Sydney Metro City and Southwest, Central Station Main Works Project

Construction Biodiversity Management Plan

Central Station Main Works Project
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Project name	Central Station Main Works
Client	Sydney Metro City & South West – Sydney Metro
Client contract number	CSMW
Laing O'Rourke contract number	K51

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Construction Biodiversity Management Plan

LAING O'ROURKE

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Terms and definitions

The following terms, abbreviations and definitions are used in this plan.

Terms	Explanation
AHD	Australian Heritage Datum
ARI	Average Rainfall Intensity
AS	Australian Standard
Assurance Application	Laing O'Rourke's Online Tool to manage Non-Conformances
CAR	Corrective Action Request
CBD	Central Business District
CBMP	Construction Biodiversity Management Plan
CEMP	Construction Environmental Management Plan
CoA	Conditions of Approval
CPESC	Certified Practitioner in Erosion and Sediment Control
CSSI	Critical State Significance Infrastructure
CSMW	Central Station Main Works
DPE	Department of Planning & Environment
ECM	Environmental Control Map
EIS	Environmental Impact Statement (Sydney Metro City and Southwest Chatswood to Sydenham dated 3 May 2016 submitted to the Secretary seeking approval to carry out the CSSI and as revised as required by the Secretary under the EP&A Act)
EPL	Environment Protection Licence
ER	Environmental Representative
ERSED Control	Erosion and Sediment Control
ISO	International Standardization Organisation
Laing O'Rourke	Laing O'Rourke Australia Construction Pty Limited
Minister	NSW Minister for Planning
OEH	Office of Environment and Heritage
PEM	Project Environmental Manager
RTS	Response to Submissions
SDS	Safety Data Sheet
SM	Sydney Metro (Transport for New South Wales)
SMCSW	Sydney Metro City and Southwest
SPIR	Submissions and Preferred Infrastructure Report
SWMS	Safe Works Method Statement
TfNSW	Transport for New South Wales
WTP	Water Treatment Plant

1. Introduction

1.1 Purpose

This Construction Biodiversity Management Plan (CBMP) outlines the Central Station Main Works (CSMW) Project's (the Project) approach to implementing measures to mitigate the risk of impact to fauna and flora in accordance with Laing O'Rourke Construction Pty Limited's (Laing O'Rourke) legal, planning and contractual requirements and Laing O'Rourke's environmental management system. This CBMP has been developed in compliance with Sydney Metro's requirements, Laing O'Rourke's environmental management system and the Minister's Conditions of Approval (CoA). The Plan incorporates the requirements of the Flora and Fauna Management Plan (as detailed in the Construction Environmental Management Framework). This plan will be submitted to the Secretary DPE for approval no later than one month before commencement of construction.

1.2 Background

Sydney Metro City & Southwest – Chatswood to Sydenham Project is a new 30km metro line extending metro rail from the end of Sydney Metro Northwest at Chatswood under Sydney Harbour, through new CBD stations and southwest to Bankstown. It is due to open in 2024 with the capacity to run a metro train every two minutes each way through the centre of Sydney. The Project forms part of the Sydney Metro City & Southwest – Chatswood to Sydenham Project and includes the construction of new underground platforms at Central Station and new related pedestrian access ways. The works will be undertaken by Laing O'Rourke. The Project consists of the Metro Station Works, the Central Station Works and the Central Walk Works which are described in the sections below.

1.3 Planning Approval

The Project has been assessed by the Department of Planning and Environment under Section 115ZB of the *Environmental Planning and Assessment Act 1979* (EP&A Act) as Critical State Significant Infrastructure (CSSI). The Project, its impacts, consultation and mitigation were documented in the following suite of documents:

- Critical State Significant Infrastructure Application SSI 15_7400
- Sydney Metro – Chatswood to Sydenham –Environmental Impact Statement (Jacobs/Aracadis/RPS, 2016);
- Sydney Metro – Chatswood to Sydenham –Response to Submissions and Preferred Infrastructure Report (Jacobs/Aracadis/RPS 2016); and

The Planning Assessment Commission granted Approval for the Project on 9 January 2017 and the Laing O'Rourke scope of works is subject to the Minister's Conditions of Approval.

Following approval of the Sydney Metro City and Southwest – Chatswood to Sydenham Project, a modification (SSI Mod 2: Central Walk) was assessed by the Department of Planning and Environment and subsequently approved on 21 December 2017 under section 115ZI of the EP&A Act.

The consolidated Conditions of Approval's for the Sydney Metro City and Southwest have been defined from the following approval modification documents.

- CSSI 7400 MOD 1 – Victoria Cross and Artarmon Substation (determined 18 October 2017)
- CSSI 7400 MOD 4 – Sydenham Station and Metro Facility South (determined 13

December 2017)

- CSSI 7400 MOD 2 – Central Walk (determined 21 December 2017)
- CSSI 7400 MOD 3 – Martin Place Metro Station (determined 22 March 2018)
- CSSI 7400 MOD 5 – Blues Point Acoustic Shed (determined 2 November 2018)
- CSSI 7400 MOD 6 – Administrative Changes (determined 21 February 2019).
- CSSI 7400 MOD 7 – Administrative Changes (determined 24 June 2020).
- CSSI 7400 MOD 8 – Blues Point Access Site (determined 25 November 2020).

1.4 Overview of the Project

The Metro Station Works include the installation of new platforms that will be constructed using sophisticated excavation techniques to create a cavern with an island platform, beneath Central Station's existing heavy-rail platforms 13, 14 and 15.

The Central Station Works include new infrastructure and the adjustments to existing infrastructure at Central Station to construct, operate and maintain the Metro Station Works. The key features of the Central Station Works include:

- a new north-south concourse for Central Station which will link the new metro station with the existing northern entrance and north concourse, a new east concourse entitled 'the Central Walk'; and
- adjustments to the existing Paid Intercity Concourse, Olympic Tunnel, north concourse and northern entrance to Central Station.

The Central Walk Works include the provision of other infrastructure to provide improved connectivity and other operational enhancements throughout Central Station. The key features of the Central Walk Works include:

- a new eastern entrance for Central Station at Chalmers Street level
- a new eastern concourse for Central Station beneath existing platforms 16 to 23 (the 'Central Walk'), which will link the new eastern entrance, the new north south concourse, existing platforms 16 to 23 and the existing Eastern Suburbs Railway (ESR) concourse; and
- provisions to enable the future construction (by others) of an extension of the Central Walk through a new west concourse and a new western entrance for Central Station.

1.5 Project Scope of Works

1.5.1 Permanent Works

The permanent new infrastructure to be constructed includes:

- Shortening of platforms 9 to 14 at the northern end, and a corresponding lengthening at the southern end
- Demolition of platforms 13 to 15 and re-instatement of platforms 13 to 14 to accommodate the construction of the new metro station
- Reinforcement of Platform 12 and demolition of exiting canopies of Platform 12
- Minor existing canopy modifications for Platform 14 for lift risers

- Suburban platforms refreshing
- Station excavation requiring the removal of approximately 230,000 cubic metres of spoil
- Demolition of the 'Bounce Hostel'
- Construction of the new eastern pedestrian portal, the Central Walk and related station access arrangements to existing platforms.

Refer to Figure 1.1 below for the locations of the works.

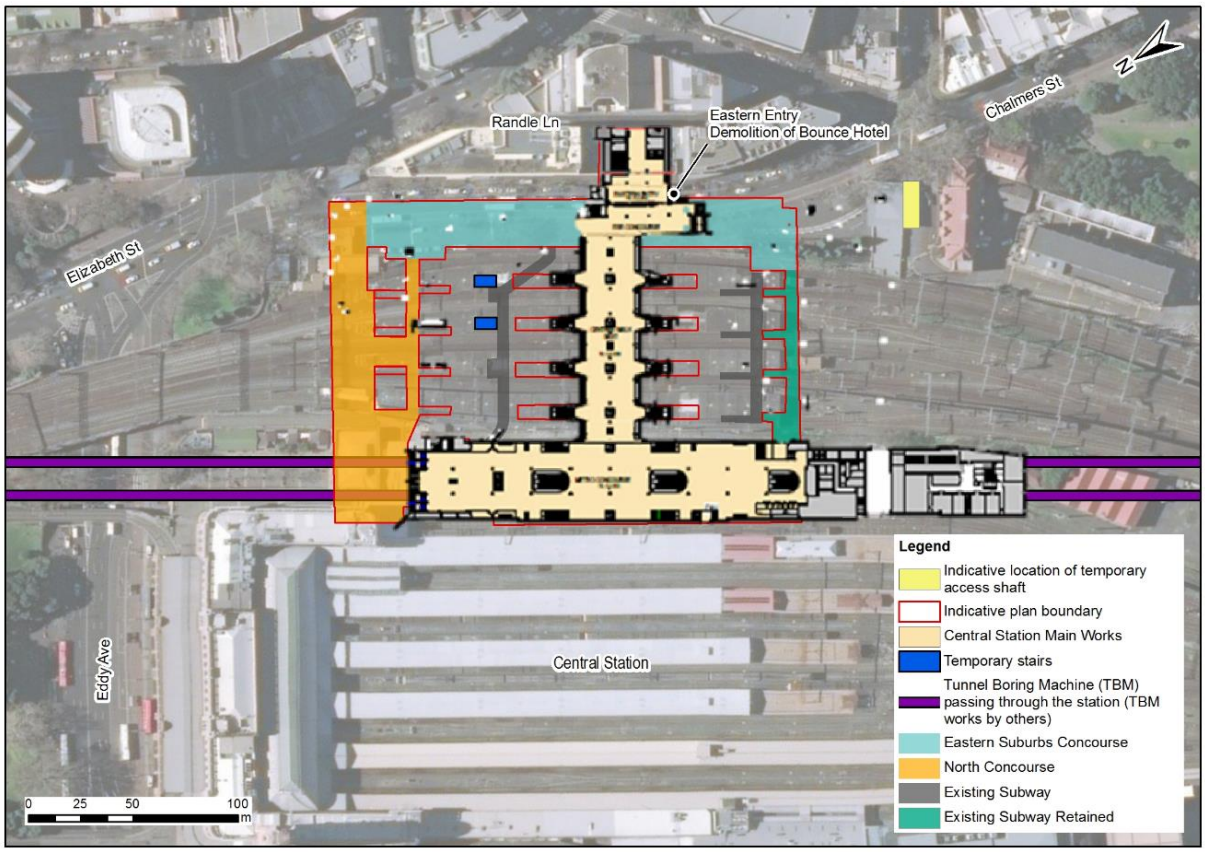

Figure 1.1: CSMW Project Works

1.5.2 Ancillary works

Ancillary works include fencing, maintenance access, utilities works, drainage, noise barriers, road and transport network works and temporary site office, laydown and work sites to support construction.

1.5.3 Combined Services Route

The CSR for Central Station will provide for Communications (Comms) services (voice, data and IT connectivity, requiring 6 to 8 cables) and High Voltage electrical (HV) services that will service the whole site, both existing and the new infrastructure installations that are being introduced as part of the Central Station Main Works. It will extend as a circular route around the site, utilising existing service infrastructure where this is available and providing new installations as required to complete the system.

The CSR was included in the Environmental Impact Statement that was approved under SSI 15_7400 as part of the concept design (refer EIS Chapter 7, Project Description – Construction, Part 7.10.9, p231) and has progressed through a detailed design process (see figure 1.2). The CSR will be delivered in two phases. Phase A occurs in areas, 2, 3 and 4 and is restricted to the Western Baggage Tunnel, Northern Baggage Tunnel and Platform 1. Phase B occurs in all other Areas and extends to the Darling Harbour Goods Line, Mortuary Tunnel, Sydney Yard, Water Mains tunnel, Prince Alfred Substation, Railway Institute driveway and Sydney Network Base.

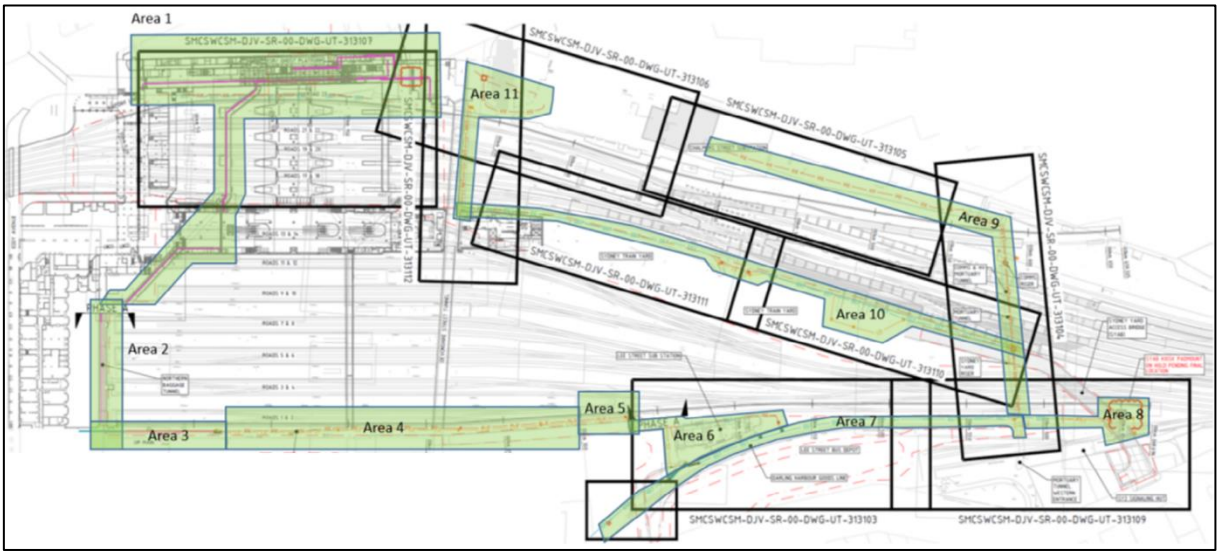

Figure 1.2 CSR around Central Station.

1.6 Works Location and Site Layout

It should be noted that there are only 11 trees within the CSMW rail corridor, and these will all require removal due to the highly constrained nature of the site. The Project location and site layout is highlighted in Figure 1.3 below.

Figure 1.3: Project Site

1.7 Requirements, Objectives and Targets

The CBMP addresses the following requirements:

- Sydney Metro City and Southwest - Chatswood to Sydenham Conditions of Approval (CoA) (SSI 15_7400) as modified – dated 9 January 2018
- The Sydney Metro City and Southwest - Environmental Impact Statement, dated 3rd May 2016
- The Sydney Metro City and Southwest – Submissions and Preferred Infrastructure Report (SPIR), dated October 2016
- The Sydney Metro City and Southwest – Chatswood to Sydenham Modification 2 – Central Walk – Sydney Metro City and Southwest – (SSI Mod 2) – Determined on 21 December 2017
- Sydney Metro City & Southwest - Chatswood to Sydenham Staging Report
- The Sydney Metro Construction Environmental Management Framework (CEMF) v3
- Infrastructure Sustainability Council of Australia - IS Technical Manual V1.2; and
- Applicable Legislative Obligations.

The Compliance Matrix in Appendix A provides an analysis of how the CBMP complies with the CoAs and the CEMF.

The objectives of the CBMP are as follows:

- Minimise impacts on flora and fauna
- Retain existing flora and fauna habitat wherever possible; and
- Appropriately manage the spread of weeds and plant pathogens.

These objectives conform to TfNSW's objectives as described in the Construction Environmental Management Framework.

2. Legal and Other Requirements

Table 1 below details the legislation and planning instruments considered during development of this Plan.

Table 1 Legislation and Planning Instruments

Legislation	Description	Relevance to this CBMP
Environmental Planning and Assessment Act 1979 (EP&A Act)	This Act establishes a system of environmental planning and assessment of development proposals for the State.	The approval conditions and obligations are incorporated into this CBMP.
Protection of the Environment Operations Act 1997 (POAO Act)	This Act includes all the controls necessary to regulate pollution and reduce degradation of the environment, provides for licensing of scheduled development work, scheduled activities and for offences and prosecution under this Act.	This plan defines how Laing O'Rourke will manage works to comply with this Act. The works will be conducted in accordance with the requirements of the EPL. The CSMW project early works will initially be completed under the Sydney Trains EPL until Laing O'Rourke obtain a Project EPL prior to commencement of construction for the project.
NSW Biodiversity Offsets Policy for Major Projects – Framework for Biodiversity Assessment 2014 (Office of Environment and Heritage 2014b)	This policy aims to strike an effective balance between the needs of proponents, communities and the environment for major projects.	Not applicable as the project does not require biodiversity offsets.
Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	This Act provides a legal framework to protect and manage nationally and internationally important flora and fauna, ecological communities and heritage places.	Not applicable as the project does not impact on Matters of National Environmental Significance.
Biodiversity Conservation Act 2017 (BC Act)	This Act repeals the *Threatened Species Conservation Act 1995.* The purpose of this Act is to deliver a strategic approach to conservation in New South Wales whilst supporting improved sustainable development.	Not applicable as the Project location has a very low biodiversity value and none of the vegetation in the study area meets the criteria for any threatened ecological community listed under this Act.
Biosecurity Act 2015	This Act imposes obligations on occupiers of land to control noxious weeds declared for their area.	This plan defines how Laing O'Rourke will manage works to comply with this Act.
Fisheries Management Act 1994 (FM Act)	This Act aims to conserve, develop and share the fishery resources of the State for the benefit of present and future generations.	Not applicable as the project does not impact on fishery resources.
Pesticides Act 1999	This Act aims to regulate the safe and correct use of pesticides in NSW	This plan outlines how herbicides will be used in the treatment of weeds.

2.1 Guidelines

Additional guidelines and standards relating to the management of biodiversity specifically for this project include:

- *Soil Landscapes of Sydney 1:100,000 Sheet* (Chapman and Murphy 1989)
- *Urban Ecology Strategic Action Plan* (City of Sydney 2012c); and
- *The Native Vegetation of the Sydney Metropolitan Catchment Management Authority Area* (Department of Environment Climate Change and Water, 2009a).

2.2 Relevant Government Agencies

This Plan has been prepared in consultation with the following relevant government agencies as required by Condition C3(b):

- *Office of Environment and Heritage*
- *Transport for New South Wales*
- *Council of the City of Sydney*

All correspondence with the above government agencies is provided in Appendix D.

2.3 ISCA

The Project will pursue a rating under the IS Rating Scheme V1.2. This plan relates to several of the IS credits. Given the limited ecological value of the site, the following ISCA credits will not be achieved.

2.3.1 Eco-1 Ecologically Sensitive Sites

The ecological value of the infrastructure site is enhanced by 20%.

2.3.2 Eco-2 Ecological Value

There is a low or moderate degree of existing habitat connectivity identified. The existing degree of habitat connectivity is enhanced (with no offsetting). The degree of habitat connectivity before and after infrastructure development must be based on ecological assessment.

2.4 LOR Severe Environmental Risks

. LOR is committed to implementing necessary measures to negate severe environmental risks where possible and when relevant to a given project. A Severe Environmental Risk (SER) as defined in the LOR EMS is an activity if not managed effectively could eventuate in severe environmental impacts, resulting in permanent or long-term damage to the environment that is not easily rectified. They would substantially alter the receiving environment and result in a significant impact on the project's and Laing O'Rourke's environmental policy and objectives. Each SER provides clear guidance on the requirements and control measures that when implemented are intended to manage these risks. They describe the critical controls that must be in place, demonstrated and working effectively such that severe environmental impacts are prevented. All SER's addressed in this management plan can be located in Appendix E and details where within this plan they are addressed.

2.5 Roles and Responsibilities

The roles and responsibilities of key Project personnel with respect to biodiversity are outlined in Table 2. Additional project personnel roles and responsibilities are further identified within CEMP – Section 7.

Table 2: Roles and Responsibilities

Project Director	Managing the delivery of the Project including overseeing implementation of biodiversity management measures. Act as Contractor's Representative.
Project Environment Manager	Oversee the implementation of all biodiversity management initiatives. Responsible for managing ongoing compliance with the CoA and environmental document requirements.
Construction Managers / Project Managers / Project Leaders	Manage the delivery of the construction process, in relation to biodiversity management across all sites in conjunction with the Project Environment Manager.
Sustainability Manager	Track and report biodiversity elements against sustainability targets.
Environment Coordinator	Manage the on-ground application of biodiversity management measures during construction. Monitor and report on biodiversity management during construction.
Project Engineer	Implement biodiversity management activities during construction works.
Environmental Representative	Provide a review and endorsement role to this plan. Site Inspections Ensure implementation of this plan Other responsibilities as defined in the CEMP
TfNSW	Provide a review and endorsement role to this plan.

3. Existing Environment

The Sydney Metro City & Southwest – Tree Impact Assessment Report Chatswood to Sydenham (Sydney Metro, 20 April 2018) states that it is proposed that all eleven trees on the CSMW site will be removed to allow for the truck access route and construction of the station box. Due to the highly constrained nature of the site there was no opportunity to retain these trees.

The vegetation mapping and survey was undertaken within the EIS. The information in this section of the CBMP is summarised from the Chatswood to Sydenham EIS.

In accordance with Condition E6, additional trees that require removal would need to be assessed within the Tree Impact Assessment Report and be approved by the Secretary.

3.1 Hydrology

The Project lies within a highly urbanised catchment, and all-natural watercourses have been historically replaced with constructed drainage systems.

3.2 General site characteristics

The Project is confined between the suburban and country railway lines, known as 'Sydney Yard', and consists of a hardstand with a railway platform, a few planted / regenerating trees and buildings. The site has limited fauna habitat value due to the highly disturbed and developed nature of the site. It is possible that buildings could provide roosting habitat for microbats, however, this is unlikely due to their location within the middle of a busy railway station and CBD (Refer Appendix C - Sydney Metro City and Southwest Chatswood to Sydenham Project: Microbat habitat preliminary inspection report, Biosis, 2017 and Microbat Habitat Inspection – Final Report, Biosis 2018). Results of preliminary inspections are considered adequate to assess potential impacts for these species. No further ecologist surveys were required at Central.

3.3 Terrestrial flora

3.3.1 Native vegetation

All vegetation identified within the study area is mapped as Urban – Exotic / Native in the Native Vegetation of the Sydney Metropolitan Catchment Management Authority Area (Department of Environment, Climate Change and Water, 2009a) and field assessment has confirmed that most vegetation is planted or exotic regrowth. None of the vegetation identified in the study area falls within the description for any Plant Community Types listed in the NSW Vegetation Information System database. No native vegetation communities were observed during site inspections, and none of the vegetation in the study area meets the criteria for any threatened ecological community listed under the EPBC Act or the BC Act. All adjoining areas to the study area are urban built environments with no identified important flora and fauna habitats. Tree species are detailed within the Tree Report (Section 11 - Appendix B). All grass and shrub species in the abandoned garden are exotic and will be cleared (approximately 50m^2). No vegetation is to be retained and as such, no vegetation management plans are required.

3.3.2 Terrestrial threatened flora species

No threatened flora species were recorded. Given the low native flora habitat values of the study area, there is a low likelihood of any occurring, with the exception of planted non-local native specimens.

3.4 Terrestrial threatened fauna species

The Protected Matters Search Tool identified 59 threatened fauna species and 78 migratory fauna species listed under the EPBC Act that are known or likely to occur within ten kilometres of the biodiversity study area. A search of the NSW Wildlife Atlas found records of 51 threatened fauna species that are known or likely to occur within ten kilometres of the biodiversity study area.

The following threatened species have at least a moderate likelihood of occurrence within the biodiversity study area:

- The Grey-headed Flying Fox (*Pteropus poliocphalus*)
- The Eastern Bent-wing Bat (*Miniopterus schreibersii oceanensis*); and
- The Eastern Freetail Bat (*Mormopterus norfolkensis*).

Further details on the above-mentioned species is provided in Table 3.

3.4.1 Fauna Habitat

The project location has limited fauna habitat value due to the highly disturbed and developed nature of the site. A lack of habitat connectivity within the construction site and between the site and adjacent areas reduces potential movements of arboreal mammals and cover-dependant fauna into and through the site, reducing the overall desirability of the potential habitat.

3.5 Groundwater dependent ecosystems

A search of the National Atlas of Groundwater Dependent Ecosystems (BOM, 2015) did not identify any Groundwater Dependent Ecosystems within the study area.

The section of the study area between Central and Sydenham (i.e. the Central Station, Waterloo Station and Marrickville dive site) is within land that forms part of the Botany Sands Groundwater Source and is subject to the provisions of the *Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources 2011*. The Botany Sands Groundwater Source extends to the Botany Wetlands, which include high priority groundwater dependent ecosystems listed on Schedule 4 of the *Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources 2011*.

3.6 Noxious weeds and pests

There are 15 exotic species recorded across Willoughby, Sydney and Marrickville local government areas from the 51 species identified under the Biosecurity Act. Of these 15, only one was identified during site inspections (see Table 6 for further details) in the Sydney LGA. The Biosecurity Act imposes obligations on occupiers of land to control noxious weeds declared for their area.

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Table 3: Threatened Fauna Species

Threatened Species		Habitat Requirements	Likelihood of Occurrence within Site
Eastern Bentwing bat (*Miniopterus schreibersii oceanensis*) **BC Act: Vulnerable** **EPBC Act: Not listed**		Eastern Bentwing bats occur along the east and north-west coasts of Australia. They hunt in forested areas, catching moths and other flying insects above the treetops. Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. The species form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young. Maternity caves have very specific temperature and humidity regimes. At other times of the year, populations disperse within about 300km range of maternity caves.	Unlikely There are 82 records of the Eastern Bentwing bat within 10km of the study sites. They are known to roost in buildings, however, inspection of buildings within the locality deemed the buildings unlikely to be used as habitat (due to the well-sealed tiled rooves with brick walls). Results of preliminary inspections are considered adequate to assess potential impacts for these species. No further ecologist surveys were required at Central.
The Eastern Freetail Bat (*Mormopterus norfolkensis*) **BC Act: Vulnerable** **EPBC Act: Not listed**		This species occurs in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. It roosts mainly in tree hollows but will also roost under bark or man-made structures. Usually solitary but also recorded roosting communally, probably insectivorous.	Unlikely There are 10 records of the Eastern Freetail bat within 10 km of the study sites. They are known to roost in hollow-bearing trees. They are also known to roost in buildings, however, further inspection of the building within the locality of Central Station deemed the buildings unlikely to be used as habitat (due to the well-sealed tiled rooves with brick walls). Results of preliminary inspections are considered adequate to assess potential impacts for these species. No further ecologist surveys were required at Central.

Threatened Species		Habitat Requirements	Likelihood of Occurrence within Site
Grey-headed Flying Fox ***(Pteropus poliocephalus)*** **BC Act: Vulnerable** **EPBC Act: Vulnerable**		The Grey-headed Flying Fox is found in urban gardens and feeds on the fruit of rainforest trees and vines.	Unlikely The Grey-headed Flying Fox has been recorded frequently in the Sydney area with 461 records of the species within 10km of the study area. There is relatively optimal habitat throughout certain sites, however, with minimal foraging resource and roosting habitat (hollow-bearing trees) it is unlikely for the Grey-headed Flying Fox to be present throughout the Central Station study site. Results of preliminary inspections are considered adequate to assess potential impacts for these species. No further ecologist surveys were required at Central.

4. Aspects and Potential Impacts

The key aspects and potential impacts associated with the management of biodiversity during the delivery of works are listed in the risk assessment in Table 4. The full project-wide environmental risk assessment in included within Appendix C of the CEMP. These identified risks have been taken into account in the development of the site-specific mitigation measures for the works.

Table 4: Aspects and Potential Impacts

Probability:	Consequence:
5 = Certain 4 = Likely 3 = Possible 2 = Unlikely 1 = Rare	5 = Severe 4 = Major 3 = Moderate 2 = Minor 1= Incidental

1- 4 Acceptable 5 - 9 Acceptable with control measures 10 - 16 Requires the implementation of best practice 17 and Above = UNACCEPTABLE

Aspect	Potential Environmental Impact	Initial Risk Rating				Control Measures	Residual Risk Rating			
		P	X	C	= Risk		P	X	C	= Risk
Biodiversity										
Vegetation trimming / clearing required outside approved work area.	Unauthorised works / removal of vegetation outside defined work area, possibility of removing threatened species, fines incurred.	**2**	**3**		**6**	Induction and toolbox training on clearance zones and required protection measures If vegetation, other than grass and weeds, needs to be trimmed or removed, further assessment would be undertaken, and approval sought from Sydney Metro prior to trimming or removal. Inspections during clearing activities. Fencing in place/ clear marking of trees to be retained and cleared / demarcation areas / plans showing clearing areas. Preclearing checklist to be completed before any clearing of vegetation.	**1**	**3**		**3**

					Should any unexpected threatened species be identified during construction, works will cease in that area and the Department be notified with appropriate mitigation measures implemented to assess and relocate the threatened species. This process would be undertaken in consultation with OEH.			
Clearing and grubbing of vegetation within work site.	Erosion of soils, uncontrolled runoff, sediment deposited into surrounding vegetated areas and water courses, and invasion of weeds. Wrong vegetation removed. Potential for injury to native fauna.	**3**	**2**	**6**	Inductions and toolbox training on erosion and sediment controls. Where possible works to be staged so environmental controls can be implemented after clearance works. If vegetation, other than grass and weeds, needs to be trimmed or removed, further assessment would be undertaken, and approval sought from Sydney Metro prior to trimming or removal. Approved Erosion and Sediment Control Plans in place prior to starting works. Where applicable, mature trees and other native vegetation to be retained would be clearly delineated, with all construction activities excluded from these areas. Preclearing checklist to be completed before any clearing of vegetation.	**2**	**2**	**4**
Sediment laden runoff from construction works leaving site.	Degradation of local watercourses. Increased turbidity in local water ways resulting in impact on aquatic life. Potential impact on traffic safety. Potential for sediment laden runoff during rainfall. Potential for generation of dust. Fines for sediment escaping site.	**2**	**3**	**6**	Control Measures as per the Environmental Control Map to be implemented. Install stormwater drainage protection within the project area. Ensure measures are inspected and maintained as the works progress and also prior to and post rainfall events. Provide training and awareness on the need to prevent pollution.	**1**	**3**	**3**

					Relevant people to undertake Erosion and Sediment Control training.			
Stockpiling of vegetation and topsoil.	Wind and water erosion causing weed/seed dispersion offsite. Location of stockpiling next to waterways causing weeds/seeds to disperse from construction site.	**2**	**3**	**6**	Include stockpile areas on the Environmental Control Map. Utilise appropriate locations for stockpiling (away from drains). Vegetation to be chipped and taken offsite. Minimise stockpiling / Use temporary stockpiling Cover stockpiles if left for extended periods.	**1**	**3**	**3**
Demolition and construction activities.	Fauna injury or mortality is most likely to occur during vegetation clearing activities, but also may result from collisions with construction vehicles or plant, or accidental entrapment in plant, trenches or other earthworks. Increased movement of people, vehicles, machinery, vegetation waste and soil may also facilitate the introduction or spread of weeds. The buildings/structures currently on site offer limited habitat features to native fauna, although they may support potential roosting habitat for microchiropteran bats.	**2**	**2**	**4**	Induction and toolbox training on required protection measures Preclearing checklist to be completed before any clearing of vegetation. Inspections prior to demolition activities. Where native fauna activity is evident, inspections prior to demolition activities will be undertaken by a qualified ecologist or wildlife handler.	**1**	**2**	**2**
Importing / exporting weed contaminated soil	Potential spread of weeds	**2**	**3**	**6**	Engineered fill primarily required Procure fill from reputable suppliers Dispose of weed contaminated topsoil to licenced landfill	**1**	**3**	**3**

5. Flora and Fauna Management and Mitigation Measures

5.1 General Principals

As identified within Section 3, the Project site is heavily urbanised with very low biodiversity value. No native vegetation communities were recorded, with all vegetation either being landscape planted or exotic species, It is not possible to retain or rehabilitate any vegetation due to the construction of the services building and operational rail requirements. As such, vegetation management relates to vegetation clearing and weed / pest management only with no retainment or revegetation proposed. Based upon the constrained nature of an operational rail site and proposed works, no native vegetation will be re-established throughout the project. Due to the lack of native vegetation on site, the CEMF requirement for an ecologist to undertake further assessment as a pre-clearing hold point is not applicable to this Project.

Due to the urban environment, lack of vegetation and associated fauna with no known bat habitat locations identified, no faunal next boxes are proposed. To ensure disturbances are minimised on surrounding fauna, lights will be directed in a manner that reduces light spill to surrounding areas.

A clearing protocol has been prepared to mitigate the risk of unnecessary vegetation removal and to identify measures for fauna protection and injury prevention.

Ongoing pest management will be in place from pre-construction to post construction in order to manage all pest flora and fauna species. Techniques that will be utilised for pest management are discussed in Section 5.4. A Weed Management Plan/Procedure is provided in Table 7.

All relevant management measures outlined in all approval documents, including the SPIR are addressed in the following sections.

5.2 Clearing Protocol

Flora and fauna management procedures will be implemented to ensure that all vegetation requiring clearing for the project is conducted in accordance with project approvals, is minimised within the approved areas and minimises impacts on biodiversity and the surrounding environment. Due to the site constraints and vegetation consisting of either planted or exotic species, retention of existing trees and shrubs was considered but not possible. Should any unexpected threatened species be identified during construction, works will cease in that area and the Department notified with appropriate mitigation measures implemented to assess and relocate the threatened species. This process would be undertaken in consultation with OEH. The vegetation clearance protocol in Table 5 must be implemented.

Table 5: Vegetation clearance protocol

Actions	Responsibility
1. *Delineation of area to be cleared* • Vegetation to be cleared will be clearly marked. No habitat trees are in close proximity to construction activities. Marked boundaries will be cross-referenced to the approved impact area. Note: no adjacent habitat areas exist surrounding the Project Site. • Where native vegetation or mature tree clearing is required outside of the approved development footprint, an ecologist will inspect the	Environmental Manager Site Supervisor

	Actions	Responsibility
	proposed area and provide advice on the impact to flora and fauna and appropriate management. • Additional approvals will be sought from Sydney Metro prior to any clearing outside of the approved Project footprint.	
2.	*Pre-clearance inspections* • Pre-clearance inspections will be undertaken within two weeks prior to the commencement of vegetation clearing, • The pre-clearance inspections will include confirmation that trees onsite do not contain hollows (refer to the Tree Report in Appendix B – Section 11). • Pre-clearance inspections will check the physical demarcation of the proposed limit of clearing. • Should any threatened species be identified within the project area, works will cease in that area and the Environment Manager shall be notified immediately who will in turn notify the Department. • Weed infested areas will be identified and managed prior to clearing commencing (see Weed Management in Table 7). • Pre-clearing inspections will be undertaken by the Environmental Manager. This would constitute a hold point before further works can occur, • A post clearance report is not required as no vegetation will remain, and the type and area of vegetation cleared does not include hollows or nest boxes.	Environmental Manager
3.	*Vegetation clearance and fauna handling procedures* • Pre-clearing inspection. • Trees will be cleared after the pre-clearing inspection has been signed off by the Environmental Manager • Mature trees will be inspected for fauna immediately before and after felling. • Animals found prior to or during clearing activities will be released to surrounding suitable habitat. • If any animal is injured, contact the relevant local wildlife rescue agency (e.g. WIRES) and/or veterinary surgery as soon as practical. Until the animal can be cared for by a suitably qualified animal handler, if possible, minimise stress to the animal and reduce the risk of further injury by: – Handling fauna with care and as little as possible. – Covering larger animals with a towel or blanket and placing in a large cardboard box. – Placing small animals in a cotton bag, tied at the top. Keeping the animal in a quiet, warm, ventilated and dark location. • Results of preliminary inspections are considered adequate to assess potential impacts for microbat species. No further ecologist surveys were required at Central. • Where fauna activity is evident, inspections prior to demolition activities will be undertaken by a qualified ecologist or wildlife handler. • Although unlikely to occur (as identified within Appendix C), sections of the roof material are to be removed at night at least 24 hours prior to demolition when the bats are out of the roof foraging. • In the case of arboreal or flying mammals, attempts will be made to relocate the den or roost unless they are in torpor, in which relocation or	Environmental Manager

Actions	Responsibility
capturing would be delayed until the end of the torpor period. After capture, the animal(s) will be held by a trained wildlife carer for a period of no longer than two weeks until the roost or den can be relocated, either as an entire tree or part thereof. • WIRES and/or a veterinarian would be contacted if any fauna require capture/relocation. • Work may recommence once the animal(s) have been captured and removed from the area. • Felled trees will be mulched, and mulch removed from site immediately. • Felled trees will be offset locally in consultation with the City of Sydney Council	

5.3 Weed Management

During the site inspections in May and October 2015, one exotic species was recorded in the Project study area that is declared noxious under the *NSW Biosecurity Act 2005* for the Sydney LGA (see Table 6).

Weed removal/spraying is to be conducted as required and would utilise over the counter herbicides in accordance with the *Pesticides Act 1999*. Ongoing weed monitoring is to be instituted and potential weed infestations will be appropriately managed to ensure surrounding communities are protected from invasive species.

Transport of weed materials and seeds will be minimised by ensuring all plant and equipment entering the site from weed infested areas are clean and void of any weed material.

If required, the spread of pathogens in vulnerable areas will be minimised by cleaning and disinfecting boots, personal items and all components of vehicles and equipment of soil and vegetation.

A Weed Management Procedure has been prepared (see Table 7), for pre-construction through to post construction completion. These measures will mitigate the risk of spread of weed species into, out of the project area and between construction sites.

Table 6 Plant species recorded in the study area listed under the NSW Biosecurity Act 2015 for Sydney LGA

Name *(Scientific)*	Control class	Weed of National Significance	Weed control requirements	Photo
Chinese Hackberry (*Celtis sinensis*)	4	No	Locally Controlled Weed The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread. The plant must not be sold, propagated or knowingly distributed	

Table 7 Weed Management Procedure

Actions	Responsibility
1. *Assess site:* • Undertake weed audit of site prior to construction commencing. Include location of noxious weeds in Environmental Control Maps as required.	Environmental Manager
2. *Establish environmental controls* • Establish exclusion areas where necessary to separate any areas of significant weed infestation until weeds are sprayed or removed. • Install wheel wash and rumble grids at construction sites if required.	Environmental Manager
3. *Determine weed removal methods* • Treatment methods and timing to be determined by species' ecology and construction requirements and to be informed by an ecologist or weed specialist	Environmental Manager
4. *Undertake weed control/removal* • Undertake slashing/mowing of weed infestations prior to seeding • Weed removal and management to be in accordance with the Vegetation Clearing Procedure	Environmental Manager
5. *Ongoing Management* • Clean machinery, vehicles and footwear when moving between sites with weed infestations. • Ensure topsoil imported onto site is free of weed propagules (test at a NATA-approved laboratory if required) • Minimise soil disturbance within weed infested areas • Monitor disturbed and rehabilitated sites for presence of weeds	Environmental Manager
6. *Dispose of weeds* • Dispose of weeds and weed contaminated material, including soil, at an appropriately licenced waste management facility in accordance with the Construction Waste Management Plan • Cover loads that contain weed material • Do not use weeds as mulch • Do not reuse vegetation or topsoil containing weed material on site unless appropriately treated	Environmental Manager
7. *Stabilise area* • All bare soil areas should be stabilised to minimise erosion and further weed problems	Site Supervisor

5.4 Pest Management

To control feral species, several management techniques must be employed over an extended period of time. Typical management actions for pest species include, but are not limited to:

- regular inspections by project personnel or a qualified ecologist to detect pest species diversity and abundance on site
- sightings of pest species to be notified to the site's Environment Manager
- maintaining a clean, rubbish free environment as to not attract feral species scavenging
- restriction of domestic species on work sites.

6. Training

All site personnel shall undergo site specific induction training, which will include environmental awareness and biodiversity management training as required. Through the environmental induction construction staff will be made aware of:

- vegetation clearing protocols
- unexpected threatened species find reporting procedures
- weed management practices; and
- penalties associated with environmental breaches.

Toolbox meetings will be conducted by the site supervisor and undertaken as and when required and may be triggered by the detection of a threatened species or noxious weeds (for example) or in the event that clearing is required outside of the approved development footprint and additional ecological surveys have highlighted additional control measures to be implemented.

Personnel directly involved in implementing biodiversity control measures on site will be given specific training in the various measures to be implemented by the Environmental Manager.

Records of all training are to be filed in accordance with the project filing system.

7. Monitoring, Auditing and Reporting

Laing O'Rourke will regularly review the Project to ensure compliance with this Plan. A regular inspection program for biodiversity will be conducted and included as part of the following:

- Details of daily inspections undertaken by the Site Supervisor will be logged in their respective site diaries
- Routine weekly inspections are to be conducted to monitor erosion and sediment controls in active worksites. Weekly inspections will be documented on the Environmental Inspection Form
- Inspection of the operation of flora and fauna management works installed on the premises and undertake any works required to repair and/or maintain these controls
  - at least weekly during normal construction hours
  - prior to any site closure of greater than 24 hours.
- Inspection of project boundary fencing.

Refer to the CEMP for details of the audit schedule that will apply to the CEMP and sub-plans.

Results and outcomes of inspections, monitoring and auditing will be reported internally on a monthly basis. Six-monthly construction compliance reports will be prepared to report on compliance with the Project Approval.

8. Review and Improvement

The CBMP will be reviewed and updated at least annually. Laing O'Rourke will undertake the ongoing development, amendment and updating of the CBMP to ensure it remains consistent with Project priorities, risk management, client requirements and Project objectives, taking into account:

- The status and progress of Laing O'Rourke's activities
- Changes in the design, delivery and operations, processes and conditions
- Lessons learnt during delivery and operations
- Changes in other related Project Plans;
- Requirements and matters not covered by the existing Project Plans
- Changes to Project Plans as directed by TfNSW's Representative under the Deed; and

Where deemed appropriate in relation to items raised within inspections or audits.

9. Enquiries, Complaints and Incident Management

Environmental complaints and incidents are to be investigated, reported, documented, actioned and closed out as per the details provided in the Community Consultation Strategy and the CEMP.

Appendix A – Construction Biodiversity Management Compliance Matrix

No.	Measure	Timing	Requirement	Responsibility	Reference
	Project Approval – Specific Management Plan Requirements				
1	Where the terms of this approval require consultation with identified parties, details of the consultation undertaken, matters raised by the parties, and how the matters were considered must accompany the strategies, plans, programs, reviews, audits, protocols and the like submitted to the Secretary.	Prior Construction / During Construction	C2S SSI 15_7400 COA – A9	Project Environment Manager	Included in Appendix D
2	From commencement of construction until completion of construction, the approved ER must: (a) receive and respond to communications from the Secretary in relation to the environmental performance of the CSSI (b) consider and inform the Secretary on matters specified in the terms of this approval (c) consider and recommend any improvements that may be made to work practices to avoid or minimise adverse impact to the environment and to the community (d) review all documents required to be prepared under the terms of this approval, ensure they address any requirements in or under this approval and if so, endorse them before submission to the Secretary (if required to be submitted to the Secretary) or before implementation (if not required to be submitted to the Secretary); (e) regularly monitor the implementation of all documents required by the terms of this approval for implementation in accordance with what is stated in the document and the terms of this approval (f) notify the Secretary of an incident in accordance with Condition A41 of this approval (g) as may be requested by the Secretary, help plan, attend or undertake Department audits of the CSSI, briefings, and site visits (h) if conflict arises between the Proponent and the community in relation to the environmental performance of the CSSI, follow the procedure in the Community Communication Strategy approved	Prior Construction / During Construction	C2S SSI 15_7400 COA – A24	Project Environment Manager	Section 2

No.	Measure	Timing	Requirement	Responsibility	Reference
	under Condition B3 of this approval to attempt to resolve the conflict, and if it cannot be resolved, notify the Secretary (i) review any draft consistency assessment that may be carried out by the Proponent, and provide advice on any additional mitigation measures required to minimise the impact of the work (j) consider any minor amendments to be made to the CEMP, CEMP sub-plans and monitoring programs that comprise updating or are of an administrative nature and are consistent with the terms of this approval and the CEMP, CEMP sub-plans and monitoring programs approved by the Secretary and, if satisfied such amendment is necessary, approve the amendment. This does not include any modifications to the terms of this approval (k) assess the impacts of minor ancillary facilities as required by Condition A18 of this approval; and (l) prepare and submit to the Secretary and other relevant regulatory agencies, for information, a monthly Environmental Representative Report detailing the ER's actions and decisions on matters for which the ER was responsible in the preceding month (or other timeframe agreed with the Secretary). The Environmental Representative Report must be submitted within seven (7) days following the end of each month for the duration of works and construction of the CSSI, or as otherwise agreed with the Secretary.				
3	The Secretary must be notified as soon as possible and in any event within 24 hours of any incident.	During construction	C2S SSI 15_7400 COA – A41	Project Manager / Project Environment Manager	Section 9
4	Notification of an incident under Condition A41 of this approval must include the time and date of the incident, details of the incident and must identify any non-compliance with this approval.	During construction	C2S SSI 15_7400 COA – A42	Project Manager / Project Environment Manager	Section 9
5	Any requirements of the Secretary or Relevant Public Authority (as determined by the Secretary) to address the cause or impact of an incident reported in accordance with Condition A41 of this approval, must	During construction	C2S SSI 15_7400 COA – A43	Project Environment Manager	Section 9

<table>
<tr><th>No.</th><th>Measure</th><th>Timing</th><th>Requirement</th><th>Responsibility</th><th>Reference</th></tr>
<tr><td></td><td>be met within the timeframe determined by the Secretary or relevant public authority.</td><td></td><td></td><td></td><td></td></tr>
<tr><td>6</td><td>If statutory notification is given to the EPA as required under the POEO Act in relation to the CSSI, such notification must also be provided to the Secretary for information within 24 hours after the notification was given to the EPA</td><td>During construction</td><td>C2S SSI 15_7400 COA – A44</td><td>Project Environment Manager</td><td>Section 9</td></tr>
<tr><td>7</td><td>The following CEMP sub-plans must be prepared in consultation with the relevant government agencies identified for each CEMP sub-plan and be consistent with the CEMF and CEMP referred to in Condition C1. The Construction Traffic Management Plan must also be prepared in accordance with the Construction Traffic Management Framework as required by Condition E81.
<table>
<tr><th></th><th>Required CEMP sub-plan</th><th>Relevant government agencies to be consulted for each CEMP sub-plan</th></tr>
<tr><td>(a)</td><td>Noise and vibration</td><td>Relevant Council(s)</td></tr>
<tr><td>(b)</td><td>Biodiversity</td><td>OEH and Relevant Council(s)</td></tr>
<tr><td>(c)</td><td>Air quality</td><td>N/A</td></tr>
<tr><td>(d)</td><td>Soil and water</td><td>DPI Water, Relevant Council(s), OEH, SES, NSW Fire and Rescue</td></tr>
<tr><td>(e)</td><td>Groundwater</td><td>DPI Water</td></tr>
<tr><td>(f)</td><td>Blasting</td><td>N/A</td></tr>
<tr><td>(g)</td><td>Heritage</td><td>Heritage Council (or its delegate) and Relevant Council(s)</td></tr>
<tr><td>(h)</td><td>Construction traffic</td><td>Relevant Road Authorities, RMS</td></tr>
</table></td><td>Prior construction</td><td>C2S SSI 15_7400 COA – C3</td><td>Project Environment Manager</td><td>This Plan
Appendix D</td></tr>
</table>

No.	Measure	Timing	Requirement	Responsibility	Reference
	Sydney Coordinator Office				
8	The CEMP sub-plans must state how: (a) The environmental performance outcomes identified in the EIS as amended by the PIR as modified by these conditions will be achieved (b) The mitigation measures identified in the EIS as amended by the PIR as modified by these conditions will be implemented (c) The relevant terms of this approval will be complied with; and (d) Issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed.	Prior construction	C2S SSI 15_7400 COA – C4	Project Environment Manager	This Plan. Section 1.7 Section 4 Section 5.1 – 5.4, Section 7
9	The CEMP sub-plans must be developed in consultation with relevant government agencies. Where an agency(ies) request(s) is not included, the Proponent must provide the Secretary justification as to why. Details of all information requested by an agency to be included in a CEMP sub-plan as a result of consultation and copies of all correspondence from those agencies, must be provided with the relevant CEMP sub-plan.	Prior construction	C2S SSI 15_7400 COA – C5	Project Environment Manager	Section 2.2
10	Any of the CEMP sub-plans may be submitted to the Secretary along with, or subsequent to, the submission of the CEMP but in any event, no later than one (1) month before commencement of construction.	Prior construction	C2S SSI 15_7400 COA – C6	Project Environment Manager	Refer to Section 1.1
11	The CEMP must be endorsed by the ER and then submitted to the Secretary for approval no later than one (1) month before the commencement of construction or within another timeframe agreed with the Secretary.	Prior construction	C2S SSI 15_7400 COA – C7	Project Environment Manager	Refer to Section 1.1
12	Construction must not commence until the CEMP and all CEMP sub-plans have been approved by the Secretary. The CEMP and CEMP sub-plans, as approved by the Secretary, including any minor amendments approved by the ER, must be implemented for the duration of construction. Where the CSSI is being staged, construction of that stage is not to commence until	Prior construction	C2S SSI 15_7400 COA – C8	Project Environment Manager	Refer to Section 1.1 and the CEMP

No.	Measure	Timing	Requirement	Responsibility	Reference
	the relevant CEMP and sub-plans have been approved by the Secretary.				
13	The CSSI must be designed to retain as many trees as possible and provide replacement trees such that there a net increase in the number of trees. The Proponent must commission an independent, experienced and suitably qualified arborist to prepare a comprehensive Tree Report before removing any trees as detailed in the EIS, as amended by the documents listed in A1. The Tree Report must include: (a) a description of the conditions of the tree(s) and its amenity and visual value (b) consideration of all options to avoid tree removal, including relocation of services, redesign or relocation of ancillary components (such as substations, fencing etc.) and reduction of standard offsets to underground services; and (c) measures to avoid tree removal, minimise damage to, and ensure the health and stability of those trees to be retained and protected. This includes details of any proposed canopy or root pruning, root protection zone, excavation, site controls on waste disposal, vehicular access, materials storage and protection of public utilities. In the event that tree removal cannot be avoided, then replacement trees are to be planted within, or in close proximity to the CSSI or other location in consultation with the Relevant Councils and agreed by the Secretary. The size of the replacement trees will be determined in consultation with the relevant Council. A copy of the Tree Report must be submitted to the Secretary before the removal, damage and/or pruning of any trees, including those affected by the site establishment works. All recommendations of the Tree Report must be implemented by the Proponent, unless otherwise agreed by the Secretary. The Tree Report may be prepared for the entire CSSI or separate reports may be prepared for individual areas where tree removal and/or pruning is proposed.	During construction	C2S SSI 15_7400 COA – E6	Project Environment Manager	Table 5. Appendix B – Section 11

No.	Measure	Timing	Requirement	Responsibility	Reference
	Biodiversity				
14	Existing trees to be retained would be protected prior to the commencement of construction in accordance with Australian Standard AS4970 the Australian Standard for Protection of Trees on Development Sites and Adjoining Properties.	Prior construction	C2S SSI 15_7400 EIS REMM – LV2	Project Environment Manager	Section 5.2
15	Opportunities for the retention and protection of existing trees would be identified during detailed construction planning.	Prior construction	C2S SSI 15_7400 EIS REMM – LV5	Project Environment Manager	Section 5.2
16	An ecologist would be present during the removal of any hollow-bearing trees	Prior construction	C2S SSI 15_7400 EIS REMM – B1	Project Environment Manager	Section 5.2
17	Potential bat roosting locations at Central Station, Waterloo Station and Marrickville dive sites would be checked by a qualified ecologist or wildlife handler prior to demolition. Any bats found would be relocated, unless in torpor, in which case the relocation would be delayed until the end of the torpor period.	Prior Construction	C2S SSI 15_7400 EIS REMM – B2	Project Environment Manager	Section 5.2
18	The local WIRES group and / or veterinarian would be contacted if any fauna is injured on site or require capture and / or relocation.	During Construction	C2S SSI 15_7400 EIS REMM – B3	Project Environment Manager	Section 5.2
Construction Environmental Management Framework					
19	Table 1.1 below identifies key NSW environmental legislative requirements and their application to SM C&SW construction works, current as at the date of this document. TfNSW and its Contractors should regularly review their legislative requirements. ***Table 1.1 NSW Legislative Requirements*** Refer to **Table 8** below Compliance Matrix (which provides the detail from Table 1.1 from CEMF) Table 1.2 identifies key Commonwealth environmental legislative requirements and their application to SM C&SW construction works, current as at the date of this document. TfNSW and its Contractors should regularly review their legislative requirements.	Prior Construction / During Construction	CEMF Section 2.1	Project Manager / Project Environment Manager	Section 2

No.	Measure	Timing	Requirement	Responsibility	Reference
	Table 1.2 Commonwealth Legislative Requirements Refer to **Table 9** below Compliance Matrix				
20	a. Subject to Section 3.3(c) and Section 3.2(c) the Principal Contractor will prepare issue-specific environmental sub-plans to the CEMP and SMP which address each of the relevant environmental impacts at a particular site or stage of the project. Issue specific sub-plans will include: • Spoil management. • Groundwater management. • Soil and water management. • Traffic and transport management. • Noise and vibration management. • Heritage management. • Flora and fauna management. • Visual amenity management. • Carbon and energy management. • Air quality management. • Waste management. b. Additional detail on the minimum requirements for these sub plans is provided in Sections 6-17 of this CEMF.	Prior Construction	CEMF Section 3.4	Project Environment Manager	Section 5
21	Where the requirement for an additional environmental assessment is identified, this will be undertaken prior to undertaking any physical works. The environmental assessment will include: • A description of the existing surrounding environment. • Details of the ancillary works and construction activities required to be carried out including the hours of works. • An assessment of the environmental impacts of the works, including, but not necessarily limited to, traffic, noise and vibration, air quality, soil and water, ecology and heritage.	Prior Construction	CEMF Section 3.6	Project Environment Manager	Refer to CEMP

<table>
<tr><th>No.</th><th>Measure</th><th>Timing</th><th>Requirement</th><th>Responsibility</th><th>Reference</th></tr>
<tr><td></td><td>• Details of mitigation measures and monitoring specific to the works that would be implemented to minimise environmental impacts.
• Identification of the timing for completion of the construction works, and how the sites would be reinstated (including any necessary rehabilitation).</td><td></td><td></td><td></td><td></td></tr>
<tr><td>22</td><td>a. Principal Contractors will identify hold points, beyond which approval is required to proceed with a certain activity. Example activities include vegetation removal and water discharge. Hold points will be documented in relevant CEMPs.
b. Table 1.4 provides the structure for the register of hold points as well as a preliminary list of hold points which will be implemented.
Table 1.4 Preliminary Register of Hold Points
<table>
<tr><th>Hold Point</th><th>Release of Hold Point</th><th>By Who</th></tr>
<tr><td>Prior to Vegetation Clearing / Ground Disturbance</td><td>Pre-clearing inspection
Erosion and sediment control plan</td><td>Qualified Ecologist
Contractor's Environmental Manager or delegate</td></tr>
</table></td><td>Prior Construction / During Construction</td><td>CEMF Section 3.8</td><td>Project Environment Manager
Construction Managers / Project Managers / Project Leaders</td><td>Section 5.2</td></tr>
<tr><td>23</td><td>a. Issue specific environmental monitoring will be undertaken as required or as additionally required by approval, permit or licence conditions.
b. The results of any monitoring undertaken as a requirement of the EPL will be published on the Principal Contractor's, or a project specific, website within 14 days of obtaining the results.
c. Environmental inspections will include:
• Surveillance of environmental mitigation measures by the Site Foreman.
• Periodic inspections by the Principal Contractor's Environmental Manager (or delegate) to verify the adequacy of all environmental mitigation</td><td>Prior Construction / During Construction</td><td>CEMF Section 3.13</td><td>Project Environment Manager
Environmental Coordinator
TfNSW</td><td>Refer to CEMP</td></tr>
</table>

No.	Measure	Timing	Requirement	Responsibility	Reference
	measures. This will be documented in a formal inspection record. d. Regular site inspections by the ERs and TfNSW representatives at a frequency to be agreed with the Principal Contractor. e. Principal Contractors will be required to undertake internal environmental audits. Internal audits will include: • Compliance with approval, permit and licence conditions. • Compliance with the E&SMS, CEMP, SMP, sub-plans and procedures. • Community consultation and complaint response. • Environmental training records. • Environmental monitoring and inspection results. f. TfNSW (or an independent environmental auditor) will also undertake periodic audits of the Principal Contractor's E&SMS and compliance with the environmental aspects of contract documentation, including this Construction Environmental Management Framework.				
24	a. Principal Contractors will document and detail any non-compliances arising out of the above monitoring, inspections and audits. TfNSW will be made aware of all non-compliances in a timely manner. b. Principal Contractors will develop and implement corrective actions to rectify the non-compliances and preventative actions in order to prevent the re-occurrence of the non-compliance. Contractors will also maintain a register non compliances, corrective actions and preventative actions. c. TfNSW or the Environmental Representative may raise non-compliances against environmental requirements	Prior Construction / During Construction	CEMF Section 3.14	Project Environment Manager Environmental Coordinator	Refer to CEMP
25	a. Principal Contractors will maintain appropriate records of the following:	Prior Construction	CEMF Section 3.15	Project Environment Manager	Section 7

No.	Measure	Timing	Requirement	Responsibility	Reference
	• Site inspections, audits, monitoring, reviews or remedial actions. • Documentation as required by performance conditions, approvals, licences and legislation. • Modifications to site environmental documentation (eg CEMP, sub-plans and procedures). • Other records as required by this Construction Environmental Management Framework. b. Records will be retained onsite for the duration of works. c. Additionally, records will be retained by the Principal Contractor for a period of no less than 7 years in total. Records will be made available in a timely manner to TfNSW (or their representative) upon request. d. Compliance reports detailing the outcome of any environmental surveillance activity including internal and external audits (refer to Section 3.13) will be produced by the Principal Contractors Environmental Manager or delegate. These reports will be submitted to TfNSW at an agreed frequency.	/ During Construction		Construction Managers / Project Managers / Project Leaders	
26	a. Principal Contractors will ensure the continual review and improvement of the E&SMS. This will generally occur in response to: • Issues raised during environmental monitoring, inspections and audits. • Significant environmental incidents. • Environmental non-conformances. b. A formal review of the E&SMS by the Principal Contractor's Senior Management Team will also occur on an annual basis, as a minimum. This review will generate actions for the continual improvement of the E&SMS and supporting management plans.	Prior Construction / During Construction	CEMF Section 3.16	Project Environment Manager Environmental Coordinator	Refer to CEMP

No.	Measure	Timing	Requirement	Responsibility	Reference
27	The following flora and fauna management objectives will apply to construction: • Minimise impacts on flora and fauna. • Design waterway modifications and crossings to incorporate best practice principles. • Retain and enhance existing flora and fauna habitat wherever possible. • Appropriately manage the spread of weeds and plant pathogens.	Prior Construction / During Construction	CEMF Section 11.1	Project Environment Manager Environmental Coordinator	Section 5
28	Principal Contractors will develop and implement a Flora and Fauna Management Plan which will include as a minimum: • The ecological mitigation measures as detailed in the environmental approval documentation. • The responsibilities of key project personnel with respect to the implementation of the plan. • Procedures for the clearing of vegetation and the relocation of flora and fauna. • Details on the locations, monitoring program and use of nest boxes by fauna. • Procedures for the demarcation and protection of retained vegetation, including all vegetation outside and adjacent to the construction footprint. • Plans for impacted and adjoining areas showing vegetation communities; important flora and fauna habitat areas; locations where threatened species, populations or ecological communities have been recorded. • Vegetation management plan(s) for sites where native vegetation is proposed to be retained. • Identification of measures to reduce disturbance to sensitive fauna. • Rehabilitation details, including identification of flora species and sources, and measures for the management and maintenance of	Prior Construction / During Construction	CEMF Section 11.2 a	Project Environment Manager	This Plan. Section 5 Section 2.4 Section 5.2 Section 5.1 Section 5.1 Section 5.1 Section 3.3.1 Section 5.1 Section 5

No.	Measure	Timing	Requirement	Responsibility	Reference
	rehabilitated areas (including duration of the implementation of such measures).				Section 5.3
	• Weed management measures focusing on early identification of invasive weeds and effective management controls.				Section 5.1
	• A procedure for dealing with unexpected EEC threatened species identified during construction, including cessation of work and notification of the Department, determination of appropriate mitigation measures in consultation with the OEH (including relevant re-location measures) and updating of ecological monitoring or off-set requirements.				Section 5.1
	• Details on the methodology for vegetation mapping and survey.				Section 7
	• Ecological monitoring requirements.				Section 7
	• Compliance record generation and management.				
29	Principal Contractors would undertake the following ecological monitoring as a minimum: • A pre-clearing inspection will be undertaken prior to any native vegetation clearing by a suitable qualified ecologist and the Contractor's Environmental Manager (or delegate). The pre-clearing inspection will include, as a minimum: ○ Identification of hollow bearing trees or other habitat features. ○ Identification of any threatened flora and fauna. ○ A check on the physical demarcation of the limit of clearing. ○ An approved erosion and sediment control plan for the worksite. ○ The completion of any other pre-clearing requirements required by any project approvals, permits or licences.	Prior Construction / During Construction	CEMF Section 11.2 b	Project Environment Manager Environmental Coordinator	Section 5

No.	Measure	Timing	Requirement	Responsibility	Reference
	• The completion of the pre-clearing inspection will form a HOLD POINT requiring sign-off from the Contractor's Environmental Manager (or delegate) and a qualified ecologist. • A post clearance report will be produced that validates the type and area of vegetation cleared including confirmation of the number of hollows impacted and the corresponding nest box requirements to offset these impacts.				
30	The Principal Contractor's regular inspections will include a check on the ecological mitigation measures and project boundary fencing.	During Construction	CEMF Section 11.2 c	Project Environment Manager Environmental Coordinator	Section 7
31.	The following compliance records would be kept by the Principal Contractor: • Records of pre-clearing inspections undertaken. • Records of the release of the pre-clearing hold point. • Records of ecological inspections undertaken.	Prior Construction / During Construction	CEMF Section 11.2 d	Project Environment Manager Construction Managers / Project Managers / Project Leaders	Section 7

32	Examples of flora and fauna mitigation measures include:
	• Areas to be retained and adjacent habitat areas will be fenced off prior to works to prevent damage or accidental over clearing.
	• Clearing will follow a two-stage process as follows:
	  ○ Non-habitat trees will be cleared first after sign-off of the pre-clearing inspection.
	  ○ Habitat trees will be cleared no sooner than 48 hours after non-habitat trees have been cleared. A suitably qualified ecologist will be present on site during the clearing of habitat trees. Felled habitat trees will be left on the ground for 24 hours or inspected by the ecologist prior to further processing.
	• Weed management is to be undertaken in areas affected by construction prior to any clearing works in accordance with the Noxious Weeds Act 1993.
		Prior Construction / During Construction	CEMF Section 13	Project Environment Manager
				Environmental Coordinator
					Section 5

No.	Measure	Timing	Requirement	Responsibility	Reference
Submissions and Preferred Infrastructure Report					
33	Biodiversity The biodiversity outcome would be consistent with the Framework for Biodiversity Assessment	Prior Construction / During Construction	REMM and environmental performance outcomes	Project Environment Manager	Section 5.1
34	The project would minimise impacts to biodiversity.	Prior Construction / During Construction	REMM and environmental performance outcomes	Project Environment Manager	Section 5.1 – 5.4

Appendix B – Tree Report

Refer to the Sydney Metro Website for the latest version of the Tree Report.

https://www.sydneymetro.info/documents

Appendix C – Microbat Preliminary and Final Inspection Reports

Sydney Metro City & Southwest Chatswood to Sydenham: Microbat habitat inspection – Final report

FINAL REPORT

Prepared for Sydney Metro

21 December 2018

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- Carl Corden and Kayla Asplet (project management, fieldwork and reporting)
- Anthony Cable (quality assurance) and Lauren Harley (mapping)

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1 Introduction

1.1 Background

Biosis Pty Ltd (Biosis) was commissioned by Sydney Metro to undertake pre-demolition bat inspections (this study) at three sites for the Sydney Metro City & Southwest Chatswood to Sydenham Project (the project).

Chapter 11 – Revised Environmental Mitigation Measures and Environmental Performance Outcomes of the *Sydney Metro – City and Southwest: Chatswood to Sydenham Submissions and Preferred Infrastructure Report* (SPIR) (TfNSW 2016) provides a number of mitigation measures to be implemented to address potential biodiversity impacts of the project. Mitigation measure B2 stipulates that:

> *Potential bat roosting locations at Central Station, Waterloo Station and Marrickville dive sites would be checked by a qualified ecologist or wildlife handler prior to demolition. Any bats found would be relocated, unless in torpor, in which case the relocation would be delayed until the end of the torpor period.*

Chapter 20 – Biodiversity of the *Sydney Metro Chatswood to Sydenham Environmental Impact Statement* (EIS) (Arcadis 2016) assessed the significance of the impacts of the project on threatened fauna listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the NSW *Threatened Species Conservation Act 1995* (TSC Act). The EIS identified potential roosting habitat for threatened microchiropteran bats (microbats) at various building structures at the three sites identified in B2 (i.e. Central Station, Waterloo Station and the Marrickville Dive Site).

The locality of the proposed construction area is shown in Appendix 1; Figure 1.

Chapter 20 – Biodiversity of the *Sydney Metro Chatswood to Sydenham EIS* assessed the impacts of the project on threatened flora, fauna and ecological communities listed under the EPBC Act and/or the TSC Act (excluding non-threatened species). The requirement for mitigation measure B2 has therefore been interpreted to apply to the potential for impacts to roosting habitat specifically for threatened microbats at the three locations specified.

1.2 Aim and objectives

This study was primarily aimed at ensuring impacts to threatened microbats would be minimised in accordance with mitigation measure B2 of the project SPIR, however the study also considered the potential for mortality of non-threatened microbats where suitable roost habitat was present. To fulfil the requirements of mitigation measure B2 Biosis recommended a staged approach managing impacts on threatened microbats as follows:

- Phase 1 preliminary site inspections – Biosis would undertake an inspection of all three sites identified in mitigation measure B2 to determine whether further surveys and/or bat mitigation measures would be required.
- Phase 2 (optional) targeted surveys – Where required, Biosis would undertake targeted surveys for threatened microbats.
- Phase 3 (optional) microbat mitigation – Where required, Biosis would undertake microbat mitigation measures such as further searches of roof cavities etc., and capture/relocation of microbats.

The objectives of this study were to:

- Undertake a preliminary site inspection to determine whether any potential roosting or breeding habitat for threatened and non-threatened microbats is present within the construction area, at the three sites specified in mitigation measure B2.
- Identify where the results of the preliminary inspections were adequate to assess impacts on threatened microbats without additional survey effort.
- Where preliminary inspections were not adequate, identify where alternative survey methods or targeted surveys could be used to adequately assess impacts on threatened microbats.
- Undertake any targeted surveys required to confirm presence and/or habitat suitability for threatened microbats.
- Report the outcomes of the preliminary site inspections and targeted surveys, and provide recommendations for Sydney Metro to fulfil obligations under mitigation measure B2 on a progressive basis in the form of interim reports.
- Confirm Sydney Metro's implementation of the interim report recommendations in this Final Report.

Biosis has undertaken preliminary site inspections of all potential microbat roosting habitat within the construction area for the three sites specified in mitigation measure B2. Biosis has also undertaken targeted surveys of potential threatened microbat roosting habitat located at the Marrickville Dive Site.

2 Methods

2.1 Database and literature review

Prior to undertaking the preliminary inspections, information provided by Sydney Metro as well as other key documentation was reviewed, including:

- Chapter 11 – Revised Environmental Mitigation Measures and Environmental Performance Outcomes of the *Sydney Metro – City and Southwest: Chatswood to Sydenham Submissions and Preferred Infrastructure Report* (SPIR) (TfNSW 2016)
- Chapter 20 – Biodiversity of the *Sydney Metro Chatswood to Sydenham Environmental Impact Statement* (EIS) (Arcadis 2016).
- Preliminary demolition program or the project (provided by Adam Koutsamanis 2 February 2017).
- NSW Office of Environment and Heritage (OEH) *BioNet Atlas of NSW Wildlife* for all microbat species records within 5km of each site (OEH 2017).
- OEH species profiles for target threatened microbat species (OEH 2016, 2015, 2014 a, and OEH 2014b).

2.2 Preliminary site inspections

The results of the database and literature review were used to prepare a list of all threatened and non-threatened microbat species known or predicted to occur within 5 kilometres of the construction area (Arcadis 2016 and OEH 2017).

Preliminary site inspections were undertaken at each of the three sites by either Carl Corden or Kayla Asplet. Both Carl and Kayla are qualified and experienced zoologists that worked for Biosis at the time of inspections. Details of the site inspections, including dates, times and habitat features inspected at each site, are provided in Table 1.

Table 1 Preliminary site inspections.

Site	Date and duration	Habitat features inspected
Central Station	20/12/2016 2 hours	Platforms 13, 14 and 15 Two heritage buildings to the south of these platforms, in the access yard. Viewed externally and internally. All vegetation surrounding the heritage buildings. All vegetation in the northern portion of the construction area. Accessed from Chalmers Street. Rear of buildings in the southern portion of the construction area. Viewed externally, accessed from Regent Street.
Waterloo Station	25/1/2017 1 hour	All buildings within the construction area. Viewed externally, inspected from public roads and footpaths.
Marrickville Dive Site	25/1/2017 2 hours	All buildings, bridges, stormwater drains and culverts within the construction area. Viewed externally, inspected from public roads and footpaths.

Site	Date and duration	Habitat features inspected
Marrickville Dive Site – Additional Structures on Murray Street	5/10/2018 1 hour	All buildings within the construction area (two buildings on Murray Street). Viewed externally, inspected from public roads and footpaths.
Central Station – Bounce Hostel on Chalmers Street	3/12/18 0.5 hours	Bounce Hostel on Chalmers Street (recently vacated prior to inspection). Viewed externally and internally.

During the preliminary site inspections all structures and vegetation within the construction area were assessed for potential microbat roosting and/or breeding habitat. Table 2 details the potential microbat habitat criteria that each structure was assessed for.

Table 2 Microbat habitat value

Features	Criteria for microbat habitat presence	Potential microbat habitat values
Surrounding landscape	• Proximity of construction area to areas of native vegetation, water and known significant habitats (e.g. breeding sites for threatened species).	• Forage, roosting and breeding habitat for threatened and non-threatened species.
Buildings – roof cavities	• Peaked roof with internal ceiling only. • Roof cavity must be thermally stable. • Must have entry/exit points for microbats.	• Roost and breeding habitat for non-threatened species. • Roost habitat only for threatened species, dependent on other factors (e.g. landscape setting).
Bridges	• Must be appropriate dimensions to provide suitably dark areas beneath bridge. • Must provide gaps, cracks or crevices with suitable depth and entry size for microbats.	• Roost and breeding habitat for non-threatened species. • Roost habitat only for threatened species, dependent on other factors (e.g. landscape setting).
Drains and culverts	• Must be appropriate length to provide suitably dark areas internally. • Must provide gaps, cracks, crevices or disused mud nests of wasps or swallows. • Must be appropriate dimensions to avoid complete inundation during rainfall periods.	• Roost and breeding habitat for non-threatened species. • Roost, winter torpor and/or breeding habitat for threatened species, dependent on other factors (e.g. temperature and moisture parameters and landscape setting).
Vegetation	• Tree hollows. • Dense vegetation. • Peeling bark.	• Roost and breeding habitat for non-threatened hollow-dependent species. • Roost habitat only for threatened hollow-dependent species, dependent on other factors (e.g. landscape setting).

The results of the preliminary site inspections were used to determine the likely habitat value of all features inspected within the construction area, and to inform recommendations for further targeted surveys and/or mitigation strategies that may be required.

2.3 Targeted surveys

Based on the recommendations of the preliminary site inspections, targeted surveys were undertaken of a culvert at Marrickville Dive Site to confirm whether this feature provided roosting habitat for the Eastern Bentwing-bat and/or the Southern Myotis. Surveys included ultrasonic bat call detection (e.g. 'Anabat') recording and visual observation of the culvert entrance for one hour at dusk to detect any microbats entering or exiting the culvert.

Targeted surveys were undertaken over two nights, on 4 and 18 April 2017. Surveys were timed with the aim of detecting either/both of the target species prior to commencement of winter torpor.

The results of the proposed targeted surveys have been provided in this final inspection report.

2.4 Limitations

The preliminary site inspections were limited to visual inspections of potential habitat features present within all construction areas. Inspection of heritage buildings at Central Station was limited to the exterior and interior of the buildings, and did not include inspections within roof cavities. All other building structures within the construction areas of all three sites were viewed from the outside only, excluding the Bounce Hostel at Central Station that was also inspected internally.

Table 3 outlines the reasons why other surveys methods were not used during the preliminary site inspections.

Table 3 Survey methods not used during preliminary inspections

Survey method	Reasons methods were not used during preliminary inspections
Inspections within roof cavities and capture/relocation of microbats	• Risks associated with working in confined space, working at heights and exposure to dangerous materials (e.g. asbestos). • Access not granted to most buildings during preliminary inspections. • Not practical given the large number of buildings at some sites. • Unlikely to detect all individual microbats. • Microbats may occupy roof cavities after inspections. • Risk of injuring microbats and/or staff during capture. • No suitable areas nearby for relocation of microbats.
Inspections of entry points from a ladder or with a pole-mounted camera	• Risks associated with working from heights. • Impractical given the large number of buildings and potential entry points. • Unlikely to adequately assess potential for microbats to be present, given observations would be limited to what can be seen from the entry point
Inspections beneath bridges or within drains and culverts	• Risks associated with working in confined spaces. • Most bridges and drains were located outside of the construction area. • Access not granted for culvert within construction area. • Only potential culvert within construction area very long and narrow, so internal inspection would be impractical.
Ultrasonic bat call	• Targeted survey method, beyond the scope of the preliminary site inspections.

Survey method	Reasons methods were not used during preliminary inspections
detection (e.g. 'Anabat') and/or observations of entry points	• Unlikely to provide useful data in most locations, given the large number of buildings present. Only applicable to specific habitat features (e.g. culvert entrances) in the context of the project.
Trapping using mist nets or harp traps	• No practical application during the preliminary site inspections.

Given the aim and objectives of this study the preliminary site inspections and targeted surveys were considered adequate to assess impacts on both threatened and non-threatened microbats at all locations.

3 Results

3.1 Preliminary site inspections

All sites are located within a heavily urbanised landscape, providing only limited habitat resources for microbats. The habitat values for each of the three sites inspected are shown in Appendix 1; Figure 2 and are outlined in Table 4. Site photographs are provided in Appendix 2.

Table 4 Site habitat values.

Site	Habitat features	Habitat value
Central Station	Landscape – no adjacent native vegetation communities or significant habitat features. Platforms – no suitable roof cavities. Vegetation – no hollows or dense vegetation. Heritage buildings – roof cavities present, no entrances recorded. Regent Street buildings – roof cavities present, no entrances recorded. No vegetation present at the Bounce Hostel.	Unlikely to provide any roost habitat for threatened or non-threatened microbats given location within or adjacent to busy rail corridor and CBD.
Waterloo Station	Landscape – no adjacent native vegetation communities or significant habitat features. Large number of buildings with roof cavities. No vegetation present.	Unlikely to provide any roost habitat for threatened microbats given location within urban environment. Potential roost habitat for non-threatened microbats.
Marrickville Dive Site	Landscape – no adjacent native vegetation communities or significant habitat features. Large number of buildings, however only one building with suitable roof cavities. Vegetation – no hollows or dense vegetation. Bridge and drains outside of construction area, and unlikely to provide microbat habitat. One culvert within construction area.	Most buildings do not provide microbat habitat. One building with roof cavity unlikely to provide any roost habitat for threatened microbats, given location within urban environment, however this does provide potential roost habitat for non-threatened microbats. One culvert may provide roost habitat for threatened microbats (including potential torpor habitat). The two Murray Street structures did not provide suitable roosting habitat for threatened microbat species.

Background research indicated that 13 microbat species have been recorded within 5km of the construction area, including four species listed as vulnerable under the NSW *Threatened Species Conservation Act 1995* (TSC Act). Two of these vulnerable species, Eastern Bentwing-bat *Miniopterus schreibersii oceanensis* and Eastern Freetail-bat *Mormopterus norfolkensis*, were identified in the project EIS. Two additional vulnerable species, Little Bentwing-bat *Miniopterus australis* and Southern Myotis *Myotis macropus*, were identified during database searches for this study.

Table 5 provides the likelihood of occurrence of all threatened and non-threatened microbat species with potential to occupy habitat features within the construction area, and further actions required.

Table 5 Likelihood of occurrence of microbats

Species	No. of OEH dabase records within 5km of each site			Likelihood of occurrence within the construction area	Actions
	Central Station	Waterloo Station	Marrickville Dive Site		
White-striped Freetail-bat *Austronomus australis*	10	9	5	Moderate. Potential roost habitat in roof cavities	Preliminary inspections are considered adequate to determine potential impacts to this non-threatened species. Mitigation measures to be used during demolition of buildings with roof cavities at Waterloo Station and Marrickville Dive sites.
Gould's Wattled Bat *Chalinolobus gouldii*	50	47	25	Moderate. Potential roost habitat in roof cavities	Preliminary inspections are considered adequate to determine potential impacts to this non-threatened species. Mitigation measures to be used during demolition of buildings with roof cavities at Waterloo Station and Marrickville Dive sites.
Chocolate Wattled Bat *Chalinolobus morio*		2	2	Moderate. Potential roost habitat in roof cavities	Preliminary inspections are considered adequate to determine potential impacts to this non-threatened species. Mitigation measures to be used during demolition of buildings with roof cavities at Waterloo Station and Marrickville Dive sites
Little Bentwing-bat *Miniopterus australis* (Vulnerable, BC Act)	1	1		Low. Very few records from the locality. Very limited habitat present.	Results of preliminary inspections are considered adequate to assess impacts for this species. No further actions required.
Eastern Bentwing-bat *Miniopterus schreibersii oceanensis*	59	30	9	Unknown Potential roost and winter torpor habitat within culvert at Marrickville Dive site.	Targeted surveys required to assess potential impacts to this species at culvert within Marrickville Dive site.

Species	No. of OEH dabase records within 5km of each site			Likelihood of occurrence within the construction area	Actions
	Central Station	Waterloo Station	Marrickville Dive Site		
(Vulnerable, BC Act)					
Eastern Freetail-bat *Mormopterus norfolkensis* (Vulnerable, BC Act)	10	10		Low. Unlikely to use habitats within the construction area.	Results of preliminary inspections are considered adequate to assess impacts for this species. No further actions required.
Eastern Free-tailed Bat *Mormopterus ridei*	8	8	1	Moderate. Potential roost habitat in roof cavities	Preliminary inspections are considered adequate to determine potential impacts to this non-threatened species. Mitigation measures to be used during demolition of buildings with roof cavities at Waterloo Station and Marrickville Dive sites
Southern Myotis *Myotis macropus* (Vulnerable, BC Act)	474	470	2	Unknown Potential roost habitat within culvert at Marrickville Dive site.	Targeted surveys required to assess potential impacts to this species at culvert within Marrickville Dive site.
Lesser Long-eared Bat *Nyctophilus geoffroyi* (Vulnerable, BC Act)			1	Low. Very few records from the locality. No suitable habitat present.	Preliminary inspections are considered adequate to determine potential impacts to this non-threatened species. No further actions required.
Gould's Long-eared Bat *Nyctophilus*		1	1	Low. Very few records from the locality. No suitable habitat present.	Preliminary inspections are considered adequate to determine potential impacts to this non-threatened species. No further actions required.

Species	No. of OEH dabase records within 5km of each site			Likelihood of occurrence within the construction area	Actions
	Central Station	Waterloo Station	Marrickville Dive Site		
gouldi					
Eastern Broad-nosed Bat *Scotorepens orion* (Vulnerable, BC Act)	1			Low. Very few records from the locality. No suitable habitat present.	Preliminary inspections are considered adequate to determine potential impacts to this non-threatened species. No further actions required.
Large Forest Bat *Vespadelus darlingtoni*	1			Low. Very few records from the locality. No suitable habitat present.	Preliminary inspections are considered adequate to determine potential impacts to this non-threatened species. No further actions required.
Southern Forest Bat *Vespadelus regulus*		1	3	Low. Very few records from the locality. No suitable habitat present.	Preliminary inspections are considered adequate to determine potential impacts to this non-threatened species. No further actions required.

Table 6 Pre-start toolbox meeting register

Site	Date	Number of Participants
Marrickville Dive Site	31/7/2017	10
Waterloo Station	1/8/2017	17
Marrickville Dive Site	24/7/2018	10
Marrickville Dive Site	22/10/2018	7

3.2 Targeted surveys

Targeted surveys were undertaken at the entrance to the culvert within the construction area of the Marrickville Dive Site that was identified during the preliminary site inspections as potential roost habitat for the Eastern Bentwing-bat and/or the Southern Myotis. This feature is identified in Appendix 2: Figure 2 as 'potential threatened species habitat'.

No threatened or non-threatened microbats were recorded at the location of the culvert during targeted surveys of this habitat feature. Visual inspection of the culvert indicated that the culvert did not provide suitable roosting structures such as expansion joints, cracks or other similar features. Further, it is likely that the culvert would be completely inundated during high rainfall events.

Based on the results of targeted surveys it is considered that the culvert at the Marrickville Dive Site does not provide suitable breeding or winter torpor habitat for any threatened or non-threatened microbats.

4 Conclusion and recommendations

Biosis has undertaken site inspections of all potential microbat roosting habitat within the construction area for the three sites specified in mitigation measure B2. Biosis has also undertaken targeted surveys of potential threatened microbat roosting habitat located at the Marrickville Dive Site.

The results of the site inspections and targeted surveys indicate that none of these sites provide suitable roosting, breeding or winter torpor habitat for any of the threatened microbats known to occur in the wider locality.

The microbat habitat inspection interim report (Biosis 2017) identified a number of buildings within the construction areas at Waterloo Station and Marrickville Dive Sites provide roof cavities, which may be used as roost habitat for non-threatened microbats. The following measures are recommended to mitigate potential impacts to non-threatened microbats, during demolition of buildings in the areas identified in Appendix 2: Figure 2 as 'non-threatened species habitat':

- A Biosis zoologist will be present at pre-start toolbox meetings to inform all workers undertaking demolition works of the potential for microbats to be present within roof cavities. A fact sheet has been prepared outlining procedures to be followed if microbats are encountered during works. The fact sheet is provide in Appendix 3.
- Building demolition will be undertaken in stages. The initial stage of demolition will involve soft-stripping by hand of building interiors, including the removal of ceilings and roof insulation material. This process will significantly reduce the risk of injury to non-threatened microbats that may be present in roof cavities. This will also provide an opportunity for any microbats present to safely vacate roof cavities overnight prior to final demolition of building structures without the requirement for the zoologist or other workers to enter roof cavities to capture and relocate microbats.
- If any microbats are encountered at any stage during building demolition works should cease and the Biosis zoologist should be contacted. Works would recommence based on the advice and/or actions of the zoologist.

This final report confirms that Sydney Metro's obligations under REMM B2 and the recommendations of Biosis' Interim Report have been fully implemented. Sydney Metro's implementation of the Interim Report's recommendations is confirmed as follows:

- A Biosis zoologist conducted a total of four pre-start toolbox meetings at the Waterloo and Marrickville sites to inform all contractors undertaking demolition works of the potential for microbats to be present within roof cavities. Pre-start toolbox sign-off sheets are provided in Appendix 4.
  - Three pre-start toolbox meetings were held at the Marrickville Dive Site on the 31 July 2017, 24 July 2018 and 22 October 2018.
  - One pre-start toolbox meeting was held at Waterloo Station on the 1 July 2017.
- All relevant buildings at the Waterloo and Marrickville sites have now been demolished in a staged manner in accordance with the recommendations in Biosis' Interim Report (refer to recommendations above). Soft-stripping by hand was completed for building interiors, including the removal of ceilings and roof insulation material to minimise harm to roosting microbats, if present.
- No microbats were identified during demolition works at any of the three sites.

Biosis is satisfied that REMM B2 has now been fully discharged by Sydney Metro.

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TfNSW 2016. *Sydney Metro – City and Southwest: Chatswood to Sydenham – Submissions and Preferred Infrastructure Report.* NSW Government Transport for NSW, October 2016.

Appendix 1 Figures

Figure 1 Locality of the construction area

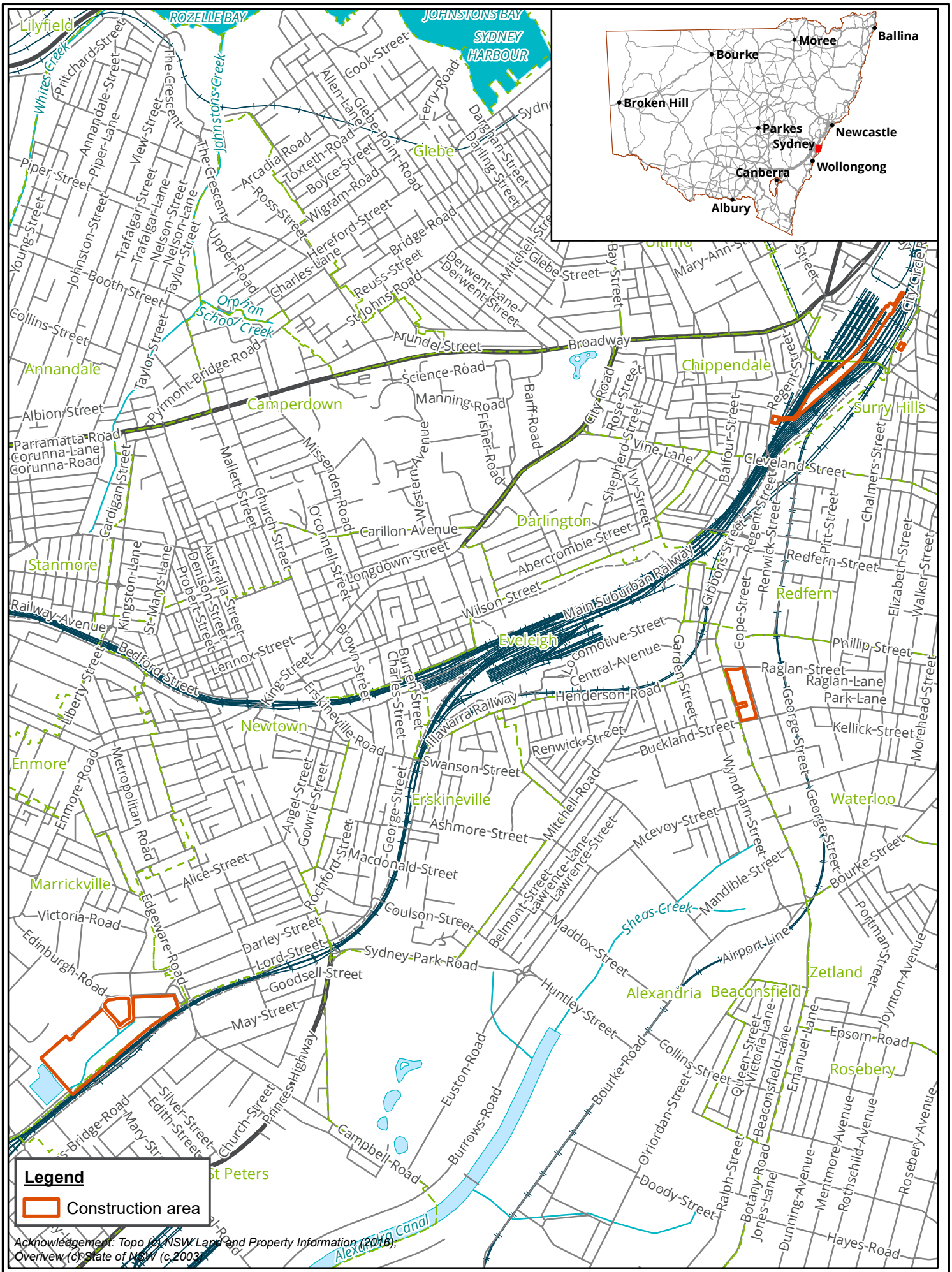

Figure 1: Location of the construction area

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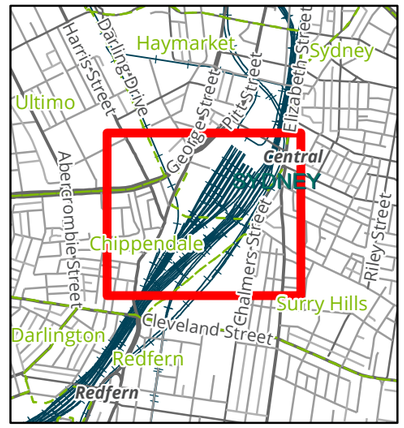
Ballarat, Brisbane, Canberra, Melbourne, Newcastle, Sydney, Wangaratta & Wollongong

Matter: 28911
Date: 07 January 2019,
Checked by: CC, Drawn by: DK, Last edited by: dkazemi
Location:P:\28900s\28911\

0 200 400 600 800
Metres
N

Scale 1:20,000 @ A4, GDA 1994 MGA Zone 56

Figure 2 Microbat habitat features



Legend

Construction area

Acknowledgements: Basemap © Land and Property Information 2016

Figure 2a: Microbat habitat features

0 20 40 60 80 100

Metres

Scale: 1:2,400 @ A3

Coordinate System: GDA 1994 MGA Zone 56

N

biosis

Biosis Pty Ltd

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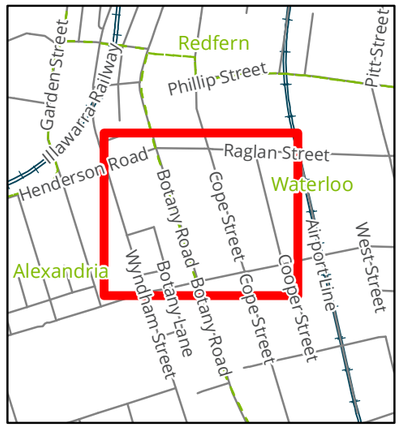
Location:P:\28900s\28911
28911_F2a_EcoFeatures



Legend

Construction area

Microbat habitat feature

Non-threatened species habitat

Acknowledgements: Basemap © Land and Property Information 2016

Figure 2b: Microbat habitat features

0 10 20 30 40 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA 1994 MGA Zone 56

N

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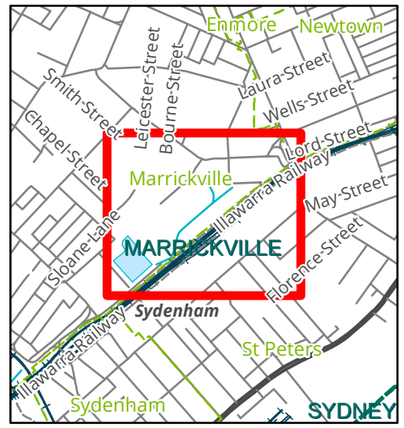
Ballarat, Brisbane, Canberra, Melbourne, Newcastle, Sydney, Wangaratta & Wollongong

Matter: 28911
Date: 07 January 2019,
Checked by: CC, Drawn by: DK, Last edited by: dkazemi
Location:P:\28900s\28911
28911_F2a_EcoFeatures



Legend

Construction area

Microbat habitat feature

Non-threatened species habitat

Potential threatened species habitat

Figure 2c: Microbat habitat features

0 20 40 60 80 100

Metres

Scale: 1:2,100 @ A3

Coordinate System: GDA 1994 MGA Zone 56

N

biosis

Biosis Pty Ltd

Ballarat, Brisbane, Canberra, Melbourne, Newcastle, Sydney, Wangaratta & Wollongong

Matter: 28911
Date: 07 January 2019,
Checked by: CC, Drawn by: DK, Last edited by: dkazemi
Location:P:\28900s\28911
28911_F2a_EcoFeatures

Appendix 2 Plates

Plate 1 Platforms at Central Station

Plate 2 Heritage buildings at Central Station

Plate 3 Rear of buildings on Regent Street at Central Station

Plate 4 Buildings at Waterloo Station. All are identified as 'non-threatened microbat habitat'

Plate 5 Buildings at Marrickville Dive Site without roof cavities

Plate 6 **One building at Marrickville Dive Site with roof cavity identified as 'non-threatened microbat habitat'**

Plate 7 **Culvert below buildings on Murray Street at Marrickville Dive Site identified as 'potential threatened microbat habitat'**

Plate 8 **Two additional warehouses inspected on Murray Street at the Marrickville Dive Site on the 5 October 2018. Both buildings were not considered suitable microbat habitat.**

Plate 9 **Bounce Hostel on Chalmers Street, Surry Hills (considered as part of Central Station) was inspected on 3 December 2018. The building was not considered suitable microbat habitat.**

Appendix 3 Microbat Toolbox Talk Fact Sheet

FLORA & FAUNA FACT SHEET SERIES

Microbats in buildings

Photos: Chocolate Wattled Bats (left) and Eastern Bentwing-bats (right). Copyright © Australian Museum and Biosis Pty Ltd.

What is a microbat?

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What to look for

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Are bats dangerous?

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What should you do if you find microbats during demolition works?

1) Stop work and tell your on-site Environmental Officer immediately.
2) Call the Biosis Project Ecologist on 0437 949 527 who will provide advice on what to do next.

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Appendix 4 Microbat Toolbox Talk Sign-off Sheet

Microbat Induction - Administration Building at Marrickville

Date: 24/07/2018 Biosis Pty Ltd

Name	Company	Signature
Adam Urdich	Biosis	
Geoff Wright	PRA	
Karen Hum	PVRT	
Rich Kuiw	Pure	
Kelly Phan	Pure	
Sopheavrum Pech	Pure	
Georgina Luck	Sydney Metro	
Pam Tummers	Sydney Metro	P Tummers
John Wilkes	Sydney Metro	
Faisal Ahmed	Sydney Metro	

Microbats in buildings

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Adam Zielack 22,10,18

P. YEN 22/10/18

ATO EDWARDS 22/10/18

VILI. AFUAFO 22/10/18.

ADAM WALKER 22/10/18.

JOHANNES KLAASEN 22/10/18

Georgina Lucke CC/10/18

MICROBAT TOOLBOX TALK - ATTENDANCE.

- Marrickville

22 October 2018

DELTA GROUP AUSTRALIA WIDE

STOP – THINK - ACT SITE TOOLBOX

Project Name or Address: WATERLOO METRO

Toolbox Subject: GENERAL **Date:** 1/3/17

Person Delivering the Toolbox: AGE

#		Toolbox Items to Discuss: *Please tick if discussed/applicable*
1		What did we do well last shift? (To be continued in the minutes)
2		What could we improve from last shift? (To be continued in the minutes)
3		Identify the hazards and ask yourself do I need a permit for the work?
4		Assess the level of risk and ask yourself do I have the suitable tools and equipment for the task?
5		Control the hazards - refer to the hierarchy of control - ***Eliminate, Substitute, Engineer, Administer, PPE***
6		Proceed safely, always follow your SWMS, if the task changes complete a **Take 5** and/or review your SWMS.
7		What training issues are outstanding? (To be continued in the minutes)
8		What health and safety issues can anyone bring up? (To be continued in the minutes)
	?	Prior to commencement: Flash back arrestors in place, safety pins in place, visual check of all hand tools
10		If you consider a task to be unsafe you must stop work and notify your Foreman / Safety Officer immediately

Minutes:

(1) CORRECT P.P.E AT ALL TIME

(2) GATES AND DOORS TO BE KEPT SHUT AT ALL TIMES

(3) LOCK YOUR CARS AND KEEP ALL VALUABLES OUT OF SITE

(4) ANY PROBLEMS WITH THE LOCALS COME SEE ME OR BREDAN

(5) TALK ABOUT BATS IN ROOFS

(6) POWER DISCONECTION FROM POLE TO BOARD

ALL LIVE POWER MARKED UP ~~ANY~~

AND IF NOT SURE SEE ME OR SPARKY

DELTA GROUP AUSTRALIA WIDE

STOP – THINK - ACT SITE TOOLBOX

The following signature is confirmation that I attended and understood the toolbox meeting as outlined on the attached forms.

#	Print Name:	Company:	Signature:	Date:
1	AGE NEAL	DELTA		1/8/17
2	RYAN Fortuna	WILKEN		1/8/17
3	Pat aman	WILKEN		1/8/17
4	JOE HITO	MERCON		1.8.17
5	T POTORU	MERCON		1/8/17
6	JIMMY PATRICK	MERCON		1/8/2017
7	LESLIE RAY	MERCON		01.08.17
8	BUN LY	PURE		
		PURE		
10	MEALEA ROS	PURE		1-8-17
11	SOY VORN	PURE		1-8-17
12	JEFF MOTTS	MAINS GROUP		1.8.17
13	Cody Geddes	Mains Group		1.8.17
14	Steve Veitch	PRA		1/8/17
15	Albert Sande	Mercon		1/8/17
16	MUSTAFA ARIFAN	MERCON		1/8/17
17	DEAN MONTOUS	PAM		1/8/17
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30				

Microbats in buildings

Photos: Chocolate Wattled Bats (left) and Eastern Bentwing-bats (right). Copyright © Australian Museum and Biosis Pty Ltd.

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FLORA & FAUNA FACT SHEET SERIES

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TOOLBOX 31/7/17 - BATS

NAME	DATE	
Vince	31/7/17	
LEE NGAROPE	"	
Herb Bennett	31/7/17	
Nailoni Mafi		
Sekope Waqakudruvi	31/7/17	
Jolame Dravesau	31/7/17	
Ash Mohammed	"	
Michael Cullen	31 07 2017	
JOSH PENROSE	"	
James Christian	31/7/17	

Appendix D – Government Stakeholder Correspondence

Document Ref	Stakeholder comment details	Response
Office of Environment and Heritage		
Section 1.7	It is recommended: • a diversity of native plant species (trees, shrubs and groundcover species) from the relevant local vegetation community are planted to improve flora and fauna habitat values • Section 1.7 is amended as follows: *retain and enhance existing flora and fauna habitat wherever possible and enhance the habitat by planting a diversity of native plant species endemic to the local native vegetation community.*	There are 11 landscape plants within the project footprint and there is no scope to re-establish native vegetation within the rail corridor.
Appendix A	The CBMP needs to identify flora species and sources etc as required by the mitigation measure in Appendix A.	Noted. Mitigation measures will be implemented as required. Flora species have been identified in the Tree Report which is appended to the plan.
Appendix A	It is recommended a separate section is included in the CBMP which includes details on any native vegetation to be retained and the proposed rehabilitation, including: • scaled maps which show the location of native vegetation to be retained, areas proposed to be rehabilitated • flora species to be planted and the sources • management and maintenance measures for the rehabilitated areas including watering, weed control, duration of maintenance etc.	Vegetation locations are shown in the Tree Report. No vegetation is to be retained and no revegetation is proposed in the rail corridor. Trees will be offset locally in consultation with City of Sydney Council. Weeds will be managed in accordance with the controls outlined in Section 5.3 of the plan
Section 6.1	It is recommended the fourth paragraph in Section 6.1 is amended as follows: *Rehabilitation will take place post construction works with a preference using a diversity of endemic species (trees, shrubs and groundcover species) to improve flora and fauna habitat values in the project area.*	There is no scope or space to re-establish native vegetation in the rail corridor, as the existing areas of vegetation are to be cleared and constructed over as part of the proposed works.

Document Ref	Stakeholder comment details	Response
Section 6.2	It is recommended the final sentence in Section 6.2 (page 20) is amended as follows: A *The vegetation clearance protocol has been prepared, see in Table 6.1 must be implemented.*	Section 5.1 of the CBMP has been updated
Table 5	*Vegetation to be* ***retained and protected*** *cleared will be clearly marked* ***on the ground prior to any works commencing***	There are no trees being retained.
Microbats	It is recommended the Mitigation Measure to remove sections of the roofing material one day prior to demolition (see page 9 of Appendix C) is amended to remove sections of the roof material at night when the bats are out of the roof foraging. This would enable the bats to find other alternative roosting habitat during the night rather than being disturbed during the day when they could be subject to predation.	The removal of roofing mitigation measure relates to the Waterloo and Marrickville Dive Sites and is not applicable to Central Station.
Microbats	OEH seeks clarification as to whether the targeted surveys of the culvert were undertaken.	This Bat Survey also covers other project. This culvert is not located on the Central Station project.
City of Sydney		
Microbats	It is not clear where Sydney Metro were taking on the recommended mitigation methods (pg. 9 of Biosis report) in their management plan, specifically the removal of roofing one day prior. Please confirm.	The removal of roofing mitigation measure relates to the Waterloo and Marrickville Dive Sites and is not applicable to Central Station. This measure has been included in Section 5 nonetheless.
Microbats	Also, page 21 of section 3, it notes that animals found prior to the clearing will be removed and relocated to suitable habitat. Please clarify that any microbats will only be handled by wildlife carers/ecologists. This shouldn't only be referred to when an injured animal is found.	Any microbats found during clearing activities will be handled only by a qualified ecologist or wildlife handler.

Document Ref	Stakeholder comment details	Response
Office of Environment and Heritage – review of updated CBMP		
Section 6.1	Section 6.1 of the previous draft CBMP included a fourth paragraph which stated that "rehabilitation will take place post construction works with a preference to using endemic species to improve flora and fauna habitat values...". OEH in its submission supported the use of endemic species in the project area to improve habitat values. OEH notes the paragraph has now been deleted from the updated CBMP (see section 5.1, page 18) as Appendix D explains "there is no scope to re-establish native vegetation within the rail corridor" (page 38). On the 28 June 2018, OEH received a phone call from Laing O'Rourke and was advised in relation to this issue there is no scope or space to undertake revegetation as part of the Central Station main works, as the existing garden area is to be cleared and constructed over and that the trees removed will be offset/replaced in negotiation with the City of Sydney Council. To provide further clarification, it is suggested Appendix D is amended to incorporate the following information that Laing O'Rourke provided during the phone call of 28 June: • there is no scope or space to re-establish native vegetation in the rail corridor, as the existing areas of vegetation are to be cleared and constructed over as part of the proposed works.	There is no scope or space to re-establish native vegetation in the rail corridor, as the existing areas of vegetation are to be cleared and constructed over as part of the proposed works.
Section 5.2	OEH previously recommended the final sentence in Section 6.2 of the previous CBMP is amended to include the wording that the vegetation clearance protocol must be implemented in accordance with the table relating to vegetation clearance. OEH agrees with the wording in Section 5.2 of the amended CBMP which incorporates this amendment.	Noted
Microbats	In relation to the potential disturbance of roosting habitat for microbats, OEH previously recommended the Mitigation Measure in Appendix C to remove sections of the roofing material one day prior to demolition (see page 9 of Appendix C) is amended to remove sections of the roof	It should be noted that Appendix C is a consultant Ecologist's report and is not able to be amended. The proposed mitigation measure related to potential bat roosting locations at the Waterloo and Marrickville Dive Sites and was not

Document Ref	Stakeholder comment details	Response
	material at night when the microbats are out of the roof foraging. OEH recommended this to enable the bats to find other alternative roosting habitat during the night rather than being disturbed during the day when they could be subject to predation. Appendix D of the updated CBMP indicates it has been updated. It appears Appendix C has not been updated but an additional action has been included in Table 5 for the vegetation clearance protocol. As the removal of the roof is a separate issue to the vegetation clearing, it is suggested a separate section is included in Section 5 to address the removal of the roof / potential disturbance of the microbats. In addition, the wording to the proposed action is amended as follows: • If prior to demolition bats are unexpectedly found by the qualified ecologist in the potential bat roosting locations, remove sections of the roof material at night at least 24 hours prior to demolition when the bats are out of the roof foraging	applicable to Central Station. Nonetheless, the following statement has been included in Section 5 of this plan: • If prior to demolition bats are unexpectedly found by the qualified ecologist in the potential bat roosting locations, remove sections of the roof material at night at least 24 hours prior to demolition when the bats are out of the roof foraging.

Appendix E - Severe Environmental Risks addressed in this report

SER 1 Biodiversity		
CC 01	*Project (or location) specific clearing or tree removal methodology is developed and communicated for local fauna species including threatened or endangered species.*	Context of this SER's Assessment: Tree removal is required, in the process of obtaining a Tree Assessment Report to inform Metro; master Tree Report for offsetting purposes. Tree management Plan in place. Limited clearing required. 1 Tree subject to additional removal. In the process of obtaining a Report by a suitably qualified ecologist. See Section 5 - Biodiversity Management Plan
CC02	*A suitably qualified ecologist or licensed spotter catcher is on site during all clearing activities.*	CEMP requires roof structures to open 24 hours prior to demolition Table 5 - Biodiversity Management Plan: the CSM Approved Clearing protocol states that only when habitat/mature trees located outside the project footprint require clearing will an ecologist be required to be on site for clearing. "
CC03	*Fauna relocation survey/inspection completed prior to relocating or clearing activities by an appropriately qualified ecologist.*	As required- limited clearing Table 5 Row 2 - Biodiversity Management Plan
CC04	*Fauna relocated prior to felling trees or land clearing using low impact trapping methods*	As required- limited clearing Table 5 Row 3 - Biodiversity Management Plan
CC05	*Habitat trees clearly delineated during the pre-clearing survey*	As required- limited clearing Table 5 - Biodiversity Management Plan - ""No habitat trees are in close proximity to construction activities
CC06	*Erosion and sediment controls are installed including for all clearing areas, waterways / drainage areas*	ERSED controls in place as per ESCP Biodiversity Management Plan: • Table 4: Aspects and impacts • Table 7: Weed Management Procedure • CC07Appendix A: 22b.

SER 1 Biodiversity		
CC07	*Temporary waterway crossings established for all crossings traversed by clearing equipment.*	No water crossings required.
CC08	*Untreated stormwater prevented from draining directly to waterways, wetlands or sensitive areas without erosion and sediment controls*	"storm water protection improved in recent times by creating a drainage sump at the top of Ramp 18 in the yard, installing wheel wash and installation of water treatment plant." Biodiversity Management Plan • Table 4: Aspects and impacts
CC09	*Clearing boundary is to be surveyed and verified against the project approval requirements prior to commencement of clearing*	"Clear site delineation in place." Biodiversity Management Plan • Table 5, 1 - "Marked boundaries will be cross-referenced to the approved impact area."
CC10	*Pathogen testing undertaken as required and pathogen controls implemented in accordance with industry best practice*	"No protected or sensitive area within project boundary." Biodiversity Management Plan • 5.3 - ""the spread of pathogens in vulnerable areas will be minimised by cleaning and disinfecting boots, personal items and all components of vehicles and equipment of soil and vegetation".
CC11	*Clearing boundary marked by a surveyor seven (7) days prior to the commencement of clearing and is clearly delineated with rope or flagging (as nominated in clearing methodology)*	Clear site delineation in place. See CC 09"
CC12	*Vehicles restricted to gazetted roads or approved haul roads to prevent damage to vegetation to be protected and retained*	Only approved routes permitted. Not entirely applicable to this site.
CC13	Signage and barricades (i.e. peg or mark limits) are in place for nominated areas where access is restricted or prohibited according to the environmental approvals and plans	Used as required. See TMP (4.11), CEMP and associated ECM's.

SER 1 Biodiversity		
CC14	Welding and other hot work undertaken in compliance with local laws, permit requirements and regulations (i.e. during bush fire danger periods)	Hot works permit used as required for various works.
CC15	Prior to mobilisation to site all vehicles and plant undergo a weeds and seeds check (or equivalent) to prevent the transportation of foreign seed or plant disease	Biodiversity Management Plan • Section 5.3 - Paragraph 4. • Table 7: Weed management procedure (row 2 and row 5).
CC16	Weed assessment completed prior to clearing activities and weed management program implemented for topsoil stockpiles and newly vegetated areas	As required- limited clearing Biodiversity Management Plan: • Table 5: Row 2 ""Weed infested areas will be identified and managed prior to clearing commencing"" • Section 5.3: Weed management. • Table 7: Weed management procedure.

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Carolyn Riley
Director Environment, Sustainability and Planning
Sydney Metro
Transport for NSW
PO Box K659
HAYMARKET NSW 1240

26 July 2022

Ref: CSMW BioMP R10

Dear Carolyn

RE: Sydney Metro City & Southwest- Central Station Main Works (CSMW) – Construction Biodiversity Management Plan Rev 10

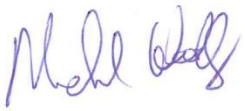
Thank you for providing the following document for Environmental Representative (ER) review as required by the Condition of Approval A24 (j) of the Sydney Metro City & Southwest project (SSI – 15_7400 January 9 2017).

- Sydney Metro City & Southwest- Central Station Main Works – Construction Biodiversity Management Plan, SMCSWSMC-LOR-SMC-EM-PLN-000005 Revision 10, dated June 2022 (the Plan).

The Plan was developed to address the Condition C3(b) of the Project Approval. Rev 10 is essentially the same document as Rev 9, with no real changes other than to the date of the document. The Plan was updated as part of an annual review of the document required under LOR systems.

As an approved ER for the Sydney Metro City & Southwest project, I have reviewed the revised document and consider the amendments minor and consistent with the terms of the Infrastructure Approval. On this basis the Construction Biodiversity Management Plan Rev 10 is approved in accordance with Condition A24(j).

Yours sincerely



Michael Woolley
Environmental Representative – Sydney Metro – City and South West