and management during construction is outlined in Section 3.2.1 of the CEMP.

8.2 FFMP update and amendment

The processes described in Section 3.12 of the CEMP may result in the need to update or revise this Plan. This will occur as needed.

Any revisions to the CFFMP will be in accordance with the process outlined in Section 3.13 of the CEMP. Any revision or amendment to the CEMP or associated sub-plans will be required to be approved by the ER

A copy of the updated Plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure – refer to 3.1 of the CEMP.

Appendix A – Vegetation Management Plan (including Vegetation Clearing Procedure)

Appendix B – Unexpected Threatened Species and Threatened Ecological Communities (TECs) Finds Procedure

Appendix C – Weed and Pathogen Management Plan

Appendix D – Habitat Compensation Plan

Appendix E – Snag Management Plan

Appendix F – Farm Dam Dewatering Procedure

Appendix G – Fauna Handling and Rescue Procedure

Introduction

Purpose

Handling of fauna during the Project may be required where fauna is encountered during Construction and is required to be relocated or transported to a vet or wildlife carer in the case of injury. This Fauna Handling and Rescue Procedure details the actions to be taken in the event that fauna (including injured, shocked, dependent juvenile or other) is discovered that requires handling during Construction of the Project. This Procedure has been developed in accordance with Guide 9: Fauna handling, Biodiversity Guidelines (RTA, 2011).

Objective

The objective of this Procedure is to minimise impacts on fauna as a result of being handled by humans and to prevent injury to people handling fauna.

Scope

This Procedure is applicable to all activities that may result in site personnel handling or rescuing fauna during Construction of the Project. It is applicable to all native and introduced species that are found in the Project area.

Induction and training

All site personnel (including sub-contractors) will be inducted on this Procedure. Best practice methods for fauna handling will be communicated to site personnel to minimise the risk of injury in the event that unavoidable handling of fauna occurs on site during Construction.

Training in this Procedure will include inductions, toolbox talks, pre-starts and targeted training as required.

Roles and responsibilities

The Environmental Site Representative is responsible for ensuring the effective implementation of, and training of site personnel in, this Procedure. In general, site personnel should avoid the handling of fauna on site, however best practice fauna handling methods will be implemented should fauna handling be unavoidable.

Prior to commencement of Construction, CPBGG JV will contact a suitably qualified and located animal rescue agency/wildlife care group or vet to ensure that they are willing and available to be involved in fauna rescue and assist with injured animals during Construction of the Project. The contact details for the agency, group or vet will be prominently displayed at ancillary facilities, main compounds and offices on site.

CPBGG JV will engage a suitably qualified and experienced fauna ecologist or wildlife carer with specific animal handling experience to carry out any animal handling required by this Procedure. Relevant fauna rescue services and local veterinary surgeries contact details are below.

Fauna rescue contact details

Agency / Business	Contact Number
Project Ecologist (EMM)	TBA
Sydney Wildlife	02 9413 4300
WIRES	1300 094 737
RSPCA Care Centre Rouse Hill	02 8883 0622
Rossmore Veterinary Hospital	02 9606 6984

Review

This Procedure will be updated by the Environmental Site Representative and reviewed by the TfNSW Environment and Sustainability Manager (or delegate) prior to commencement of Construction of the Project.

This Procedure will be updated throughout Construction of the Project to include any new fauna findings and subsequent management measures required. This Procedure will be reviewed annually, or as required in accordance with the continuous improvement process described in Section 8 of this CFFMP.

Procedure

Rescue Procedure

In the event that wildlife is discovered on the site during construction activities that may harm the animal or pose a risk to site personnel, the following procedure should be followed:

1. **Stop all works** in the vicinity of the animal and notify your supervisor or superintendent who is to notify the Project Ecologist or Environmental Site Representative if the Project Ecologist is not present on site.
2. Provide exact location of the animal, clear directions to access the area and contact details for someone at the work front who will be able to meet the Project Ecologist or Wildlife Carer and show them where the animal is.
3. **Establish an exclusion zone around the animal.** Control plant and vehicle movements around this area.
4. **Allow animal to leave the area without handling if the animal is mobile.** Make sure the animal has a clear safe path to leave the project area.
5. If the animal is unable or unwilling to leave the area of its own accord, only a licensed fauna ecologist or wildlife carer with specific animal handling experience should attempt to handle and relocate the animal.
6. If the Project Ecologist or Wildlife Carer is not immediately available, the following may be suitable to reduce stress to fauna and / or reduce the risk of further injury:
    a. Minimise the number of people around the animal;
    b. Cover larger animals with a towel or blanket and place in a cardboard box or hessian bag;
    c. Place smaller animals in a cotton back or shoe box;
    d. Keep animal in a quiet, ventilated and preferably dark location away for construction activities; and
    e. Frogs and aquatic fauna to be placed in a plastic bag or container with sufficient amount of water.
7. If the animal cannot be safely handled (e.g. venomous reptiles);
    a. Maintain exclusion zone;
    b. Supervise the animal until the Project Ecologist or Wildlife Carer arrives.
8. The Project Ecologist or Wildlife Carer will either:
    c. relocate fauna to nearby areas that will not be disturbed by the project construction works that contains similar / suitable habitat for the species;
    d. hold the animal temporarily to release nocturnal animals at dusk or avoid periods of heavy rainfall; or
    e. transport the animal to Veterinary Services for assessment if the animal is injured or stressed
9. If the animal is a threatened species that is **NOT** identified in the CFFMP, the Environmental Site Representative is to notify the following relevant stakeholders;
    1. The DPU and/or the OEH Representative; and
    2. The TfNSW Environment and Sustainability Manager (or delegate)
10. Following consultation with the relevant stakeholders, the Environmental Site Representative or Project Ecologist will implement any corrective actions and additional safeguards required.
11. If the animal is injured, requires veterinarian assessment, requires euthanasia or is killed, an Environmental Incident Report is to be completed in accordance with the Environmental incident classification and reporting procedure.

Fauna Handling Considerations

The table below provides a summary of considerations for general handling and rescue of fauna.

Taxa / Activity	Consideration
Handling of Snakes	Handling of snakes can be unsafe and bites from certain species can result in serious illness, damage to organs or even death. Some monitor species also have anticoagulants that result in excessive bleeding.
Handling of bats / removal of structures (bridges and culverts)	Some species of bats carry the Australian Bat Lyssavirus (ABL) which is a form of rabies. Anyone handling bats should be vaccinated. Bats that are held should be stored in a calico bag or sealed bat nest box. Prior to clearing of existing structures, an assessment for microbats and other fauna residing in the structure shall be completed. If the assessment determines that microbats are likely roosting in the structure, a site specific bat management strategy is to be developed to manage staged exclusion of the bats from the structure prior to removal.
Handling of frogs	Handling of frogs can result in the spread of the Amphibian Chytrid Fungus and shall be undertaken in accordance with the DECC Hygiene Protocol for Control of Disease in Frogs (DECC 2008). Frogs and tadpoles are to be placed into plastic bag (zip lock) or other plastic containers with a small amount of water and vegetation
Handling of mammals and birds	Mammals and birds are capable of causing injury to handlers (e.g. bites, scratches) or themselves if handled incorrectly. Mammals and birds should be placed into a calico/hessian bag or a cardboard box. Possums which can easily rip through calico bags and should be placed within double lined canvas bags.
Nestlings or juveniles	If habitat trees are found to contain nestlings or juveniles prior to felling then it would be preferable to leave trees intact until such a time that juveniles have vacated the nest or den. If, however, construction timing does not permit this then attempts should be made to rescue juveniles for possible captive rearing by a responsible wildlife group (such as WIRES) and subsequent release into translocation sites. The success of this will depend upon the species, their stage of development and their likely chances of survival. Alternatively, and only as a last resort juveniles may be euthanized on-site.
Threatened species	If any habitat tree is found or suspected (based on fresh tree markings or scats) to contain any threatened species, the tree should be left in place for a minimum of two days and, if possible, be re-inspected prior to felling.
Arboreal animals	In the event that arboreal animals do not move or they cannot be captured because the tree hollow is too large, high or its recovery would breach OH&S requirements then the tree will be felled and animals recovered post-felling.
Handling of fish and aquatic species	Ensure that containers for holding aquatic species provide sufficient amount of water and adequate aeration.
Relocation and release of animals general	Animals should only be released at a time and place that is suitable to the species and provides it with a likely chance of survival (i.e. release should not increase the risk of stress or predation to the species). Release should not take place during periods of heavy rainfall.
Release of nocturnal species	Nocturnal animals captured during the day will be immediately taken to adjacent bushland and placed into a relocated tree hollow or nest box or held until the evening and released shortly after dusk (see below for holding of animals).
Temporarily holding animals	Collected animals may be held for a short period of time (preferably less than 24 hours prior to release). Animals kept for any purpose will be secured in a container (see above) and stored in a quiet, ventilated and preferably dark location away for construction activities. Injured animals will require additional care and may need to be nursed on route to care.
Injured Animals	Injured animals will be cared for according to specific animal care and ethics guidelines) and be given appropriate veterinary care, and if available, the services of one of the local animal welfare groups.
Euthanasia	In some instances severely injured and pest animals may need to be euthanized. This is to be done by a veterinarian after being assessed.
Release site selection	During the preliminary pre-clearing assessments, the project ecologist is to identify and assess suitable release sites for fauna adjacent to the project area.

Fauna Likely to be affected by the Works

While some mobile species, such as birds, may be able to move away from the path of clearing, other species that are likely to be direct affected by the works including:

- Less mobile species unable to move rapidly over relatively large distances (e.g. frogs and reptiles, nesting birds and juvenile fauna);

- Arboreal and scansorial mammals (possums);
- Microbats residing in structures (bridges and culverts);
- other species utilising tree hollows (e.g. birds); and
- Fish and aquatic fauna (e.g. fish or eels) in waterways.

For these species, construction activities will result in loss of roosting habitat and potential injury or mortality. Mobile species fleeing clearing areas are also at risk from collision with vehicles.

Relocation procedure

Relocation of fauna will be undertaken by, or under advice from, the Project Ecologist or wildlife carer and records will be maintained in a register. If the animal is not injured or stressed, it will be released nearby in an area that is not to be disturbed by Construction, in accordance with the following procedures:

- sites identified as suitable release points by the Project Ecologist or wildlife rescuer
- sites of similar habitat and located as close to the original capture location as possible
- if the species is nocturnal, release will be carried out at dusk
- avoid release during periods of heavy rainfall where feasible
- hollow-dependent species, particularly those with dependent young, will be released into a temporary nest box.

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.

Dewatering procedure and aquatic fauna relocation

A number of farm dams and creeks are located within the Project area and there is the potential for fish and other aquatic fauna, including turtles and eels, to be present within these watercourses. CPBGG JV will prepare a Farm Dam Dewatering Plan in consultation with a qualified aquatic ecologist who will advise on measures relevant to relocation of fauna and prevention of transfer of exotic aquatic life (if appropriate).

Aquatic fauna will be relocated in accordance with the following steps:

1. Ensure all aquatic fauna relocation works are supervised by a suitably qualified aquatic ecologist.
2. Prior to the commencement of pumping, advice should be sought from the aquatic ecologist on pumping methods and the extent of drawdown.
3. The water level will be pumped down to a level that will allow the safe and effective implementation of capture methods, such as seine nets, dip nets and electrofishing.
4. A fine mesh screen (≤5 mm) may be installed on the inlet of the pump or a fish basket used to remove the risk of native aquatic fauna being transferred through pump. A maximum depth of 500 mm is typically required before fish salvage can commence but site-specific advice will be required from the aquatic ecologist.
5. The aquatic ecologist is to establish the presence of native and introduced aquatic fauna and plan the relocation. Access to adjoining properties may be required for relocation, particularly when dewatering dams. The aquatic ecologist will ensure that native aquatic fauna species are released into suitable habitat as close to the original location as possible.
6. In areas of identified frog habitat, dip-netting for tadpoles will be undertaken prior to substantial water draw-down.
7. Tadpoles will be placed in individual clip-seal bags and acclimatised to the release site (i.e. bag placed in waterbody for 30 minutes) before being released.
8. Separate the native fish and pest species, with native fish placed in tubs full of water from the water body for later relocation and pest fish placed in an ice slurry to be euthanised.
9. Transfer native aquatic fauna species to an aerated transport tank for immediate release downstream in previously identified suitable habitat.

10. Following completion of relocation, a final check will be undertaken to find any remaining fish, or dying/dead fish.
11. All euthanised and dead fish will be transported to a licensed landfill facility for disposal.

Handling procedure

The following handling procedures will be implemented to minimise stress to fauna and/or remove the risk of further injury:

12. If time permits, call ecologist or fauna rescue for advice.
13. Attempt to herd terrestrial fauna into adjoining forest or other vegetated area.
14. If capture is necessary, cover larger animals with a towel or blanket and place in a large cardboard box or hessian bag.
15. Place smaller animals in a cotton/calico bag tied at the top.
16. Keep the animal in a quiet, warm, ventilated and dark place away from noisy Construction activities.
17. Animals such as venomous reptiles and raptors require particular handling and will only be handled by appropriately qualified personnel, i.e. Project Ecologist or wildlife rescuer.
18. If handling bats, the handler must be vaccinated against the Australian Bat Lyssavirus.
19. Aquatic fauna will be placed in plastic aquaria or a plastic bag with sufficient amount of water and aeration.
20. Frogs will be transported in moistened plastic bags (1 frog/bag) with a small amount of leaf litter. Handling and translocation of frogs shall be 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. Recommended measures include:
    - thoroughly cleaning/disinfecting footwear and equipment before entering frog habitat and when moving from one site to another
    - in high risk areas, spraying/flushing vehicle tyres with a disinfecting solution and avoid driving through frog habitat
    - cleaning/disinfecting hands between collecting samples/frogs (preference would be given to using bags, rather than bare hands to handle frogs)
    - limiting one frog or tadpole to a bag. Bags should not be reused.

Recommencement of work

Following consultation with all relevant stakeholders, the Environmental Site Representative and Project Ecologist will implement any corrective actions and additional safeguards identified. Following confirmation by the Environmental Site Representative and Project Ecologist that all appropriate safeguards have been implemented, Construction works can recommence.

Project Ecologist responsibilities for fauna handling and rescue

CPBGG JV's Project Ecologist has the following responsibilities in regard to this Procedure:

- relocation of captured fauna will be undertaken in accordance with Sections 2.2 and 2.3 of this Procedure
- record and provide capture and relocation data in the Post-Clearing Report (refer Appendix A of this CFFMP). Data will include the species, number, and general health of each individual
- in the event that the rescue service and/or local veterinary service cannot be contacted or non-native fauna are captured, 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 with applicable guidelines and legislative requirements
- if the fauna species is identified as a threatened species that is not identified in this CFFMP, notify the Environmental Site Representative or TfNSW Environment and Sustainability Manager (or delegate).

Temporary fauna fencing

CPBGG JV will install temporary fauna fencing to minimise the risk of road kill or injury from public road traffic or Construction vehicles, plant or machinery where it is considered that there is a high risk of mobile threatened fauna species entering the Construction area or in existing areas where there is a known history of threatened species roadkill.

Supervision of Clearing

An ecologist or WIRES representative will be present during the clearing of suspected vegetation that may support a habitat for fauna to manage and/or relocate any fauna present.

The objective of the pre-commencement inspections and supervision of clearing is to direct clearing in a manner that either allows for fauna to safely flee the clearing area.

Uninjured animals that are unable to flee the clearing area will be captured and placed in adjacent areas of analogous habitat that contains suitable refuge habitat, to areas of adjoining habitat.

Injured animals will be cared for according to specific animal care and ethics guidelines

(http://www.animalethics.org.au/reader/arrp-policies-and-guidelines) and be given appropriate veterinary care, and if available, the services of one of the local animal welfare groups. Severely injured and pest animals may need to be euthanized at the assessment of a veterinarian.

Records

CPBGG JV will maintain accurate records of all fauna captured and relocated during the Project. The following details are to be recorded for each event:

- species name
- location and time captured
- location and time released
- behaviour and condition upon release
- details of any injury or death that occurred
- contact details and location of licensed wildlife carer or vet if the animal was transferred into their care.

Reporting

The Project Ecologist will record fauna finds, relocations and euthanised animals in the TfNSW Incident Report.

CPBGG JV will immediately report any injury or death of a threatened species to the TfNSW Project Manager and Environment and Sustainability Manager (or delegate).

Appendix H – Fauna Mortality Monitoring Methodology

Introduction

Fauna mortality on haulage routes is a potential risk during construction, particularly when fauna habitat is being removed. The removal of habitat can result in an increased likelihood that fauna dispossessed by construction activities disperse into the surrounding areas of the project seeking refuge or in search of food resulting in entry onto roads and haulage routes.

Scope

TfNSW QA Specification G36 clause 4.8 requires CPBGG JV to undertake fauna mortality video surveys on project haulage routes both on public roads surrounding the project (ie. Elizabeth Drive, Luddenham Road, The Northern Road) and on internal haul roads. Figure 8-1 below in white shows the extent to which the Fauna mortality monitoring will be undertaken over. Fauna mortalities are to be maintained in the project fauna mortality register. This monitoring methodology is to fully implemented during construction and be further developed in conjunction with TfNSW.

Figure 8-1: Fauna Mortality Monitoring extents along Elizabeth Drive, The Northern Road and Luddenham Road illustrated in white

Methodology

Inspections will be undertaken when hauling activities are occurring as part of the daily site inspection utilising a dashcam device or equivalent (eg. GoPro camera) mounted in the inspecting site vehicle. These inspections will typically be undertaken by supervisory staff as per frequency outlined in dot points below. Inspections will be recorded in the supervisor's daily diaries (and by way of the video footage).

Inspections of haul routes will be undertaken:

- Once daily during 'normal' work operations
- Twice daily (morning and afternoon) whilst conducting high-risk activities likely to result in an increased likelihood of fauna movement (eg. such as vegetation clearing and dam dewatering)

- Following rainfall events (defined as per CSWMP as 10 mm or more of rain forecast within 24 hour period)

Initial analysis of data will be undertaken by CPBGG JV to determine if any immediate mitigation measures are required to be implemented.

Equipment to be used during the monitoring includes:

- Light Vehicle
- Dashcam device (eg. GoPro camera or equivalent)

The location of any fauna mortality noted during the inspection will be documented in the foreman diaries and also the fauna mortality register.

Reporting

All fauna mortalities will be reported immediately to the project ESR. Any fauna mortalities observed during the inspections will be maintained on the fauna mortality register (including details on fauna species and location) with subsequent video footage retained in the site files. Results of the fauna mortality register will be included in the monthly project reports including any raw video data. The results of the fauna mortality monitoring will be used to inform adaptive management strategies to reduce the incident of native fauna mortality in close proximity to the project.

Continual Improvement

This methodology may be updated based on findings from the monitoring and any identified improvements throughout construction.

Appendix I – Secondary CoA and REMMs

Secondary CoAs

CoA No.	Condition Requirement	Document reference
E2	The clearing of native vegetation must be minimised with the objective of reducing impacts to threatened ecological communities and threatened species habitat.	Section 6.1
E14	A minimum width of three (3) metres and a minimum height of 1.5 metres must be provided to maintain fauna passage below the Badgerys Creek, Cosgroves Creek, South Creek and Kemps Creek bridges. The three metre wide passage must consist of a natural substrate or other surface type that will not hinder fauna movement.	Section 6.3
E15	Prior to vegetation clearing, the Proponent must identify where it is practicable for the CSSI to reuse native trees and vegetation that are to be removed. If it is not possible for the CSSI to reuse all removed native trees and vegetation, the Proponent must consult with the relevant council(s), Western Sydney Parklands Trust and Landcare groups and relevant government agencies to determine if: (a) hollows, tree trunks, mulch, bush rock and root balls salvaged from native vegetation impacted by the CSSI; and (b) collected plant material, seeds and/or propagated plants from native vegetation impacted by the CSSI, could be used by others in habitat enhancement, beneficial re-use and rehabilitation work, before pursuing other disposal options.	Section 6.1
E65	Landscaping must improve parkland, open space and native vegetation and fauna connectivity, including between areas of existing parkland and open space adjacent to and intersecting the CSSI, and through the revegetation of areas with local provenance species, where practicable, between adjoining areas of remnant Cumberland Plain Woodland to re-link them. In implementing these requirements, the Proponent must have regard to wildlife strike risk in proximity to the Western Sydney International Airport.	Section 6.10

E71	Revegetation and the provision of replacement trees must be informed by a Tree Survey undertaken during detailed design. The Tree Survey must identify the number, type and location of any trees to be removed. The Tree Survey must be submitted to the Planning Secretary for information with the Place, Design and Landscape Plan. Where trees are to be removed, the Proponent must provide a net increase in the number of replacement trees at a ratio of 2:1, except trees that are offset under Condition E3. Replacement trees must have a minimum pot size consistent with the relevant authority's plans / programs / strategies for vegetation management, street planting, or open space landscaping, or as agreed by the relevant authority(ies). Note: For the purposes of this condition, the relevant authority is that State or local government authority that owns or manages the land on which the replacement trees will be planted.	Section 6.10
E105	The CSSI must be designed, constructed and operated so as to maintain the NSW Water Quality Objectives where they are being achieved as at the date of this approval, and contribute towards achievement of the NSW Water Quality Objectives over time where they are not being achieved as at the date of this approval, unless an EPL in force in respect of the CSSI contains different requirements in relation to the NSW Water Quality Objectives, in which case those requirements must be complied with. Note: If it is proposed to discharge construction stormwater to waterways, a Water Pollution Impact Assessment will be required to inform licensing, consistent with section 45 of the POEO Act. Any such assessment must be prepared in consultation with the EPA and be consistent with the National Water Quality Guidelines, with the level of detail commensurate with the potential water pollution risk.	Section 6.5 CSWMP
E106	Drainage feature crossings (permanent and temporary watercourse crossings and diversions) and drainage swales and depressions must be carried out in accordance with relevant guidelines and designed by a suitably qualified and experienced person.	Section 6.5.1
E107	Work on waterfront land must have regard to the *Guidelines for controlled activities on waterfront land – Riparian Corridors (NRAR, 2018), Controlled activities on waterfront land – Guidelines for watercourse crossings on waterfront land (NSW Office of Water, 2012) and Policy and Guidelines for Fish Habitat Conservation and Management (DPI Fisheries, 2013).*	Section 6.5
E108	The Proponent must consult DPI Fisheries and EES during the detailed design of the watercourse crossings. The consultation must include: (a) design of bridges; (b) design of scour protection; and (c) details of riparian revegetation.	Section 6.5

E109	Rehabilitation and revegetation of the riparian corridor and banks of watercourses impacted by the CSSI must be commenced within three (3) months of the completion of the watercourse work, bridge works (sub-structure, super-structure and pavement) and any other construction work required in the riparian corridor.	Section 6.10

Secondary REMMs

ID	Revised environmental management measure	Timing	Document Reference
B02	A Habitat Compensation Plan (HCP) will be prepared and implemented as part of the CFFMP for the project. The HCP will target those species that will be impacted by the loss of hollows. Measures will include: nest boxes, reuse of salvaged hollows and/or new technologies eg chainsaw hollows), as well as replacement of woody debris and bushrock with consideration to Guide 5 and Guide 8 of Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011).	Prior to construction	Appendix D
B05	Pre-clearing surveys will be carried out in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 1: Pre-clearing process). The following species identified on or near the study area will require particular attention: •White-bellied Sea-Eagle If design cannot avoid the White-bellied Sea-Eagle nest, then pre-clearing measures to avoid impact on the nest will be implemented. This will include pre-clearing survey to establish if it is currently being used and removal of the nest by an ecologist experienced in similar procedures. The potential impacts of habitat removal will be minimised by removing the nest outside of the nesting period (typically lays between June and September, with young remaining in the nest for 70 days). An initial pre-clearing inspection will be carried out at least 21 days prior to commencement of clearing, to give the ecologist time to check the nest and then relocate if needed. •Cumberland Plain Land Snail Pre-clearance surveys will be carried out immediately before clearing works by a qualified ecologist in all vegetated areas to be disturbed that were identified as known or potential habitat for Cumberland Plain Land Snail (see Figure 6-6 in amendment report). As identified in the CFFMP, all individual Cumberland Plain Land Snails found during pre-clearance surveys will be translocated to adjacent areas of suitable habitat.	Prior to construction	Appendix A Section 2.2

ID	Revised environmental management measure	Timing	Document Reference
B06	An unexpected threatened species finds procedure will be developed as part of the CFFMP and based on Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 1: Pre-clearing process). The procedure will include requirements for workers to be made aware of the potential flora and fauna species that may be encountered during construction (including training staff on species identification) and outline the process for the identification and management of unexpected flora and fauna. In the event that any threatened species are identified during construction, the following steps would be carried out: 1. Stop work immediately in the location of the unexpected find to avoid any potential impacts. 2. Notify the environmental manager. 3. Environmental manager will arrange for an ecologist to conduct an assessment of significance of the likely impact, develop management options, and notify DPIE, EESG,and DoEE DAWE as appropriate. 4. If a significant impact is unlikely to occur, re-begin work and maintain regular site inspections. 5. If a significant impact is likely to occur: a.Consult with DPIE, EESG and DoEE DAWE as appropriate. b.Obtain approvals, licenses or permits as required. c.Re-begin work once advice is sought and necessary approvals, licenses and permits are obtained. 6. Include species in subsequent inductions, toolbox talks and update the CEMP.	During construction	Appendix B
B07	Vegetation and habitat removal will be carried out in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 4: Clearing of vegetation and removal of bushrock).	During construction	Appendix A

ID	Revised environmental management measure	Timing	Document Reference
B09	Habitat will be replaced or re-instated in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 5: Re-use of woody debris and bushrock and Guide 8: Nest boxes). A Habitat Compensation Plan, as described in B02 will include this measure.	During construction	Appendix D
B10	Removal of riparian vegetation at creek crossings will be minimised and vegetation connectivity across the riparian zone will be maintained where possible.	During construction	Section 6.5
B11	Measures to protect aquatic and riparian habitat will be outlined in the CFFMP and protected in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 10: Aquatic habitats and riparian zones) and Section 3.3.2 Standard precautions and mitigation measures of the Policy and guidelines for fish habitat conservation and management (DPI, 2013).	Prior to Construction	Section 6.5
B12	A snag management plan would be prepared as part of the CFFMP for the project for snag removal and relocation at Badgerys Creek, Kemps Creek and South Creek in accordance with the Policy and guidelines for fish habitat conservation and management (DPI, 2013). The management plan will be informed by additional field work which will provide details of the snags to be relocated (such as numbers and locations) and relocation methods. In accordance with Section 3.2.5.2 of the Policy and guidelines for fish habitat conservation and management (DPI, 2013), the snag management plan will: • Clearly outline the objectives to be achieved • Document the actions to be taken for each individual snag • Detail the methods and machinery to be use • Specify the season or time period over which the works will be carried out.	Prior to Construction	Appendix E
B14	Creek corridors will be revegetated with locally native riparian vegetation, in accordance with the requirements of the Policy and guidelines for fish habitat conservation and management (DPI, 2013) and in consideration of the Guidelines for instream works on waterfront land (DPI, 2012). The creek channels will be rehabilitated to preconstruction conditions or better.	During Construction	Section 6.10

ID	Revised environmental management measure	Timing	Document Reference
B16	Large woody debris will be retained for creek crossing works where practicable. Any large woody debris placed in the realigned waterways will be relocated in consultation with an ecologist.	During Construction	Section 6.4
B17	Permanent and temporary waterway crossings will be designed and constructed to maintain fish passage in accordance with Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (Fairfull and Witheridge, 2003). Crossing types should be matched to waterway type as per Table 1 in Fairfull and Witheridge (2003).	During Construction	Section 6.5.1
B19	Emergency response protocols and procedures will be included in the Project CEMP and implemented in the event of a contaminant spill or leak.	As required during construction	Section 6.14
B24	Exclusion zones will be set up at the limit of clearing in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 2: Exclusion zones). Exclusion zones will be set up to protect potential indirect impacts to threatened flora in accordance with the areas identified in the EIS and the amendment report (including Figure 1-2 of Appendix A of the amendment report).	During Construction	Appendix A – Section 2.2.6
B25	Fauna will be managed in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 9: Fauna handling).	During Construction	Appendix A – Section 2.4
B26	Weed species will be managed in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 6: Weed management).	During Construction	Appendix C – Section 3 Appendix C – attachment 1
B27	Pathogens will be managed in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 2: Exclusion zones).	During Construction	Appendix C – Section 4 Appendix C – attachment 2
B28	Shading impacts will be minimised through detailed design of bridge and culvert structures. The need for artificial lighting during construction and operation will be minimised through detailed design where feasible, including directing lighting away from vegetated areas where practicable.	Detailed Design and During Construction	Section 5.2.8

ID	Revised environmental management measure	Timing	Document Reference
LVIA15	A tree management strategy will be prepared for the project, outlining: •Measures to minimise tree removal to retain and protect as many trees within the construction footprint as reasonable and feasible •Measures to avoid damage to trees that are to be retained within the construction footprint to ensure the maintenance of health and stability of the trees in accordance withAS4970-2009 Protection of trees on development sites •Requirements for the pruning of trees to be carried out by a suitably qualified person in accordance with AS 4373-2007 Pruning of amenity trees •Consideration of maintenance requirements and safety standards •Requirements for the replacement trees where removal cannot be avoided including: −Net increase in the number of trees (not identified as within an EEC) −Where it is not practicable to plant trees in the operational footprint an alternative location will be identified in consultation with relevant councils and in consideration of future development in the local area - Minimum pot size in accordance with part 3.2.1 (Rural road reserves) in the TfNSW Landscape Guideline (Roads and Maritime, 2018b) subject to long-term viability of the plant.	Detailed design and prior to construction	Section 6.11
LVIA16	Revegetation for the project will consider the land use requirements of the National Airports Safeguarding Framework (NASF) (National Airports Safeguarding Advisory Group, n.d.) to minimise the risk of wildlife strikes at the Western Sydney Airport.	Detailed design	Section 6.10
GG03	Vegetation removal will be minimised where practicable.	Detailed design and construction	Appendix A – Section 2.3