

Flora and Fauna Management Sub Plan




Project Name:	Sydney Metro West		
Client Name:	Sydney Metro		
Project Address:	Delta will demolish buildings across the following sites: 1. Parramatta 2. Clyde 3. Westmead		
Project Description/Scope:	Delta Pty Ltd (Delta) is responsible for the full structural demolition of existing structures including removal of all hazardous materials of the Sydney Metro West Demolition Project.		
Prepared By:	Name: [Redacted]	Signature: [Redacted] 	[Redacted]
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Reviewed By: (Project Manager)	Name: [Redacted]	Signature: [Redacted]	[Redacted]
Authorised By: (Project Director)	Name: [Redacted]	Signature: [Redacted]	[Redacted]

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1 AUTHORISATION AND CONTROL

1.1 Authorisation

This Plan is authorised by the Project Director. All project personnel are to ensure that their work activities and those of Project Consultants, Contractors and Suppliers are carried out in accordance with the requirements of this Plan.

1.2 Distribution

This Plan is a Controlled Document and must be distributed and revised under the guidance of the Project Manager. People who hold Controlled copies are responsible for maintaining their copies up to date.

1.3 Revision

The Project Director will monitor the implementation of this Plan and review the need for change or improvements having due regard to:

- Change in work scope, client comments etc.
- Internal and external audits
- Suggestions and comments from project personnel
- Incidence and frequency of non-conformance
- Necessity for corrective or preventative action
- Legal Update and Requirements
- Review by Delta Groups Management team
- Annual Review

All changes must be formally approved by the Project Director.

Changes to the recent revision will be highlighted.

The following table provides a record of amendments made to this document.

Rev	Date	Description	Page	Developed By	Approved By
b	23/08/2021	Issued for internal comment	All		
0	25/08/2021	Issued for comment and consultation	All		
1	01/10/2021	Issued for comment and consultation	All		
2	13/10/2021	Issued for comment and consultation	All		
3	19/10/2021	Issued for comment and consultation	All		
4	25/10/2021	Issued for comment and consultation	All		
5	2/11/2021	Issued for comment and consultation	All		
6	5/11/2021	Updated Consultation list	App. D		
7	2/12/2021	Update project description and weed management procedure	S. 3 & App. A		

Distribution Register			
Rev No.	Date of Issue	Name of Recipient	Position / Organisation
0	25/08/2021		Principals Representative / Sydney Metro
1	01/10/2021		Principals Representative / Sydney Metro
2	13/10/2021		Principals Representative / Sydney Metro
3	19/10/2021		Principals Representative / Sydney Metro
4	25/10/2021		Principals Representative / Sydney Metro
5	2/11/2021		Principals Representative / Sydney Metro
6	5/11/2021		Principals Representative / Sydney Metro
7	2/12/2021		Principals Representative / Sydney Metro

2 INTRODUCTION

2.1 Purpose

This Flora and Fauna Management Sub Plan (FFMSP) has been prepared by Delta Pty Ltd. (Delta) to comply with the requirements of Section 10 of the Sydney Metro Construction Environmental Management Framework (CEMF) and the Minister for Planning, Industry and Environment's Conditions of Approval (MCoA) SSI 10038 for the demolition phase of the Sydney Metro West Project, including;

- Sydney Metro West – Westmead to The Bays and Sydney CBD Environmental Impact Statement dated 15 April 2020;
- Sydney Metro West – Westmead to The Bays and Sydney CBD Submissions Report dated 20 November 2020; and
- Sydney Metro West – Westmead to The Bays and Sydney CBD Amendment Report dated 20 November 2020.
- Sydney Metro West – Westmead to The Bays and Sydney CBD Modification Request Letter dated 21 June 2021. Minister's Conditions of Approval (SSI 10038) for the demolition phase of the Sydney Metro West Project.

Delta has been engaged to carry out the demolition of buildings as described in Section 2.3. The demolition of these buildings and structures is defined in this FFMSP as "the Project".

The objectives of the FFMSP include;

- Minimising impacts on flora and fauna;
- Retaining and enhancing existing flora and fauna habitat wherever possible.
- Appropriately managing the spread of weeds and plant pathogens throughout the works.

This FFMSP provides specific management measures to ensure that Delta's demolition works are carried out so as to manage flora and fauna aspects of the Project in a responsible and sensitive manner.

Implementing the FFMSP effectively will ensure that the Project meets regulatory and contract requirements in a systematic manner and continually improves its performance.

2.2 Scope of the FFMSP

This FFMSP addresses flora and fauna management associated with the Project. It covers all areas where physical works will occur and is applicable over the full duration of the Project. The Project must be carried out generally in accordance with the MCoAs A1 and A2 of the SSI 10038 approval for the demolition phase of the Sydney Metro West Project

All Delta staff and subcontractors are required to comply fully with the requirements of this FFMSP.

The plan forms part of the project management documentation that has been prepared in accordance with the requirements of the Contract. The Project will be guided by Delta's Integrated Management System (IMS). Delta's IMS is certified as meeting the requirements of:

- AS45001 Occupational Health and Safety Management Systems;
- ISO14001 Environmental management; and
- ISO9001 Quality Management Systems.

3 Project Description

3.1 Overall

The Sydney Metro West project is a new 24-kilometre metro line with stations confirmed at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street in the Sydney CBD (see **Figure 1**).

In order to enable the next phase of the overall Sydney Metro West Project, the Principal requires the demolition of all structures, and clearance of all vegetation (with the exception of riparian vegetation at Clyde) within three sites located in Clyde, Parramatta and Westmead. **Figures 2, 3 & 4** show each of the sites and specific buildings to be demolished.

Delta will be delivering the Parramatta, Clyde, and Westmead Enabling Works package (Phase C1), and the archaeological testing at Parramatta and Clyde (Phase C2). This package of works is generally broken down into the following stages including; site establishment works, service disconnections and relocations, hazardous materials (HAZMAT) removal, internal strip-out of structures, demolition of existing structures and site clearing. These stages of

works will apply to each of the sites. The archaeological testing at Parramatta and Clyde (Phase C2) will be staged as the study areas become available.

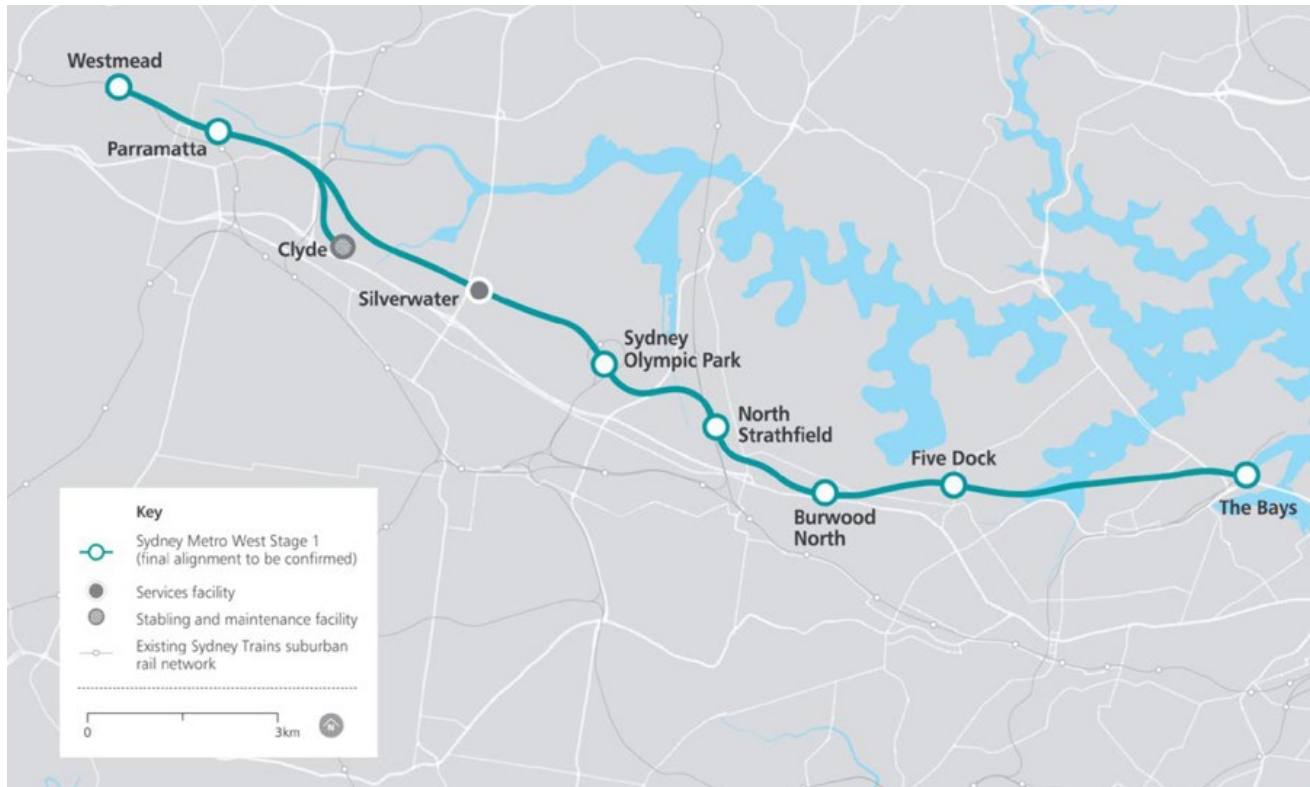


Figure 1 Sydney Metro West project

Source: Sydney Metro

3.2 Site establishment works (Phase C1)

Site establishment works are required to facilitate the overall works and are generally considered to be relatively low impact works. These activities will generally be undertaken in accordance with the Sydney Metro West Low Impact Works approval pathway in accordance with MCoA A21 or under an approved Site Establishment Management Plan (SEMP) in accordance with MCoA A19. Any SEMP must be submitted to the Planning Secretary for approval one (1) month before the establishment of any ancillary facilities. Once the CEMP and relevant Sub Plans approved, any outstanding site establishment works will be managed in accordance with the project CEMP and relevant sub plans.

Site establishment works will generally include:

- Initial site investigations (e.g., specialist consultant inspections or surveys);
- Establishing perimeter security (e.g., installation of hoarding, fencing and boundary screening);
- Establishing environmental controls (e.g., erosion and sediment controls, and bat roosting boxes (if required));
- Salvaging any potential items identified by the Principal that may have heritage value; and
- Installation of site amenities and associated infrastructure (e.g., site sheds).

Note that in accordance with MCoA 21, the use of an ancillary facility for construction must not commence until the CEMP required by Condition C1 of this schedule, relevant CEMP Sub-plans required by Condition C5 of this schedule and relevant Construction Monitoring Programs required by Condition C14 of this schedule have been approved by the Planning Secretary or endorsed by the ER (whichever is applicable). Also noting that the requirement of Condition 21 does not apply to Condition A21 of this schedule or where the use of an ancillary facility is Low Impact Work or for Low Impact Work. In addition, Delta will be undertaking the Parramatta and Clyde archaeological investigative works (Phase C2).

3.3 Service disconnections and relocations (Phase C1)

Each site has a number of services that require disconnection and/or relocation in order to facilitate the safe demolition of structures and future phases of work on the site. Access to all utilities and properties will be maintained during works, unless otherwise agreed with the relevant utility owner, landowner or occupier. Service disconnection and/or relocation includes:

Service disconnection generally includes:

- Service location, generally using non-destructive techniques where appropriate;
- Accessing services via existing structures or via targeted excavation;
- Disconnecting relevant service in accordance with relevant requirements and approvals;

Relocating services generally includes:

- Service location, generally using non-destructive techniques where appropriate;
- Installing services via existing structures or via targeted excavation; and
- Connecting relevant service in accordance with relevant requirements and approvals;

3.4 Hazardous materials (HAZMAT) removal (Phase C1)

Due to the age of various structures to be demolished, there are number of sites that have been identified to contain hazardous materials such as asbestos, lead paint and dust. This material identified through target surveys and will be safely removed by appropriately licensed removalists prior to undertaking the strip-out or demolition.

Hazardous materials removal works will generally include:

- Accessing the site;
- Establishing appropriate controls and exclusion zones for the hazard;
- Licensed removalist will use relevant tools to safely undertake the strip-out;
- Waste is managed and disposed to an appropriately licensed facility; and
- Validation of removal works by an appropriately qualified professional (e.g., Licensed Asbestos Assessor)

3.5 Internal strip-out of structures (Phase C1)

To allow safe structural demolition, Delta will perform an internal strip-out of internal materials. This would include items such as; office furniture and internal fixtures and linings.

Internal strip-out works will generally include:

- Accessing the site;
- Using appropriate tools and machinery to remove items;
- Managing waste and recycling; and
- Making safe for the final demolition work.

3.6 Demolition of existing structures and site clearing (Phase C1)

Delta has been engaged to undertake the demolition of all structures within the nominated sites down to slab level. Structural demolition works will generally include:

- Use of mechanical demolition methods e.g. Using Excavators with hydraulic attachments to demolish buildings.
 - Demolition will predominantly by completed top-down methodologies;
 - Mechanical demolition will be used either working from the slab on ground reaching up to the height of structure; or
 - Mechanical demolition with excavators working on top of the structure progressively demolishing level by level.
- Managing waste and recycling; and
- Making safe for handover.
- Using appropriate tools and machinery to demolish items;
- Managing waste and recycling; and
- Making safe for handover.

External site clearing of vegetation will be undertaken during demolition and/or concurrently with other stages of the works. Site clearing will generally include:

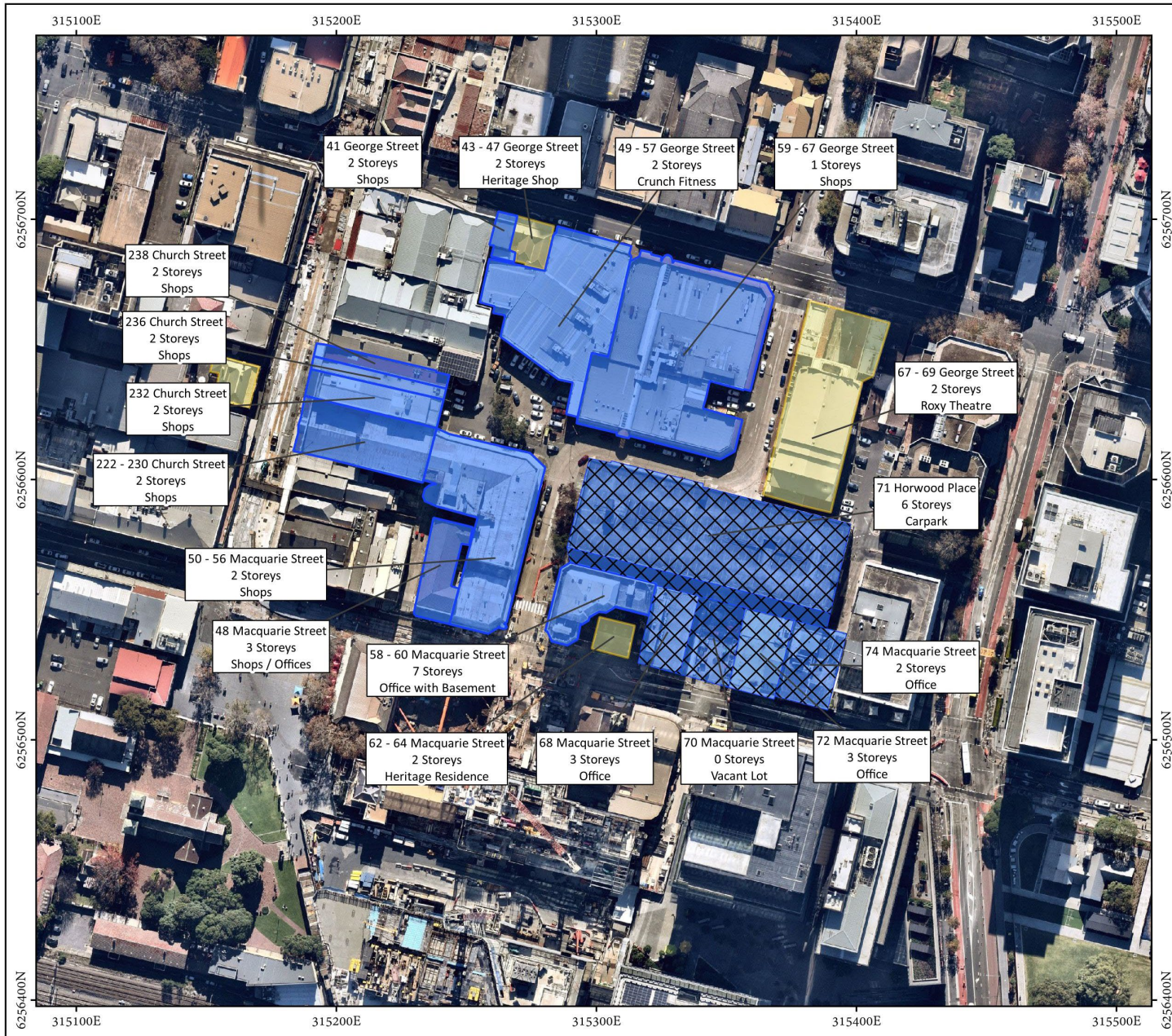
- Use of available machinery to remove vegetation;
- Use of an arborist to remove trees where there is a safety or ecological requirement (e.g., where there is potential to damage neighbouring buildings or structures to be retained or where an ecologist has noted it is as a requirement);
- Manage the waste; and
- Pre and Post Clearing inspections and reporting.

3.7 Archaeological test excavation and related investigations (Phase C2)

Archaeological test excavation and related investigations are required at the Parramatta and Clyde sites as identified in the Aboriginal Cultural Heritage Assessment Report of the EIS Stage 1. Delta will facilitate the excavation and spoil management requirements of the archaeological investigation. The archaeological investigation works will be undertaken by a Heritage specialist in accordance with the Archaeological Research Design and Excavation Methodology (ARDEM) 2021 and AHR 2021.

The investigation works will generally include:

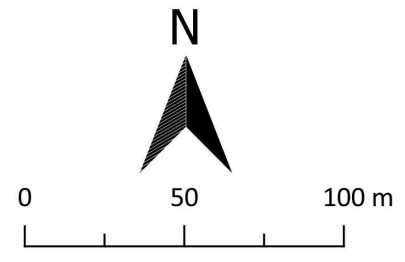
- Test excavation;
- Salvage excavation;
- Archaeological monitoring if localised or shallow excavations are proposed in areas of potential and are not expected to impact significant archaeology; and
- Review for opportunities for conservation/relocation/interpretation of state significant archaeology to salvage.



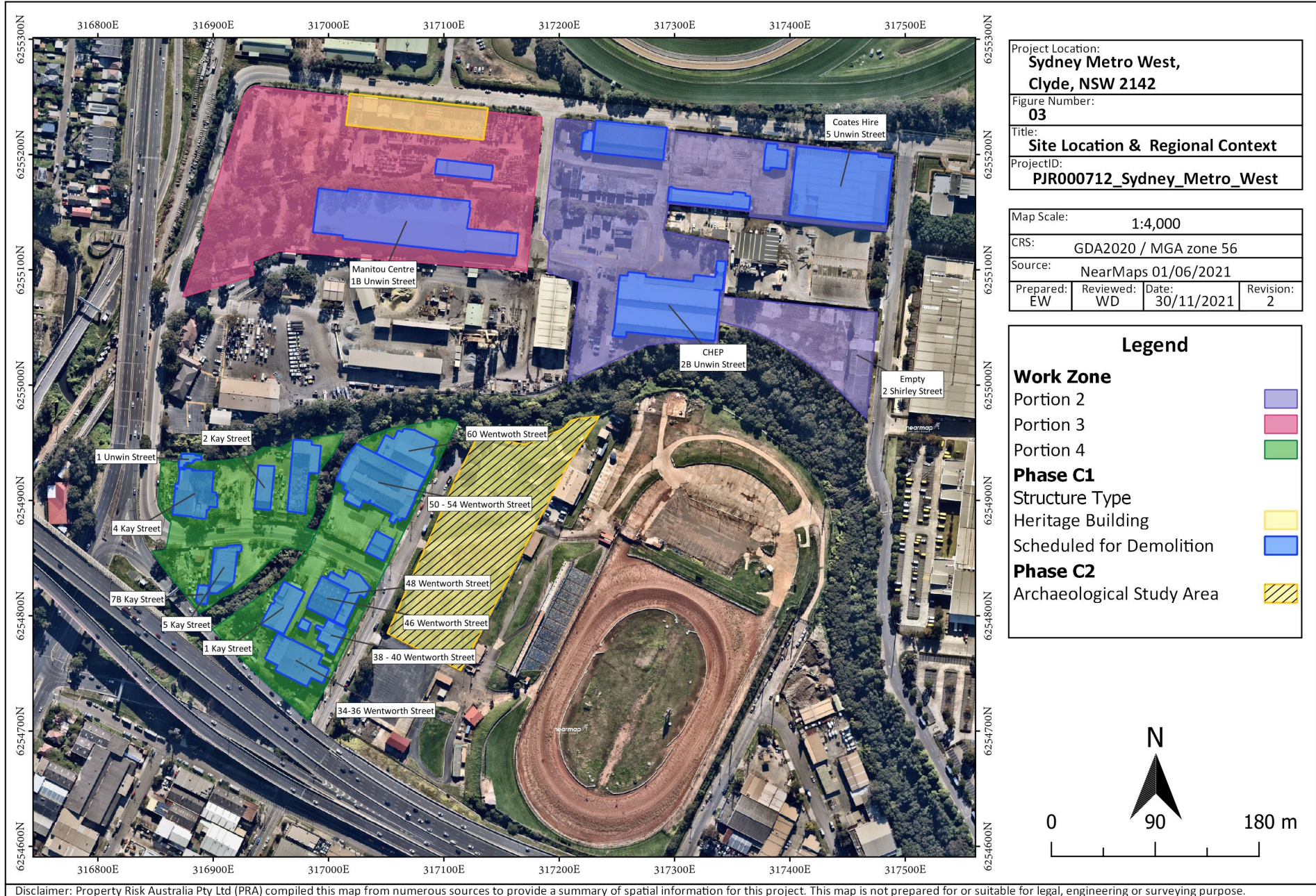
Project Location:	Sydney Metro West Parramatta, NSW 2150
Figure Number:	02
Title:	Sydney Metro West
Project ID:	PRJ000712_Sydney_Metro_West
Client Name:	Delta Group
Project Description:	CEMP

Map Scale:	1:2,100		
CRS:	GDA2020 / MGA zone 56		
Source:	Source: Nearmaps 05/06/2021		
Prepared:	Reviewed:	Date:	Revision:
EW	WD	30/11/2021	2

Legend	
Phase C1	
Structure Type	
Heritage Building	
Scheduled for Demolition (Phase C1)	
Phase C2	
Structure Type	
Archaeological Survey (Phase C2)	



Disclaimer: Property Risk Australia Pty Ltd (PRA) compiled this map from numerous sources to provide a summary of spatial information for this project. This map is not prepared for or suitable for legal, engineering or surveying purpose.



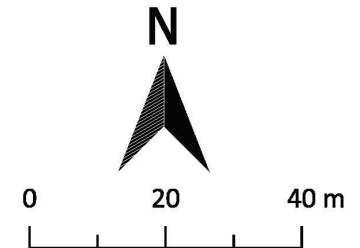
Disclaimer: Property Risk Australia Pty Ltd (PRA) compiled this map from numerous sources to provide a summary of spatial information for this project. This map is not prepared for or suitable for legal, engineering or surveying purpose.



Project Location:	Sydney Metro West Westmead, NSW 2145
Figure Number:	04
Title:	Sydney Metro West
Project ID:	PRJ000712_Sydney_Metro_West
Client Name:	Delta Group
Project Description:	CEMP - Westmead

Map Scale:	1:1,000	
CRS:	GDA2020 / MGA zone 56	
Source:	Source: Nearmaps 05/06/2021	
Prepared:	Reviewed:	Date:
EW	WD	17/08/2021

Legend	
Structure Type	
Scheduled for Demolition	



Disclaimer: Property Risk Australia Pty Ltd (PRA) compiled this map from numerous sources to provide a summary of spatial information for this project. This map is not prepared for or suitable for legal, engineering or surveying purpose.

4 Policy and Objectives

Delta is committed to minimising the environmental impacts associated with its operations. In relation to flora and fauna management, the Environmental Policy outlines that Delta will strive to prevent pollution, look for better ways to do things, and get it “Right First Time”.

A copy of Delta’s latest Environment Policy is found in Appendix B.

5 LEGAL AND OTHER REQUIREMENTS

5.1 Legislation

The key NSW environmental legislative requirement applicable to the flora and fauna include:

- *Environmental Planning and Assessment Act 1979* (NSW)
- *Biodiversity Conservation Act 2016* (NSW)
- *Biosecurity Act 2015* (NSW)
- *Fisheries Management Act 1994* (NSW)
- *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)

Delta regularly reviews its legislative requirements in accordance with its Integrated Management System (IMS).

5.2 Guidelines and Other Documents

Guidelines, specifications, and policies relevant to flora and fauna include:

- Greater Sydney Regional Strategic Weed Management Plan (NSW Local Land Services 2019)
- NSW WeedWise

5.3 Minister’s Conditions of Approval and Revised Environmental Mitigation Measures

The MCoAs relevant to the FFMSPP are identified in **Table 1**. A reference is included to indicate where and how the MCoA is addressed in this FFMSPP or other project management documents.

Table 1 Relevant MCoAs

MCoA	Detail	Where addressed
C-B8	As many mature trees as practicable must be retained. In addition, within ten (10) years of the date of this approval or no later than the commencement of operation of the CSSI (whichever is earlier) there must be a net increase in the number of mature trees provided at a ratio of 2:1.	Section 11.1
C5(b)	Flora and fauna Sub-plan; consult with DPIE EES, DPI Fisheries, SOPA (in respect of Sydney Olympic Park) and Relevant Council(s)	Section 9
C6	The CEMP Sub-plans must state how:	This Plan
	(a) the environmental performance outcomes identified in the documents listed in Condition A1 of this schedule will be achieved;	In relation to “No net loss of tree numbers and tree canopy” refer to Section 6 and Appendix A
	(b) the mitigation measures identified in the documents listed in Condition A1 of this schedule will be implemented;	Table 3
	(c) the relevant conditions of this approval will be complied with; and	Table 1
	(d) issues requiring management during construction (including cumulative impacts), as identified through ongoing environmental risk analysis, will be managed through SMART principles.	Refer to Section 6.1 of the CEMP
C7	With the exception of any CEMP Sub-plans expressly nominated by the Planning Secretary to be endorsed by the ER, all CEMP Sub-plans must be submitted to the Planning Secretary for approval.	Section 9

MCoA	Detail	Where addressed								
C8	The CEMP Sub-plans not requiring the Planning Secretary's approval must obtain the endorsement of the ER as being in accordance with the conditions of approval and all relevant undertakings made in the documents listed in Condition A1 of this schedule. Any of these CEMP Sub-plans must be submitted to the ER with, or subsequent to, the submission of the CEMP but in any event, no later than one (1) month before construction or where construction is phased no later than one (1) month before the commencement of that phase.	Section 9								
C9	Any of the CEMP Sub-plans to be approved by the Planning Secretary must be submitted to the Planning Secretary with, or subsequent to, the submission of the CEMP but in any event, no later than one (1) month before construction or where construction is phased no later than one (1) month before the commencement of that phase.	This Plan is to be endorsed by the ER								
C11	In addition to the relevant requirements of the CEMF, the Flora and fauna CEMP Sub-plan must include, but not be limited to:	This Plan								
	(a) site specific mitigation measures to manage impacts (including proposed techniques, timing, frequency and responsibility of implementing);	Section 7 and Appendix A								
	(b) measures to minimise disturbance to habitat associated with <i>Myotis macropus</i> / Southern Myotis, including demolition inspections by a suitably qualified ecologist of any vegetation to be cleared and any buildings or structures identified as potential roosting habitat for microbats that are to be demolished or refurbished;	Section 7 and Appendix A								
	(c) measures to minimise and mitigate disturbance to mangrove forests at the Clyde Maintenance and Stabling construction site to the extent necessary; and	Section 7 and Appendix A								
	(d) details for undertaking and mitigating vegetation clearance through improved environmental outcomes.	Section 7 and Appendix A								
D2	The clearing of native vegetation must be minimised to the greatest extent practicable with the objective of reducing impacts to threatened ecological communities and threatened species habitat.	Section 7 and Appendix A								
D3	Impacts to plant community types must not exceed those identified in the documents listed in Condition A1 of this schedule, unless otherwise approved by the Planning Secretary. In requesting the Planning Secretary's approval, an assessment of the additional impact(s) to plant community types and an updated ecosystem and / or species credit requirement under Condition D4 below, if required, must be provided.	Section 7 and Appendix A								
D4	Before any vegetation clearing or tree removal that must be offset, credits specified in Table 3 below must be purchased and retired. The retirement of credits must be carried out in accordance with the offset rules of the BC Act.	Section 11.1 (note Delta to supply required information to Sydney Metro. Sydney Metro to purchase and retire offset credits)								
	<table border="1" data-bbox="370 1758 1125 2065"> <thead> <tr> <th data-bbox="370 1758 901 1825">Credit Type</th> <th data-bbox="901 1758 1125 1825">Number of Credits</th> </tr> </thead> <tbody> <tr> <td data-bbox="370 1825 901 1892">Ecosystem Credits</td> <td data-bbox="901 1825 1125 1892"></td> </tr> <tr> <td data-bbox="370 1892 901 2004">Mangrove Forests in estuaries of the Sydney Basin Bioregion and South East Corner Bioregion (Plant Community Type 920) - Poor</td> <td data-bbox="901 1892 1125 2004">3</td> </tr> <tr> <td data-bbox="370 2004 901 2065">Species Credits for Threatened Species</td> <td data-bbox="901 2004 1125 2065"></td> </tr> </tbody> </table>		Credit Type	Number of Credits	Ecosystem Credits		Mangrove Forests in estuaries of the Sydney Basin Bioregion and South East Corner Bioregion (Plant Community Type 920) - Poor	3	Species Credits for Threatened Species	
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	Ecosystem Credits									
Mangrove Forests in estuaries of the Sydney Basin Bioregion and South East Corner Bioregion (Plant Community Type 920) - Poor	3									
Species Credits for Threatened Species										

MCoA	Detail		Where addressed
	<i>Myotis macropus</i> / Southern Myotis (Fauna)	3	
D7	Before the removal or clearing of any vegetation, or the demolition of structures identified as potential roosting sites for microbats at the Clyde Stabling and Maintenance Facility site commences, pre-clearing / demolition inspections for the threatened species must be undertaken. The inspections, and any subsequent relocation of fauna and associated management / offset measures, must be undertaken under the guidance of a suitably qualified and experienced ecologist. Survey and relocation methodologies and management / offset measures must be included in the Flora and fauna CEMP Sub-plan required under Condition C5 of this schedule or the relevant Site Establishment Management Plan required by Condition A17 of this schedule.		Section 7 and Appendix A
D8	In the event roosting sites have been identified under Condition D7 above, bat boxes must be provided, or suitable habitat built within the Clyde Stabling and Maintenance Facility site.		Section 7 and Appendix A
D9	As many mature trees and as much urban canopy as practicable must be retained during construction. Canopy trimming should be considered where practicable prior to any mature tree removal.		Section 7 and Appendix A

5.4 Sydney Metro Requirements

Delta's specific environmental requirements associated with the early works package being undertaken on behalf of Sydney Metro (the Principal) are provided in the relevant contract documents. The contract provides a clear allocation or environmental requirements, which mirrors the requirements set out in the Sydney Metro Phasing Report.

Sydney Metro requirements for flora and fauna are provided within the amended Construction Environmental Management Framework (CEMF) and revised in the Phasing Report. The relevant requirements addressed by this FFMS are found in **Table 2** and **Table 3** below.

Table 2 Relevant Sydney Metro Requirements

Section	Relevant requirement	Where addressed
CEMF 10.2 (a)	Principal Contractors will develop and implement a Flora and Fauna Management Plan which will include as a minimum:	This Plan
	i. The ecological mitigation measures as detailed in the environmental approval documentation;	Table 1
	ii. The responsibilities of key project personnel with respect to the implementation of the plan;	Section 6
	iii. Procedures for the clearing of vegetation and the relocation of flora and fauna;	Appendix A – Works Procedure Sections 5.1, 6.3, 6.4 & 6.5
	iv. Details on the locations, monitoring program and use of nest boxes by fauna;	Appendix A – Works Procedure Section 5.3
	v. Procedures for the demarcation and protection of retained vegetation, including all vegetation outside and adjacent to the construction footprint;	Appendix A – Works Procedure Section 6.1
	vi. 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;	Section 7 and Appendix A
	vii. Vegetation management plan(s) for sites where native vegetation is proposed to be retained;	No native vegetation to be retained
	viii. Identification of measures to reduce disturbance to sensitive fauna;	Section 7 and Appendix A
	ix. Rehabilitation details, including identification of flora species and sources, and measures for the management and maintenance of rehabilitated areas (including duration of the implementation of such measures);	Rehabilitation is outside Delta's scope.
x. Weed management measures focusing on early identification of invasive weeds and effective management controls;	Section 7 and Appendix A	

Section	Relevant requirement	Where addressed
	xi. 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 relocation measures) and updating of ecological monitoring or off-set requirements;	Section 7 and Appendix A
	xii. Details on the methodology for vegetation mapping and survey;	Section 7 and Appendix A
	xiii. Ecological monitoring requirements; and	Section 11.1 and Appendix A
	xiv. Compliance record generation and management.	Section 12.1 and Appendix A
10.2 (b)	Principal Contractors would undertake the following ecological monitoring as a minimum:	Sections 7, 11 and Appendix A
	i. A pre-clearing inspection will be undertaken prior to any native vegetation clearing by a suitable qualified ecologist and the Contractor's Environmental Manager (or delegate). The pre-clearing inspection will include, as a minimum: <ul style="list-style-type: none"> a. Identification of hollow bearing trees or other habitat features; b. Identification of any threatened flora and fauna; c. A check on the physical demarcation of the limit of clearing; d. An approved erosion and sediment control plan for the worksite; and e. The completion of any other pre-clearing requirements required by project approvals, permits or licenses 	Sections 7, 11 and Appendix A
	ii. The completion of the pre-clearing inspection will form a Hold Point requiring sign-off from the Contractor's Environmental Manager (or delegate) and a qualified ecologist; and	Sections 7, 11 and Appendix A and Appendix C
	iii. A post clearance report, including any relevant Geographical Information System files, will be produced that validates the type and area of vegetation cleared including confirmation of the number of hollows impacted and the corresponding nest box requirements to offset these impacts	Sections 7, 11 and Appendix A
10.2(c)	The Principal Contractor's regular inspections will include a check on the ecological mitigation measures and project boundary fencing	Section 11
10.2(d)	The following compliance records would be kept by the Principal Contractor: <ul style="list-style-type: none"> i. Records of pre-clearing inspections undertaken; ii. Records of the release of the pre-clearing hold point; and iii. Records of ecological inspections undertaken. 	Sections 7, 11, 12 and Appendix A and Appendix C

Table 3 Relevant Revised Environmental Mitigation Measures (REMM)

REMM B1	During construction, sufficient flow and fish passage would be maintained similar to current conditions during in-stream works where feasible and reasonable.	Section 7 and Appendix A
REMM LV11	Opportunities for the retention and protection of existing street trees and trees within the site would be identified during detailed construction planning.	Section 7 and Appendix A
REMM LV12	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.	Section 7 and Appendix A
REMM LV13	Trees removed by Stage 1 would be replaced to achieve no net loss to tree numbers and/or canopy in proximity to the site as a minimum in the long term (and part of future stages of Metro West).	Sections 7, 11.1 (note Delta to supply required information to Sydney Metro. Sydney Metro to purchase and retire offset credits)
REMM LV14	Opportunities would be investigated with the relevant local council to provide plantings in proximity to the impacted areas prior to construction commencing where feasible and reasonable.	Providing plantings to relevant local council is outside Delta's scope.

6 ROLES AND RESPONSIBILITIES

Table 3 provides the key roles and responsibilities under the FFMSP.

Table 3 Key Roles and Responsibilities

Project Role	Responsibilities
Project Director	<ul style="list-style-type: none"> • Primary contact with the Principal's Representative on all aspects of the Project. • Approve and ensure implementation of this FFMSP. • Approve monthly reports and issue to the Principal.
Project Manager	<ul style="list-style-type: none"> • Implement the FFMSP. • Lead by example. • Immediately notify the Principal Representative in the event of an unexpected find. • Identify flora and fauna management opportunities and support those identified by others. • Organise on-site personnel with regard to their responsibilities within the FFMSP. • Carry out periodic audits of the incident response process. • Manage non-conformances and initiate corrective action as required. • Review reports and follow up on recommendations. • Release vegetation hold points as required.
Demolition Site Manager	<ul style="list-style-type: none"> • Implement the FFMSP. • Lead by example. • Immediately shut down the works in the event of an unexpected find. • In the absence of the Project Manager, immediately notify the Principal Representative in the event of an unexpected find • Provide advice and assistance on the FFMSP to employees. • Identify flora and fauna management opportunities and support those identified by others. • Ensure environmental controls are installed, including environmental exclusion barriers. • Decide when training is required. • Undertaking inspection of the contracted or planned works to ensure that FFMSP measures are implemented and effective. • Carry out weekly toolbox talks. • Manage the Site Folder and ensure all FFMSP requirements are compiled.
Environment and Sustainability Manager	<ul style="list-style-type: none"> • Maintain the FFMSP. • Update the FFMSP as required. • Lead by example. • Ensure relevant information from the FFMSP is incorporated into project inductions. • Release pre-clearance vegetation hold points as required. • Prepare monthly reports and submit to the Project Director. • Identify flora and fauna management opportunities and support those identified by others. • Communicate the requirements of the FFMSP and ensure these are addressed. • Ensure subcontractor documentation captures the requirements of the FFMSP. • Conduct audits and inspections of the site. • Participate in Principal-led site audits. • Attend toolbox meetings and inductions. • Ensure that flora and fauna management defects are identified, actioned and closed out. • Attend on-site meetings to ensure flora and fauna is raised for review. • Liaise with the Principal, ER, Independent Auditor or Regulator on matters of Flora and Fauna where required.
Project Ecologist (suitably qualified)	<p>Pre-work:</p> <ul style="list-style-type: none"> • Review FFMSP; • Pre-clearance tree survey and report; and • Implementing Southern Myotis procedures. • Release pre-clearance vegetation hold points as required.

Project Role	Responsibilities
	<p>During work:</p> <ul style="list-style-type: none"> • Assist in unexpected finds of flora and fauna management as requested. • Undertake agreed monitoring. <p>Post-work:</p> <ul style="list-style-type: none"> • Post-clearance survey and reporting.
<p>Environmental Representative</p>	<p>For the duration of the work or as agreed with the Planning Secretary, the approved ER must:</p> <p>(a) receive and respond to communication from the Planning Secretary in relation to the environmental performance of Stage 1 of the CSSI;</p> <p>(b) consider and inform the Planning Secretary on matters specified in the conditions of this approval;</p> <p>(c) consider and recommend to the Proponent any improvements that may be made to work practices to avoid or minimise adverse impact to the environment and to the community;</p> <p>(d) review documents identified in Conditions A10, A17, A19, C1, C5 and C14 of this schedule and any other documents that are identified by the Planning Secretary, to ensure they are consistent with requirements in or under this approval and if so: (i) endorse the documents before submission of such documents to the Planning Secretary (if those documents are required to be approved by the Planning Secretary); or</p> <p>(ii) endorse the documents before the implementation of such documents (if those documents are only required to be submitted to the Planning Secretary / Department for information or are not required to be submitted to the Planning Secretary / Department);</p> <p>(e) for documents that are required to be submitted to the Planning Secretary / Department for information under (d)(ii) above, the documents must be submitted as soon as practicable to the Planning Secretary / Department after endorsement by the ER, unless otherwise agreed by the Planning Secretary;</p> <p>(f) regularly monitor the implementation of the documents listed in Conditions A10, A17, A19, C1, C5 and C14 of this schedule to ensure implementation is being carried out in accordance with the document and the conditions of this approval;</p> <p>(g) as may be requested by the Planning Secretary, help plan or attend audits of the development commissioned by the Department including scoping audits, programming audits, briefings and site visits, but not independent environmental audits required under Condition A39 of this schedule;</p> <p>(h) as may be requested by the Planning Secretary, assist in the resolution of community complaints received directly by the Department;</p> <p>(i) consider or assess the impacts of minor ancillary facilities comprising lunch sheds, office sheds and portable toilet facilities as required by Condition A21 of this schedule; and</p> <p>(j) consider any minor amendments to be made to the Site Establishment Management Plan, CEMP, CEMP Sub-plans and construction monitoring programs without increasing impacts to nearby sensitive receivers, and are consistent with the conditions of this approval and the Site Establishment Management Plan, CEMP, CEMP Sub-plans and construction monitoring programs approved by the Planning Secretary and, if satisfied such amendment is necessary, approve the amendment. This does not include any modifications to the conditions of this approval;</p> <p>(k) prepare and submit to the Planning Secretary and other relevant regulatory agencies, for information, an Environmental Representative Monthly Report providing the information set out in the Environmental Representative Protocol under the heading “Environmental Representative Monthly Reports”. The Environmental Representative Monthly Report must be submitted within seven (7) days following the</p>

Project Role	Responsibilities
	<p>end of each month for the duration of the ER’s engagement for Stage 1 of the CSSI, or as otherwise agreed by the Planning Secretary; and</p> <p>(l) assess the impacts of activities as required by the Low Impact Work definition.</p> <p>With respect to (d) above, the ER is not required to endorse the specialist content in documents requiring specialist review and / or endorsement.</p> <p>The Environmental Representative will interface with the Environment and Sustainability Manager or delegate during ER site inspections and in addressing ER correspondence or enquiries. The Environment and Sustainability Manager will seek the endorsement of the ER for management plans, consistency assessments, and minor amendments to be made to the CEMP and its Sub Plans.</p> <p>Note: The ER has been nominated by Sydney Metro and approved by DPIE in accordance with MCoA A27.</p>

7 FLORA AND FAUNA MANAGEMENT

In order to manage flora and fauna Delta have engaged Lodge Environmental to prepare a robust Flora and Fauna Works Procedure. The detailed Works Procedure is found in **Appendix A**.

The Works Procedure details

- The existing environment in relation to flora and fauna;
- General safeguards;
- Microbat specific safeguards;
- Weed management
- Management of unexpected finds; and
- Monitoring and reporting.

8 Environmental Incidents

An incident is defined in the Planning Approval as, an occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance with the conditions of this approval. The Sydney Metro Environmental Incident and Non-compliance Reporting Procedure (SM-00000096) further defines an incident related to Flora and Fauna to cover vegetation and vegetation communities as well as animals and animal habitat. It is described as any event where vegetation is felled or damaged, animals are killed or injured, or habitat is harmed or destroyed is covered. In relation to Delta’s works, this is extended to events where appropriate approvals or hold points have not been granted or completed prior to impacts to flora and fauna.

Where any environmental incident has been identified, Delta will follow the incident processes as described in the Project CEMP.

9 Consultation

The FFMSPP has been provided to relevant stakeholders in accordance with MCoA C5(b); including the relevant Local Council (Parramatta City Council and Cumberland City Council), Department of Primary Industries Fisheries and the Department of Environment Planning, Industry and Environment (DPIE) Environment, Energy and Science Group (EES). Evidence of consultation associated with the FFMSPP is found in **Appendix D**.

In accordance MCoA C8 and with the Phasing Report, this Plan will submitted to the Environmental Representative no later than one (1) month before the commencement of that works and will be endorsed by the prior to commencing works (other than works under an approved Site Establishment Management Plan or Low Impact Works).

Final endorsement of the Flora and Fauna Management Sub-Plan by the Environmental Representative is found in **Appendix E**.

10 TRAINING

IMS Procedure 03 Competency, Induction and Training requires that all persons (permanent and temporary employees and contractors) who undertake work on a Delta Group site must as a minimum hold a current:

- Generic Construction Industry OHS Induction;
- Delta Group induction;
- Client induction (as required);
- SWMS, toolbox, and SOP inductions;
- Site Management Plan/s induction; and
- Site specific inductions.

10.1.1 Site inductions

Site Inductions will be conducted by the Work Health and Safety Manager, Site Manager, or designated person. Workers, including Delta employees, contractors, sub-contractors, and suppliers, must undergo Site Induction training and be deemed competent prior to being given approval to access Delta's Project sites.

Visitors and consultants, who are to be escorted at all times, and workers who will not undertake work outside the Site Office area will not need to undergo the Site Induction.

Site Induction training will inform all site personnel about their requirements and responsibilities for environmental management under the FFMSP.

10.1.2 Management Plan Training

Management Plan training will be carried out prior to personnel commencing work on the Project. Management Plan training will include the provisions of the Delta FFMSP.

Refresher training will be carried out after six months following commencement of the Project, and as required, when site inspections, audits, task observations and the like uncover work practices not in accordance with the Plan.

10.1.3 Toolbox Talks

Toolbox talks will be conducted weekly as a minimum, and will be used to present the status of safety and environmental performance, incidents, safety and security alerts, lessons learnt, bulletins, messages, etc.

The Environment and Sustainability Manager will periodically participate in the weekly toolbox talks to emphasise aspects of environmental management or to provide updates when there are changes to legislation, work methods, or scope. Following any flora and fauna related incident, the Environment and Sustainability Manager will provide an incident-specific toolbox lesson for all site personnel.

Delta's IMS Form 054 Toolbox Meeting will be used to record all toolbox talks.

11 MONITORING AND INSPECTION

11.1 Ecological Monitoring

Ecological monitoring is detailed in the Works Procedure found in Appendix A, which includes:

- A pre-clearance inspection
- Ongoing monitoring of nesting boxes (if required)
- Onsite monitoring of fauna removal (if required); and
- A post clearance report.

Prior to commencing demolition or clearance of vegetation at each site, Delta will complete the Flora and Fauna Pre-Clearance/Demolition Inspection Test Plan / Checklist (ITP002) found in **Appendix C**. This will be signed-off by the Environment & Sustainability Manager or Project Manager, and relevant specialist (e.g., Project Ecologist and/or Arborist).

The pre and post clearance reports related to tree clearing and microbats will be provided to the Principal in order for them to meet their offset requirements under MCoA C-B8 and D4.

11.2 Routine Site Inspections

In addition to the specific ecological monitoring in the detailed Works Procedure in Appendix A, Delta will carry out ongoing surveillance of protection measures, including checking of mitigation measures, in accordance with Procedure 24 Inspection, Monitoring and Measurement. Regular site inspections are carried out by the Site Manager and recorded on SEF 049 Site Inspection Report.

Site inspections cover the whole of the works, including the site perimeter, and assess progress, risk, opportunities, and quality, safety, and environmental aspects of the Project. Daily Pre-start inspections are carried out by the Site Manager and recorded on Safety and Environmental Form SEF 047 Site Diary - Daily pre-start.

Periodic inspections by Delta’s Environmental and Sustainability Manager (or delegate) will be carried out to verify the adequacy of all environmental measures. This will be documented in SEF 049 Site Inspection Report.

Delta will participate in any Principal, ER and/or Regulator required site inspection.

A timetable of site inspections is provided in **Table 5** below.

Table 5 Site Inspection Timetable

Inspection	Frequency	Content
Daily Pre-start	Daily	Safety, environment, quality
Site Inspection	Weekly	Safety, environment
Environmental Inspection	Weekly	Environment
Principal, ER and/or Regulator	As required/requested	Environment

12 RECORDS AND REPORTING

12.1 Compliance Records

Delta will retain copies of all compliance records generated for flora and fauna management and monitoring. These records will include:

- Records of pre-clearing inspections undertaken;
- Records of the release of the pre-clearing hold point (ITP002);
- Records of ecological inspections undertaken;
- Eviction reports of the Southern Myotis (if required);
- Post-clearing reports; and
- Unexpected finds related to flora and fauna.

12.2 Reporting

12.2.1 Environmental Incident/Non-Compliance Report

Incident or non-compliance reports will be managed in accordance with the processes as described in the Project CEMP.

12.2.2 Monthly Report

Delta will prepare and submit a monthly Progress Report which meets the requirements of the Contract. The monthly Progress Report will be submitted to the Principal’s Representative for review. In relation to Flora and Fauna, the Progress Report will provide a summary of compliance and environmental inspections, amongst a number of other environmental aspects.

APPENDIX A – FLORA & FAUNA WORKS PROCEDURE



**FLORA &
FAUNA
WORKS
PROCEDURE**

**PREPARED FOR
DELTA GROUP**
SYDNEY METRO WEST
PARRAMATTA, CLYDE, WESTMEAD

Project Name:

Sydney Metro West, Parramatta, Clyde, Westmead – Flora and Fauna Works Procedure

Project Code:

LE1365

Document Tracking:

Prepared by:	
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1.0 INTRODUCTION

Lodge Environmental were commissioned by Delta Group to prepare a Flora and Fauna Management Plan to advise on measures to be undertaken during the demolition works required for the Parramatta, Clyde and Westmead sections of the Sydney Metro West Project (herein referred to as the *Study Area*) (**Figure 1**) (the project). The objective is to ensure appropriate controls are in place to minimise risk of injury to any residing fauna, their habitat, and important vegetation at the Study Area.

Metropolitan areas contain minimal habitat, however, old buildings, street trees and watercourses can provide habitat for some fauna, including threatened species of microchiropteran bats (microbats). The removal of these features can lead to the displacement, injury or death of species reliant on this habitat.

This report provides specific management measures to ensure that Delta Groups demolition and vegetation removal works are carried out to manage flora and fauna in a responsible and sensitive manner. A particular focus has been placed on microbats over all other fauna, as they are considered the most likely to be encountered during project works.

This report is based on information obtained through data searches and a literature review of previous studies and reports within the Study Area, without any field survey included within the scope.

It is understood the proposed project works include:

- Site establishment and dis-establishment at three specific areas: Parramatta, Clyde and Westmead.
- Internal strip-out of structures.
- Demolition of buildings at all areas.
- Clearance of vegetation.

The works will require the use of loud machinery, demolition works and removal of trees. The works have the potential to disrupt any residing microbats and other fauna through the high levels of noise, demolition of potential habitat, vibration, general disruption and dust generation.

This report does not aim to act as an assessment of any impacts, but instead, provide management procedures to increase the environmental sensitivity of the project.



Figure 1: Project Areas

2.0 WORK AREAS AND POTENTIAL IMPACTS

The Sydney Metro West project is a new 24-kilometre metro line with stations confirmed at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street in the Sydney CBD.

In order to enable the next phase of the overall Sydney Metro West Project, the Principal requires the demolition of all structures, and clearance of all vegetation (with the exception of riparian vegetation at Clyde) within three sites located in:

- Parramatta – very metropolitan. Key considerations are two rows of street trees only.
- Clyde – metropolitan, with riparian corridor adjacent. Southern Myotis (*Myotis macropus*) (listed under the *Biodiversity Conservation Act 2016*) habitat is assumed within 200m of the riparian corridor in suitable tree hollows and structures. This site is mostly occupied by commercial and industrial facilities that lack natural vegetation. There are several regions of concern as follows:
 - Small areas of mangrove forest along A' Becketts Creek and Duck Creek that are considered protected under the *Fisheries Management Act 1994*.
 - Though weed-dominated, the riparian zone along A' Becketts Creek is home to native species that exist along the creek bank.
 - Though weed-dominated, the vegetation along Duck Creek also features some native vegetation.
 - There is a community of 'Subtropical and Temperate Coastal Saltmarsh' approximately 1.2 kilometres south of the Clyde construction site which is listed under the *Environment Protection and Biodiversity Conservation Act 1999*.
- Westmead – urban area with mature landscaping and street trees. Considerable potential for tree hollows. There are some potential areas of concern within the existing T1 Rail Corridor, which contains a small, poor condition, plant community (Type 849). This community is listed as critically endangered under the *Biodiversity Conservation Act 2016*. Delta Groups activities are unlikely to have an impact on the plant community (Type 849) zone as it falls within the rail corridor to the north, outside the demolition site.

Figure 2, Figure 3 and **Figure 4** show each of the sites and specific buildings to be demolished.

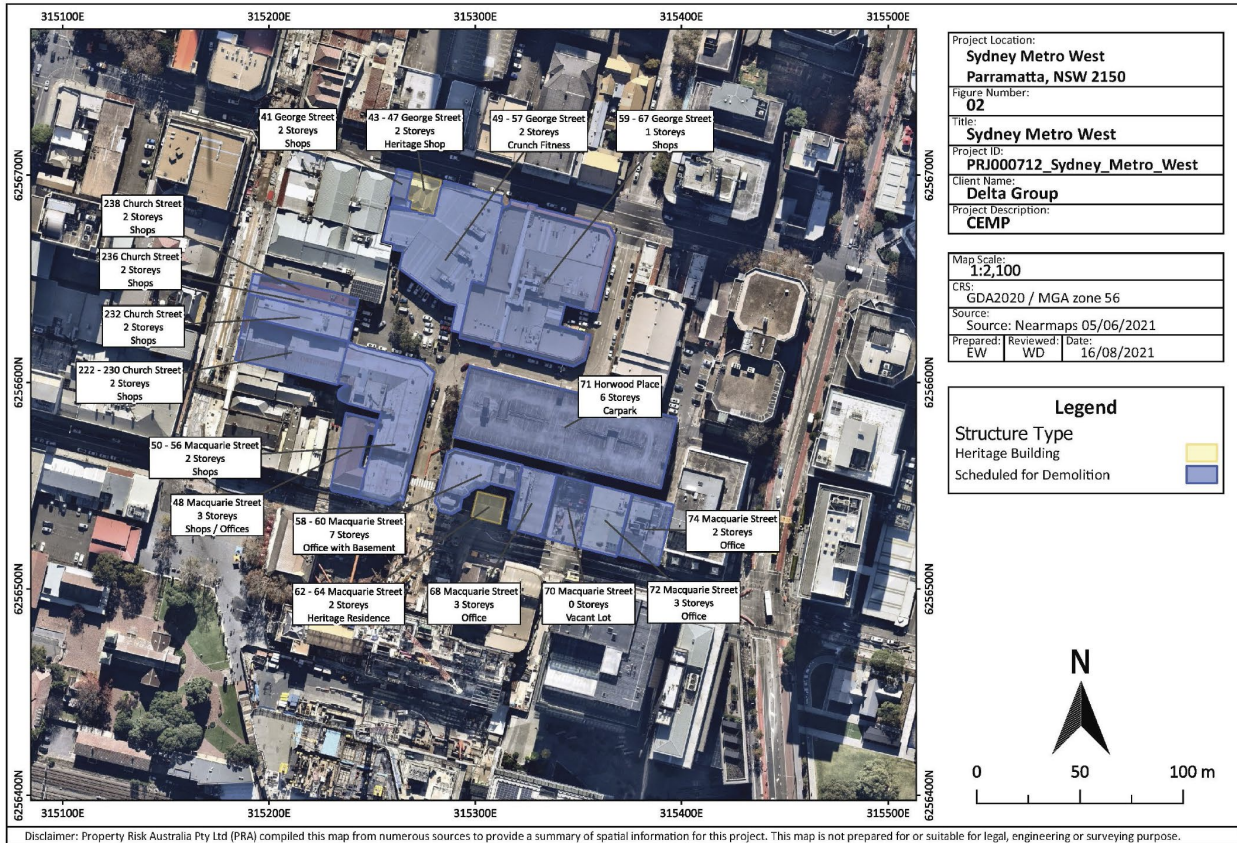


Figure 2: Parramatta Site

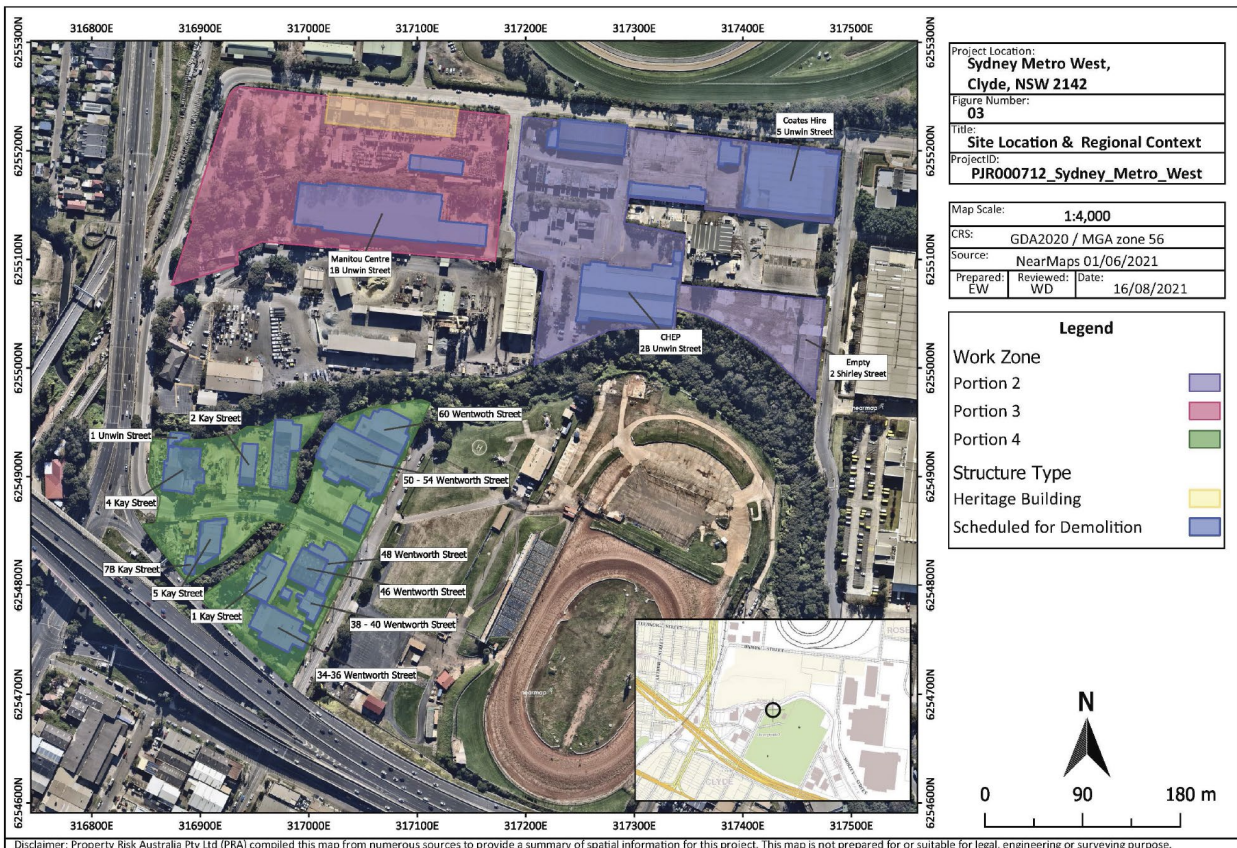


Figure 3: Clyde Site

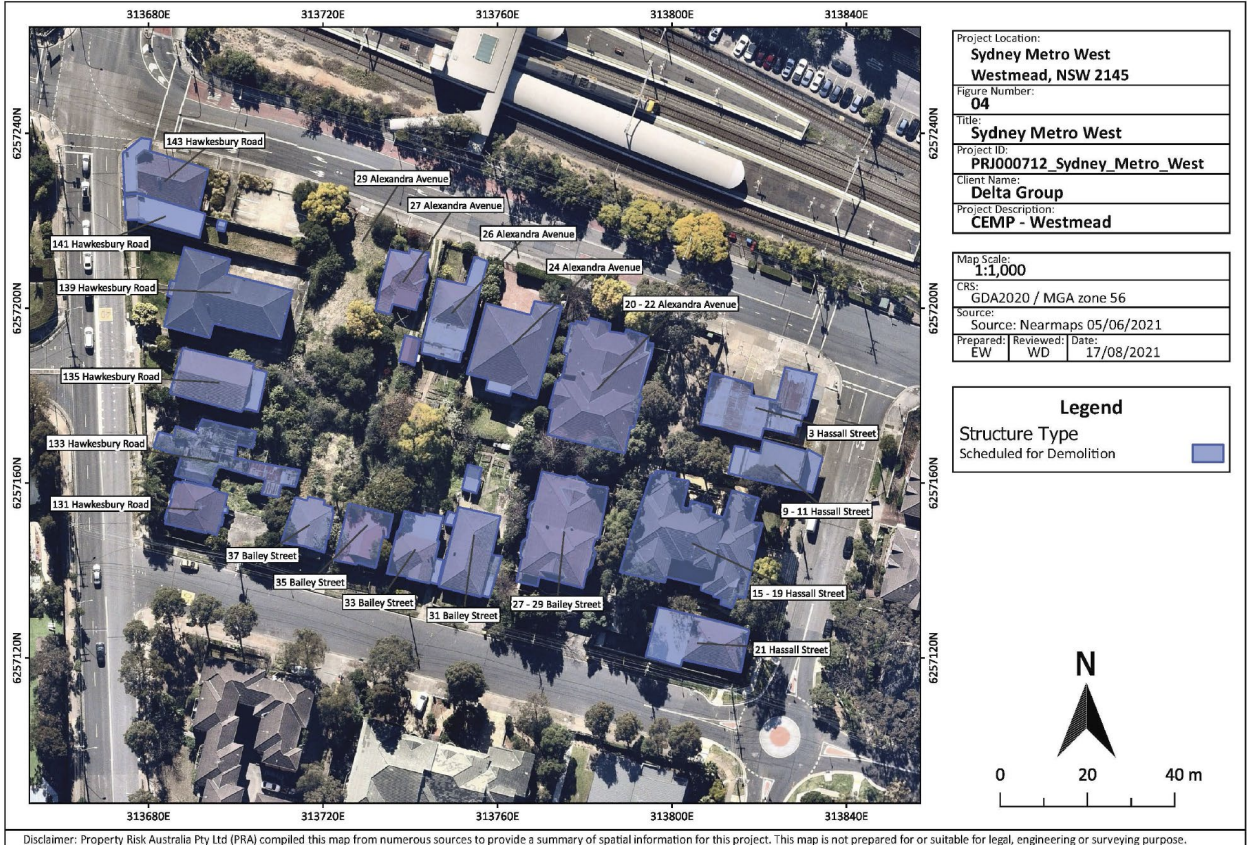


Figure 4: Westmead Site

3.0 METHODS

3.1 DATA AND LITERATURE REVIEW

Data records and relevant literature pertaining to the ecology of the Study Area and surrounding areas were reviewed. The material reviewed included:

- NSW BioNet, Atlas of NSW Wildlife database search (5 km) (Accessed 29 August 2021)
- EES threatened species profile database (EES 2021)
- EPBC Act Protected Matter Search Tool (5 km) (Accessed 29 August 2021)
- Flora and Fauna Management Sub Plan Draft (Delta Group 2021)
- Aerial photography

3.2 FIELD SURVEY

Due site access restrictions no field survey was conducted as part of the preparation of this report. Field survey will be required at subsequent stages of the works – immediately prior, during and post monitoring.

4.0 DESKTOP REVIEW

4.1 MICROBAT SPECIES

A review of the EES and DEE databases identified 22 microbat species that have been previously recorded, or are considered to have habitat, within 5 km of the site (**Figure 3**).

The following microbat species were identified as having potential habitat within the project areas. The conservation status of each species as listed under the State *Biodiversity Conservation Act 2016* (BC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), as well as the total count of records, is detailed.

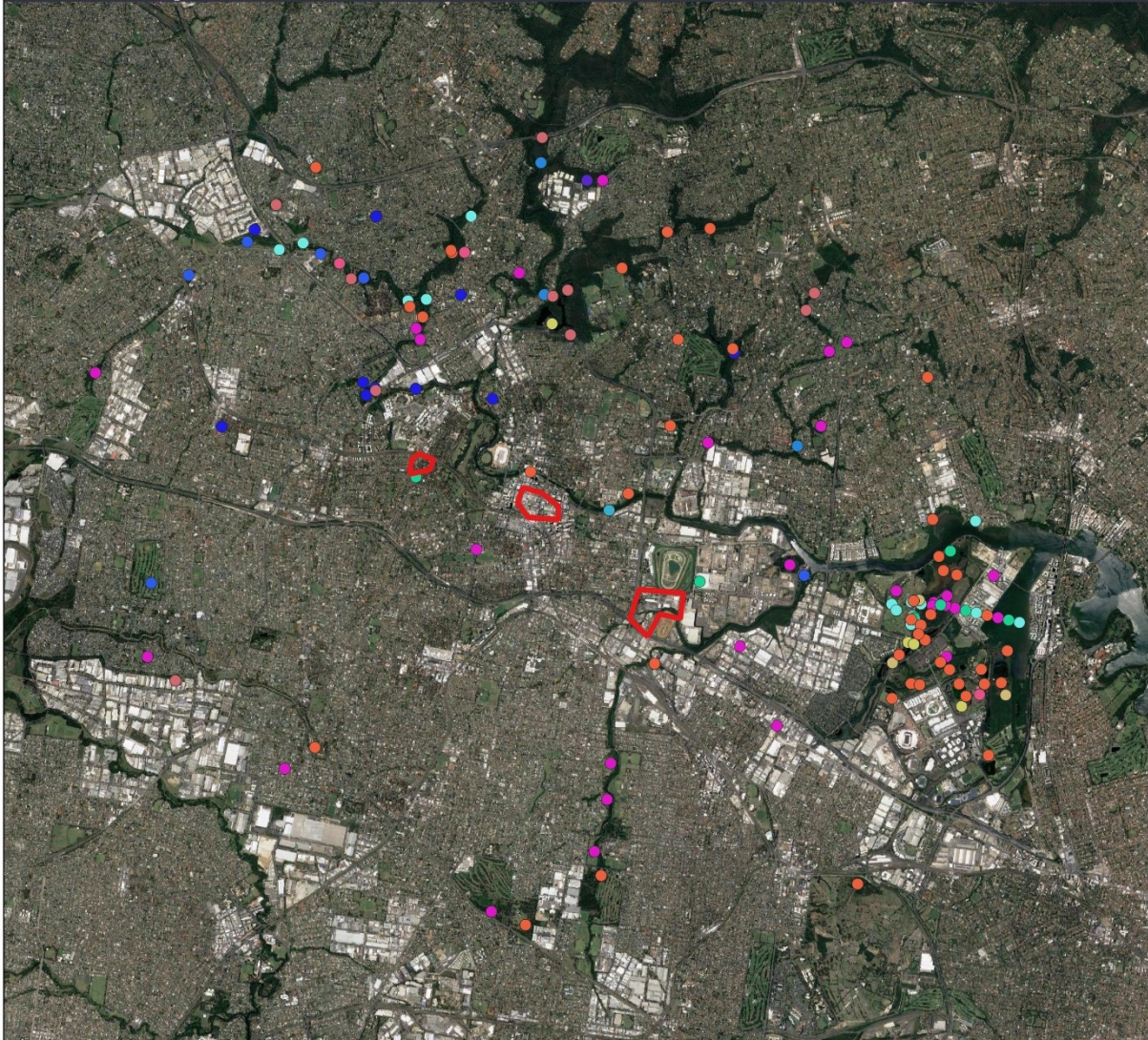
Table 1: Microbat species with a potential to use the sites habitat features

Common name	Scientific name	BC Act	EPBC Act	Count
White-striped Freetail-bat	<i>Austronomus australis</i>	P	-	148
Gould's Wattled Bat	<i>Chalinolobus gouldii</i>	P	-	156
Chocolate Wattled Bat	<i>Chalinolobus morio</i>	P	-	22
Eastern False Pipistrelle	<i>Falsistrellus tasmaniensis</i>	V	-	6
Eastern Coastal Freetail-bat	<i>Micronomus norfolkensis</i>	V	-	11
Little Bent-winged Bat	<i>Miniopterus australis</i>	V	-	1
Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	V	-	76
Little Mastiff-bat	<i>Mormopterus planiceps</i>	P	-	15
Mastiff-bat	<i>Mormopterus sp.</i>	P	-	1
Southern Myotis	<i>Myotis macropus</i>	V	-	34
Lesser Long-eared Bat	<i>Nyctophilus geoffroyi</i>	P	-	109
Gould's Long-eared Bat	<i>Nyctophilus gouldi</i>	P	-	2
Long-eared bat	<i>Nyctophilus sp.</i>	P	-	16
Eastern Free-tailed Bat	<i>Ozimops ridei</i>	P	-	42
Eastern Horseshoe-bat	<i>Rhinolophus megaphyllus</i>	P	-	1
Yellow-bellied Sheath-tail-bat	<i>Saccolaimus flaviventris</i>	V	-	10
Greater Broad-nosed Bat	<i>Scoteanax rueppellii</i>	V	-	7
Eastern Broad-nosed Bat	<i>Scotorepens orion</i>	P	-	15
Large Forest Bat	<i>Vespadelus darlingtoni</i>	P	-	29
Southern Forest Bat	<i>Vespadelus regulus</i>	P	-	5

Common name	Scientific name	BC Act	EPBC Act	Count
Eptesicus species	<i>Vespadelus sp.</i>	P	-	5
Little Forest Bat	<i>Vespadelus vulturinus</i>	P	-	12

Key. P = Protected, V=Vulnerable, E=Endangered, - = not listed.

Microbat Species Records (Bionet 2021)

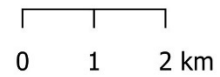


Legend

 ProjectAreas

Bat Records Within 5km

- | | | |
|---|---|--|
|  Chocolate Wattled Bat |  Gould's Wattled Bat |  Little Mastiff-bat |
|  Eastern Broad-nosed Bat |  Greater Broad-nosed Bat |  long-eared bat |
|  Eastern Coastal Free-tailed Bat |  Large Bent-winged Bat |  mastiff-bat |
|  Eastern False Pipistrelle |  Large Forest Bat |  Southern Forest Bat |
|  Eastern Free-tailed Bat |  Lesser Long-eared Bat |  Unidentified Eptesicus |
|  Eastern Horseshoe-bat |  Little Bent-winged Bat |  White-striped Freetail-bat |
| |  Little Forest Bat |  Yellow-bellied Sheath-tail-bat |



5.0 MICROBAT SAFEGUARDS

Safeguards are proposed to minimise impacts of the project works to any potentially resident populations of microbats. The management measures proposed are based on the methodology, bionet records, and outcomes achieved during similar projects where metropolitan construction works have occurred in vicinity to microbat habitation.

The Southern Myotis (*Myotis Macropus*) is assumed to be present within the Clyde development site as relevant foraging habitat is present downstream along the Duck Creek River. Southern Myotis and a host of other threatened species including the Large Bent-winged Bat (*Miniopterus orianae oceanensis*), Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*) and Little Bent-winged Bat (*Miniopterus australis*) are known to roost in cave-like anthropogenic structures including mine shafts, storm water channels, buildings and under bridges. Delta Group have stated that, due to the high volume of anthropogenic activity, there are no suitable buildings present on the worksite which are expected to be, at best, marginal roost sites. A conservative approach will be undertaken regardless to reduce the chance of harm to microbat species.

To minimise activities that cause an adverse effect to the bioregional persistence of these species, Delta will conduct the procedures listed in **Table 2** across the Study Area.

Table 2: Minimise impacts to the Southern Myotis, other microbats and fauna

Aim	Procedure
<p>Provide details on inspection requirements prior to work commencing</p>	<p>An examination will occur for each building prior to demolition. This should occur no more than seven days before demolition commences. Examination will include the use of binoculars, thermal cameras, and ultrasonic sound recorders (Anabats). Photos will be taken where possible. Daytime searches for potential habitat will be followed by no less than two twilight surveys for each building to be demolished. The twilight surveys will aim to detect fly outs.</p> <p>Any roosts detected will be suitably marked with flagging tape or spray paint, and the location recorded with a handheld GPS, to allow ease of identification. Evidence of roosts includes; bat colony, bat sighted, bat guano, bat fly out.</p> <p>If threatened or protected species are found, discussions are to be held with the Office of Environment and Heritage (OEH) to formulate a plan that protects the species and enables work to commence as soon as possible.</p>
<p>Provide details of alternative temporary relocation of microbat habitat</p>	<p>Two nest boxes will be installed within nearby suitable habitat for every bat roost or suitable tree hollow recorded within the impact area. This ensures not net loss of habitat. Nest boxes should be installed prior to demolition of the identified roosts or nest boxes they are offsetting.</p> <p>Any bats captured by hand will placed in a cool, dark room within a catch bag and be relocated at twilight. All bat handling must only be carried out by an ecologist who has been vaccinated for Australian Bat Lyssa Virus.</p> <p>Monitoring of nest boxes should occur for the duration of Deltas scope, including a single post-works monitoring event.</p>
<p>Provide exclusion techniques and management including details on exclusion devices to be put in place to allow bats to exit after dusk but not re-enter structures</p>	<p>If bats are found to be present, when planning the demolitions of structures that contain roosts exclusion devices will be put in identified roosts to allow bats to exit after dusk but not re-enter.</p> <p>If any bats become trapped by the exclusion devices the ecologist will remove bats and release at a suitable location.</p> <p>No work is to commence until any detected Southern Myotis have been successfully relocated.</p> <p>Works should progress from one end incrementally across each project area. This will assist in disturbance provoking bats to move on independently.</p>

Aim	Procedure
Provide advice to the Principal Contractor on how to manage microbat conflicts while the works are being undertaken	If bats are seen by the project team within 10m from the daily works area, advice from the ecologist must be sought prior to works continuing.
Reduce potential for microbat injury or mortality	Injured fauna would be taken to WIRES. The contact details of WIRES (Sydney Metro – 1300 094 737) would be known to the site supervisor and ecologist. Lodgement of deceased bats shall be with the Australian Museum Mammal Section (contact) as specimens for future research and study ((02) 9320 6118).
Minimise disturbances to breeding microbats	If a breeding roost is recorded works will be stopped. Discussions are then to be held with the Office of Environment and Heritage (OEH) to formulate a plan that protects the breeding roost and enables work to commence as soon as possible.

5.1 DEMOLITION PROCEDURE FOR STRUCTURES CONTAINING ROOSTS

The general demolition procedure for structures is as per below and summarised in **Figure 6**:
Each structure will be subject to:

- Initial search for potential bat habitat.

If no bat habitat is recorded, the building is cleared for demolition. If bat habitat is recorded, the following must occur:

- Mark the identified habitat with flagging tape, spray paint and GPS point.
- Two nights of dusk surveys are to be undertaken using a combination of visual inspections, ANABAT detection and thermal cameras. If no bats are detected, the building is cleared for demolition.

If bats are detected, the results of the ANABAT device will infer the likely species present. Suitable locations are likely to be within the adjacent riparian vegetation.

- A bat exclusion procedure will then commence. Exclusion devices will be put in identified roosts to allow bats to exit after dusk but not re-enter.
- Exclusion devices will be checked first thing the following morning. If any bats become trapped by the exclusion devices the ecologist will remove bats and release at a suitable location when appropriate to do so.
- No work is to commence until any detected bats have been successfully relocated.
- Works should progress from one end incrementally across each project area. This will assist in disturbance provoking bats to move on independently.

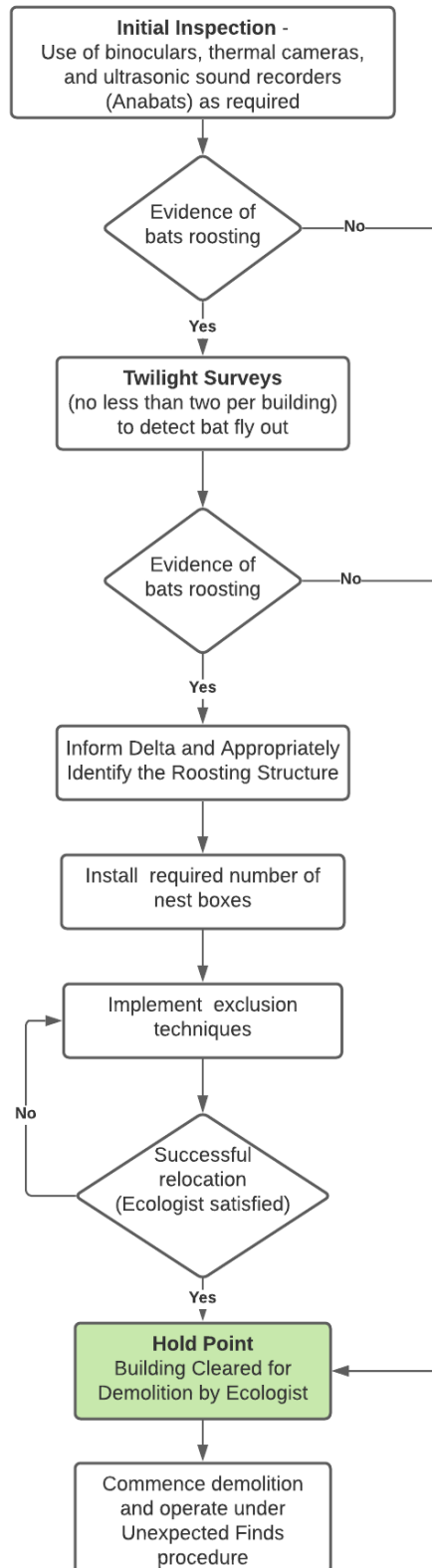


Figure 6: Microbat clearance procedure

5.2 CAPTURING AND RELEASING HEALTHY MICROBATS

All handling of live microbats would be carried out by a qualified and vaccinated ecologist experienced in handling microbats. The ecologist must hold an Animal Care and Ethics Committee approval, an OEH National Parks and Wildlife Service scientific licence for handling native flora and fauna and be vaccinated against Lyssavirus. Any microbats captured during nocturnal or diurnal inspections would be housed in small cloth bags and either:

- Relocated to nearby suitable habitat, or
- Housed in a dark, cool, dry, quiet location for nocturnal release on the evening/night following capture.

The ecologist would determine the most appropriate option, giving consideration to the animal's welfare.

Bags containing microbats would be hung in a cool, dry place off the ground, preferably within a secured ventilated box (e.g. a cat carry cage) for safety. Microbats housed in this way can be taken off site if required. Microbats of the same species would be housed together with no more than five in any one bag.

In the unlikely event that other species are captured, large bats (head and body 75-95 millimetres) would not be grouped with smaller bats (head and body <75 millimetres) as some larger species predate on smaller species. The ecologist would be responsible for releasing any microbats in the evening at the site.

Housed microbats awaiting nocturnal release or relocation would be placed in a dry and undisturbed place out of the direct sun. Microbats would be kept in a cool, shaded environment (< 25°C) and be assessed for heat stress as required. If temperatures exceed 30°C, a cooler location within a local building would be sought.

Any microbats captured at night would be released that night if still dark or held until they could be placed into suitable nearby habitat or held for release the following evening. Bats would not be held for longer than 24 hours.

5.3 NEST BOXES

Habitat/Nest Boxes are to be installed at a 2 for 1 ratio of roost or tree hollow removed. Each site walkover will inform how many boxes are required for each stage of works.

Habitat boxes will need to be installed, as much as possible, prior to any tree felling or demolition operations.

Suitable locations for the boxes will be selected during the initial site walkovers.

Nest boxes are to be constructed of appropriate durable materials (e.g. painted marine ply, native hardwood or similar) and fixed to recipient trees with stainless steel screws, wire or similar. One option for bracketing is the Habisure system (Hollow Log Homes Pty Ltd). This system allows at least one metre growth in the diameter of the host tree before adjustment is required, it is a non-invasive process for the tree and provides the required security.

The following measures outline important factors for the supervising ecologist and appropriately qualified climber to consider when installing the nest boxes;

- When installing nest boxes, position the entrances away from artificial lighting, traffic and other forms of potential anthropogenic disturbance.
- Installing nest boxes at a minimum height of 3 meters and a maximum of 10 meters to ensure occupants are protected from potential predation while allowing effective monitoring by an ecologist.
- Nest boxes should be installed by a specialist nest box contractor with appropriate tree climbing certification (i.e. Arborist Tree Climbing Certificate and Work Safely at Heights certification). Maintenance will also need to be undertaken by appropriately height-certified personnel.
- The locations of all the installed habitat boxes will be required to be recorded on a GPS and the locations recorded in a report.

5.3.1 Nest box monitoring and maintenance

Where deployed, nest boxes will be required to be monitored biannually by a suitably qualified and experienced fauna ecologist for the duration of Deltas scope, including a single post-works monitoring event. Monitoring will be undertaken using a pole camera, with a particular focus on identifying a number of factors including;

- information from the date of inspection i.e. date, weather conditions and time of inspection
- nest box number and GPS coordinate
- nest box condition
- signs of occupancy by fauna or target species
- invasive species presence
- if maintenance is required
- photo evidence of the box condition

Following each monitoring session, a brief report including the results and recommendations will be forwarded to Deltas Project Manager within one month of the completion of each monitoring session.

It is important that replacement tree hollows are installed prior to removing any existing hollows. Where practical, Delta will also investigate options for placing removed tree hollows into natural areas nominated and approved by the relevant local council.

6.0 GENERAL SAFEGUARDS

Safeguards are proposed to minimise impacts of the project works to any potentially resident populations of general fauna, flora and vegetation communities.

6.1 PROTECTION OF RETAINED VEGETATION

Vegetation clearance should be minimised as much as possible and all retained vegetation should be suitably protected. The removal and or disturbance of indigenous vegetation on the property should only be that required to complete the works.

Site fencing must be erected to ensure all works stay within the fenced areas and there are no impacts to vegetation outside of the works areas. Exclusion fencing will comprise a combination of utilising existing and/or temporary fencing (such as ATF type). Where practical, exclusion fencing shall be set back 1m from the vegetation line.

Any trees in close proximity to the works areas should be protected with suitable tree guards. If further detail on tree guards is required – a consulting arborist should be engaged to provide advice. Materials are not to be stored within the drip line of canopy vegetation of any vegetation to be retained.

Canopy trimming should be considered where practicable prior to any mature tree removal

Care must be taken when moving equipment near vegetation to be retained, such as within the adjacent vegetation. If works appear to encroach on retained vegetation, advice from a qualified Arborist should be gained to infer appropriate tree protection measures. Generally, the Tree Protection Zone (TPZ) is a hypothetical estimation of the area required to protect a tree from adverse construction and development activities. It is calculated for each tree by multiplying diameter at breast height (DBH) by 12 and is a radius measured in metres from the centre of trunk. It is understood that encroachments into the TPZ can occur for 10% of the zone in accordance with AS4970-2009 Protection of trees on development sites.

Impacts to plant community types must not exceed those identified in the documents listed in Condition A1 of the project schedule, unless otherwise approved by the Planning Secretary. In requesting the Planning Secretary's approval, an assessment of the additional impact(s) to plant community types and an updated ecosystem and / or species credit requirement under Condition D4 below, if required, must be provided.

It is understood that all vegetation within and directly adjacent to the project areas will be cleared, with the exception of the riparian corridor vegetation at the Clyde project area. **Figure 7, Figure 8 and Figure 9** detail the existing vegetation mapping (unvalidated) and buildings for demolition.



Figure 7: Westmead buildings and vegetation mapping

Site Buildings and Vegetation



Legend

Parramatta Buildings

- Heritage Building
- Scheduled for Demolition
- Sensitive Receptor - Educational

SydneyMetroArea_v3_1_2016_E_4489

- Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney
- Mangrove Forests in estuaries of the Sydney Basin Bioregion and South East Corner Bioregion
- Not in Bionet
- Saltmarsh in estuaries of the Sydney Basin Bioregion and South East Corner Bioregion
- Swamp Oak open forest on riverflats of the Cumberland Plain and Hunter valley

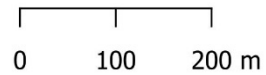


Figure 8: Parramatta buildings and vegetation mapping

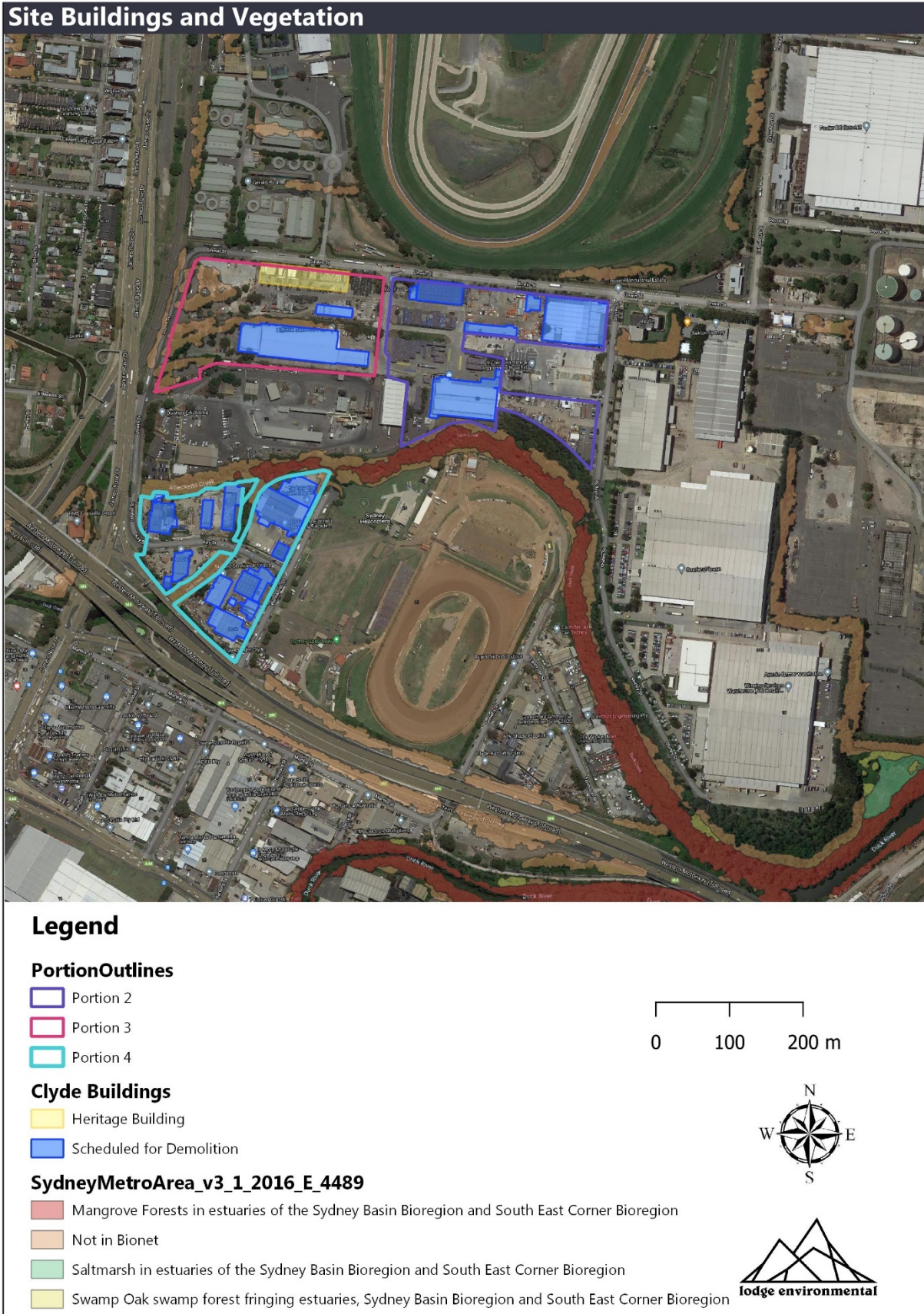


Figure 9: Clyde buildings and vegetation mapping

6.2 PROTECTION OF MANGROVES ADJACENT TO CLYDE WORKS AREA

Disturbance to mangrove forests at the Clyde Maintenance and Stabling construction site must be minimised as much as possible. Suitable fencing of the works zone, including sediment fencing, will be the primary mitigation measure in place.

Adequate erosion and sediment control measures should always be in place during construction in accordance with best practice guidelines (Landcom 2004), including:

- Appropriate sediment fencing or equivalent
- vehicle and machinery movement confined to designated work areas

6.3 PRE-CLEARANCE INSPECTION - ECOLOGY

An ecological pre-clearance inspection will occur at all works areas prior to any vegetation clearance or demolition works. The inspection will likely be coupled with the structure inspections, and also compile information on:

- Habitat bearing trees, including count of hollows and size of hollows
- Structures providing potential microbat habitat
- Identification of other habitat features including any nests, dreys logs, bush rock etc.
- Identification of any potential threatened and protected native flora and fauna (including all protected animals listed under the BC Act)
- Identification and marking of priority weeds requiring additional management by Delta
- Provide guidance on subsequent relocation if required for any protected native fauna (including any threatened fauna not previously identified) found during the inspections.
- Mark hollow bearing trees, nests, dreys, logs where special attention may be required during vegetation clearing

6.4 PRE-CLEARANCE INSPECTION - ARBORIST

An arborist pre-clearance inspection will occur at all works areas prior to any vegetation clearance or demolition works. The inspection must be completed by an AQF level 5 Arborist and compile general information on all mature trees:

- Identification: Allocated number and botanical name.
- Dimensions: Tree height, canopy spread, and trunk diameter at breast height (DBH)
- Condition: Tree health, structure, and age class (including specific reference to "Mature Trees").
- Significance: Tree significance and useful life expectancy.
- Protection zones: Tree protection zone (TPZ) and structural root zone (SRZ).
- Spatial location: GPS point data

- Impacts: Sited for removal, or any conflict between the development footprint and the tree protection zone.

6.5 TREE FELLING SUPERVISION

A suitably licensed ecologist (who is vaccinated for Australian Bat Lyssavirus) is to be engaged to supervise the removal of any identified Habitat Bearing Trees (HBTs) in order to minimise the chance of harm to fauna, and to rescue or relocate any fauna displaced during the clearing process. The following procedure should be followed:

- Remove the trees that do not contain habitat potential prior to removal of the HBTs. The aim is to disturb any residing fauna so they move away on their own accord.
- Leave the HBTs standing for at least one night after other non-HBTs have been cleared. This is to allow any fauna the opportunity to remove themselves after site disturbance.
- HBTs should be inspected immediately prior to removal by a suitably licensed ecologist.
- Fell the HBTs and stags via a slow drop technique involving lowering hollow limbs to the ground so they can be checked by the ecologist.
- After the HBT has been lowered, thoroughly check the hollow for fauna in the case that any have become trapped or injured during clearing operations. Any fauna should be safely moved into adjacent habitat
- As a mitigation measure a total of nest boxes will be established in suitable habitat under instruction by an ecologist.

6.6 UNEXPECTED FINDS OF FAUNA OR FLORA

Should any unexpected finds of listed species or ecological communities occur:

- All work in the immediate vicinity of the flora or fauna is to cease and the Environment & Sustainability Manager or equivalent will be notified;
- The Sydney Metro and project ER will be notified of any unexpected finds of threatened flora and fauna species or communities;
- Appropriate mitigation measures will be prepared by Delta in consultation with the Environment & Sustainability Manager, Project Ecologist, ER and with the OEH as required.
- Discussions will then be held with the project team to formulate a plan that protects the species and enables work to recommence as soon as possible including:
 - Determination of appropriate mitigation measures (including relocation)
 - Updates to ecological monitoring and off-set requirements.

6.7 GENERAL WEED MANAGEMENT

It is likely that the sites may contain priority weeds. Priority weeds are listed based on their strong ability to outcompete native species to a degree that could pose a biosecurity risk to human health, the economy, the livability of our city and the environment. Priority weeds of concern are defined in the Greater Sydney Regional Strategic Management Plan (Sept. 2019), with species listed by Local Council Areas on the NSW WeedWise database. Weeds that are listed on the NSW WeedWise database for the given Council areas will be identified during the pre-inspection for appropriate management.

Mechanisms to prevent the spread of any identified priority weeds are broadly provided below.

- Priority weeds will generally be scraped from the ground, and segregated in stockpiles (or equivalent, such as bins) to prevent spreading.
- Where weed stockpiles remain onsite for greater than 5 days they will be stored under black plastic to prevent spread of propagules.
- All propagules of priority weeds will be bagged or covered with black plastic and disposed of as directed by legislation at a facility licensed to receive green waste. All priority weed waste without propagules will be composted onsite in small unobtrusive piles.
- All woody weed material will be mulched on site, piled into unobtrusive piles or disposed of at a facility licensed to receive green waste. Weeds with seed propagules should be placed in a plastic bag and left in the sun for a couple of days to kill the seed, prior to disposal.
- All priority weed waste without propagules will be composted onsite or disposed off at a facility licensed to receive green waste.
- Alternatively to onsite management, Delta may engage the services of an external arborist/green waste provider to appropriately manage the weeds. This includes:
 - Weeds will be taken off site to a green waste facility where it will be mulched.
 - The mulched material is pasteurised to 60 degrees (this can take up to 6 weeks).
 - The pasteurised weed material will then be processed at a licensed facility to produce a garden product.

6.8 REPORTING

The results of each phase of work (pre, during, and post works) for each of the three project locations should be documented in a summary report and provided to a Delta Group representative.

A post-clearance close-out report detailing the compliance of the project. The report should detail whether impacts have occurred outside of the approved works zones and provide information on the success of the project, including:

- Habitat supplementation – nest box types and locations.

- Relocated fauna: species, count, fate, location.
- Retained natural tree hollows
- Total clearance areas, including details on the tree species removed and whether the trees removed were local native / non-local native or exotic species

On completion of clearing in each location a post clearance report will be prepared, and the report will confirm the number of hollows impacted and the corresponding nest box requirements.

7.0 REFERENCES

- Department of Agriculture, Water and the Environment (DAWE) (2021). *Protected Matters Search Tool*. Accessed August 2021.
- Churchill, S. (2008). *Australian Bats. Second Edition*. Allen and Unwin. NSW.
- Department of Planning Industry and the Environment (DPIE) (2021). *SEED: The Central Resource for Sharing and Enabling Environmental Data in NSW*. Accessed August 2021. Available at <https://www.seed.nsw.gov.au/>
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- Pennay, M., Law, Bradley., Lunney, D. (2011), *Review of the distribution and status of the bat fauna of New South Wales and the Australia Capital Territory*. In *Biology and Conservation of Australasian Bats*. Edited by Bradley Law, Peggy Eby, Daniel Lunney and Lindy Lumsden. Royal Zoological Society, NSW, Mosman, NSW. Australia.
- Reinhold, L., Law, B., Ford, G., and Pennay, M. (2001). *Key to the bat calls of south-east Queensland and north-east New South Wales. Queensland, DNR*.
- Van Dyck, s., and Strahan. R. (2008). *Mammals of Australia*. Third Edition. Reed New Holland. Sydney.
- Van Dyck, s., Gynther. I., and Baker. A. (2013). *Field Companion to the Mammals of Australia*. New Reed New Holland. Sydney.

8.0 LIMITATIONS

This report and the associated services performed by Lodge Environmental are in accordance with the scope of services set out in the contract between Lodge Environmental and the Client. The scope of services was defined by the requests of the Client, by the time and budgetary constraints imposed by the Client, and by the availability of access to Site.

Lodge Environmental derived the data in this report primarily from visual inspections, and, limited survey and analysis made on the dates indicated. In preparing this report, Lodge Environmental has relied upon, and presumed accurate, certain information provided by government authorities, the Client and others identified herein. The report has been prepared on the basis that while Lodge Environmental believes all the information in it is deemed reliable and accurate at the time of preparing the report, it does not warrant its accuracy or completeness and to the full extent allowed by law excludes liability in contract, tort or otherwise, for any loss or damage sustained by the Client arising from or in connection with the supply or use of the whole or any part of the information in the report through any cause whatsoever.

The data, findings, observations, conclusions and recommendations in the report are based solely upon the state of the Site at the time of the investigation. The passage of time, manifestation of latent conditions or impacts of future events (e.g. changes in legislation, scientific knowledge, land uses, etc) may render the report inaccurate. In those circumstances, Lodge Environmental shall not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on, the contents of the report.

This report has been prepared on behalf of and for the exclusive use of the Client, and is subject to and issued in connection with the provisions of the agreement between Lodge Environmental and the Client. Lodge Environmental accepts no liability or responsibility whatsoever and expressly disclaims any responsibility for or in respect of any use of or reliance upon this report by any third party or parties.

It is the responsibility of the Client to accept if the Client so chooses any recommendations contained within and implement them in an appropriate, suitable and timely manner.

APPENDIX B – ENVIRONMENTAL POLICY

ENVIRONMENTAL MANAGEMENT POLICY (04)



POLICY STATEMENT

As part of our commitment to achieving the principles of responsible environmental management, sustainability and protection of the natural environment in our worksites, we recognise our legal and moral responsibility to ensure that our activities, products and services are designed to protect and enhance the environment in the communities in which we operate, and our obligations to ensuring that our operations do not place the natural environment or the local community at risk of harm.

AIMS AND OBJECTIVES

We are committed to environmental improvement and prevention of pollution. We will achieve this by working with our customers, suppliers and the community. To achieve these objectives we will –

- develop, implement and maintain a management system that addresses the requirements of ISO 14001;
- reduce waste through innovative work practices and recycling practices;
- minimise environmental impacts by reduction of polluting substances produced by our operations, activities, products or services;
- minimise the impact of our operations on the neighbouring community;
- increase the use of environmentally acceptable materials, equipment and technology in place of those which are considered harmful;
- ensure that our suppliers follow acceptable environmental policies; and
- actively promote environmental awareness among workers, clients, customers and the general public

At Delta Group we recognise that the overall responsibility environmental sustainability rests with management, who will be accountable for the implementation of this policy. These responsibilities include –

- ensuring that all environmental policies and procedures are implemented;
- establishing measurable objectives and targets to ensure continued improvement aimed at the elimination of waste, pollution and environmental harm;
- encouraging consultation and co-operation between management, workers and stakeholders in matters which may affect or impact on the environment; and
- providing adequate resources to meet these environmental commitments.

Workers responsibilities include –

- following all environmental policies and procedures; and
- recognising and reporting hazards which may affect the health and well-being of the environment.

A handwritten signature in black ink, appearing to read 'Jason Simcocks', is written over a light grey background.

Jason Simcocks
CEO

AUSTRALIA WIDE

Head Office: 577 Plummer Street, Port Melbourne VIC 3207 / Ph: 03 9646 8277 Fax: 03 9646 6877 / delta@deltagroup.com.au

APPENDIX C – FLORA and FAUNA PRE-CLEARANCE/DEMOLITION INSPECTION TEST PLAN / CHECKLIST (ITP002)



Inspection Test Plan/Checklist

Job No:	N1-409
Project:	Sydney Metro West – Enabling Works
Date – Revision:	11/10/2021
ITP Name - No.:	002 – Pre-Clearance/Demolition
Client:	Sydney Metro

Developed By: Wayne Duffy **Approved By:** Angus Lumsden

Location:	
Description of work:	Demolition and Clearance works
Trade/Task:	Flora and Fauna Management Pre-clearing/demolition Inspection

Inspection Method:		Item Verification:		
V: Visual	T: Test	S: Surveillance or Monitoring	H: Hold Point (Mandatory)	H(C): Consultant Inspection
M: Measure	D: Document	X: Self Inspection by Worker	W: Witness Point (Optional)	H(A): Local Authority Inspection

No.	Inspection & Test Items	Inspection Method	Acceptance Criteria Specification/Standard/Drawings	Item Verification Action Complete				Notes/Comments
				Delta		Specialist		
				Key	Print Name & Date	Key	Print Name & Date	
Pre-Clearance - Microbat Management								
<u>1</u>	Pre-clearance inspection for Bats by Project Ecologist	V, M, D	<ul style="list-style-type: none"> FFMSP – Work Procedures <ul style="list-style-type: none"> Initial inspection complete 	W		H(C)		
<u>2</u>	Pre-clearance inspection for Bats by Project Ecologist	V, M, D	<ul style="list-style-type: none"> FFMSP – Work Procedures <ul style="list-style-type: none"> Twilight Surveys complete (if required) 	W		H(C)		
<u>3</u>	Pre-clearance inspection for Bats by Project Ecologist	V, M, D	<ul style="list-style-type: none"> FFMSP – Work Procedures <ul style="list-style-type: none"> Nest Boxes Installed appropriately 	W		H(C)		
<u>4</u>	Pre-clearance inspection for Bats by Project Ecologist	V, M, D	<ul style="list-style-type: none"> FFMSP – Work Procedures <ul style="list-style-type: none"> Ecologist recommended bat exclusion measures installed 	W		H(C)		



Inspection Test Plan/Checklist

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No.	Inspection & Test Items	Inspection Method	Acceptance Criteria Specification/Standard/Drawings	Item Verification Action Complete				Notes/Comments
				Delta		Specialist		
				Key	Print Name & Date	Key	Print Name & Date	
<u>5</u>	Pre-clearance inspection for Bats by Project Ecologist	V, M, D	<ul style="list-style-type: none"> • FFMSPP – Work Procedures <ul style="list-style-type: none"> ○ Bat relocation successful 	W		H(C)		
<u>6</u>	Pre-clearance inspection for Bats by Project Ecologist	V	<ul style="list-style-type: none"> • Project Ecologist clearance for Building/vegetation and/or demolition/removal 	H		W		
Pre-Clearance – General Fauna, Tree hollows, Weeds								
<u>7</u>	Inspection for hollow bearing trees or other habitat features including any nests, dreys, logs, bush rock etc by Project Ecologist	V	<ul style="list-style-type: none"> • Identification of hollow bearing trees or other habitat features including any nests, dreys, logs, bush rock etc • Features appropriately and clearly marked, and identified to Delta by the ecologist 	W		H(C)		
<u>8</u>	Identified hollow bearing trees or other habitat features including any nests, dreys, logs, bush rock by the Project Ecologist	V	<ul style="list-style-type: none"> • In the event of identified hollow bearing trees or other habitat features including any nests, dreys, logs or bush rock, procedures requirements from the FFMSPP and any advice from the Project Ecologist documented and relevant pre-clearing requirements implemented 	H		H(C)		
<u>9</u>	Inspection for any potential threatened and protected native flora		<ul style="list-style-type: none"> • Positive identification of any potential threatened and protected native flora and fauna (including all “protected animals” 	H		H(C)		



Inspection Test Plan/Checklist

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Developed By: Wayne Duffy **Approved By:** Angus Lumsden

No.	Inspection & Test Items	Inspection Method	Acceptance Criteria Specification/Standard/Drawings	Item Verification Action Complete				Notes/Comments
				Delta		Specialist		
				Key	Print Name & Date	Key	Print Name & Date	
	and fauna (including all “protected animals” under the Biodiversity Conservation Act 2016 (BC Act)) by Project Ecologist		under the Biodiversity Conservation Act 2016 (BC Act))					
<u>10</u>	Identified protected native flora and fauna safeguarded and/or relocated as required by the Project Ecologist		<ul style="list-style-type: none"> In the event of identified protected native flora and fauna, procedures and relevant notifications implemented (see requirements from the FFMSF and any advice from the Project Ecologist) 	H		H(C)		
<u>11</u>	Inspection for priority weeds by Ecologist	V	<ul style="list-style-type: none"> Positive identification of priority weeds Priority weeds appropriately and clearly marked, and identified to Delta by the ecologist 	W		H(C)		
<u>Pre-Clearance – Quantification of mature trees to be removed</u>								
<u>12</u>	Inspection by arborist to quantify the number of mature trees removed and overall canopy coverage removed (to be reported post clearing)	V, M	<ul style="list-style-type: none"> Arborist Inspection undertaken 	W		H(C)		



Inspection Test Plan/Checklist

Job No:	N1-409
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Client:	Sydney Metro

Developed By: Wayne Duffy **Approved By:** Angus Lumsden

No.	Inspection & Test Items	Inspection Method	Acceptance Criteria Specification/Standard/Drawings	Item Verification Action Complete				Notes/Comments
				Delta		Specialist		
				Key	Print Name & Date	Key	Print Name & Date	
<u>Pre-Clearance - Other environmental controls installed</u>								
<u>12</u>	Erosion & Sediment Controls	V	<ul style="list-style-type: none"> Ersed controls installed as documented in the latest version of the ECM 	W		W		
<u>13</u>	Exclusion fencing to protect adjacent vegetation	V	<ul style="list-style-type: none"> Exclusion fencing installed as documented in the latest version of the ECM 	V		W		



Inspection Test Plan/Checklist

Job No:	N1-409
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Client:	Sydney Metro

Developed By: Wayne Duffy **Approved By:** Angus Lumsden

Completed by Delta & Delta Subcontractors at end of work

Verification

This is to confirm Delta and Delta Subcontractors have carried out all necessary inspections and verifies that the work has been completed and conforms to the relevant specifications.

Attachments (Tick as appropriate):

Role	Name	Company	Signature	Date			
Project Manager		Delta Group			<input type="checkbox"/> Inspection Report: Details:	<input type="checkbox"/> Product Details Details:	<input type="checkbox"/> Sample Material Details:
Environment & Sustainability Manager		Delta Group					
Project Ecologist							
					<input type="checkbox"/> Test Results / Certificates Details:	<input type="checkbox"/> Dockets Details:	<input type="checkbox"/> Other: Details:

APPENDIX D – STAKEHOLDER CONSULTATION

AGENCY	DATE SENT FOR REVIEW	DATE RECEIVED COMMENTS	COMMENTS	DOCUMENT REFERENCE	HOW COMMENT HAS BEEN ADDRESSED
Cumberland City Council	27/08/2021	12/09/2021	<p>Comments from Cumberland City Council: General Remarks Proposed demolition works within the Cumberland LGA will be constrained to the Westmead site, between Hawkesbury Rd, Alexandra Ave, Hassell St and Bailey St. All structures and trees on the site are proposed to be removed. Trees to be removed are proposed for offset by replacement at a two to one ratio as part of the greater Metro West project. Ecological monitoring under 7.1 of the Flora and Fauna Management Plan includes a pre-clearance inspection and report by a qualified ecologist which will identify hollow bearing trees, and a post-clearance inspection to identify the number of trees removed. Workshop Discussion That sections of remnant trees on site which bear suitable habitat hollows would be salvaged and relocated to the nearest natural bushland site, in consultation with the consulting ecologist and Cumberland City Council. Other Remarks Cumberland City Council be given the opportunity to review the Ecologist's a pre-clearance report on completion. It was also mentioned that the design of the Westmead site as part of the greater Metro West project is currently in progress and the opportunity for Council's landscape architects to contribute to the design process would be appreciated.</p>	SMWSDDS-DLT-1NL-EM-PLN-000038 Flora and Fauna Management Plan (revision 0)	<p>In relation to Delta's scope, the FFMSF was updated to address the comments from Cumberland City Council including:</p> <ul style="list-style-type: none"> • Included requirement to consult with council on potential salvage and reuse of hollows within natural areas as agreed.

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<p>Environment, Energy and Science Group (EES)</p>	<p>27/08/2021</p>	<p>13/09/2021</p>	<p>The following EES comments are provided on the Sydney Metro West Project - SSI-10038 – Delta Group draft Flora and Fauna Management Plan (FFMP) – 25 August 2021 to demolish buildings across the following sites: Parramatta, Clyde and Westmead and the Sydney Metro West meeting held on 8 September 2021 to discuss the draft FFMP.</p> <p>The project details following the cover page of the FFMP state that “Delta will demolish buildings across the following sites:</p> <ol style="list-style-type: none"> 1. Parramatta, 2. Clyde 3. Westmead” <p>but Section 2.3 of the FFMP states “This Sub Plan addresses the demolition of buildings within Scope of Work Packages at the Parramatta and Clyde Sites” and it does not refer to the Westmead site. The FFMP needs clarify if the plan also addresses the demolition of buildings at the Westmead site.</p> <p>The inclusion of scaled plans /aerial photography/ photos of the sites in the FFMP would be helpful which show the buildings/structures to be demolished / vegetation that is proposed to be removed/retained etc.</p>	<p>SMWSDDS-DLT-1NL-EM-PLN-000038 Flora and Fauna Management Plan (revision 0)</p>	<p>In relation to Delta's scope, the FFMSPP was updated to address the comments from DPIE (EES) including:</p> <ul style="list-style-type: none"> • An improved description of works and updated figures. • A description of the offset and rehabilitation requirements in relation to Delta’s scope of works. • Inclusion of a Flora & Fauna Works Procedure (Appendix A), prepared by the Project Ecologist. • The Works Procedure and updated Sub Plan addresses a number of the ESS comments associated with: <ul style="list-style-type: none"> o Overall management measures o Inspection requirements o Management of hollows o Relocation/reuse of vegetation/hollows o Clear documentation and sign-

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			<p>Table 1 Relevant CoA and Revised Environmental Mitigation Measures (REMM) At the meeting on 8 September 2021, EES raised Condition MCoA C-B8 of the approval listed in Table 1 that requires “there must be a net increase in the number of mature trees provided at a ratio of 2:1” and it indicates this is addressed in Section 5.4 of the FFMP, however Section 5.4 does not address this. The FFMP needs to be amended to address this issue.</p> <p>Also, EES recommended at the meeting that the replacement trees consist of local native species from the relevant native vegetation communities that once occurred at the sites. Sydney Metro West confirmed at the meeting that it intends to use local native species. EES recommends the FFMP is amended to include this commitment.</p> <p>Table 2 in the FFMP at CEMF 10.2 (a)(ix) indicates the FFMP will include as a minimum:</p> <p>ix Rehabilitation details, including identification of flora species and sources, and measures for the management and maintenance of rehabilitated areas (including duration of the implementation of such measures) The FFMP needs to address this.</p>		<ul style="list-style-type: none"> o off requirements of the pre-clearance inspection hold point o Demarcation of vegetation o Management of unexpected finds o Specific measures for identifying, relocation requirements and management / monitoring requirements o Reporting requirements, including Pre and Post Clearance Reporting

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			<p>5.2 Ecological Impacts Section 5.2 states “there are activities that may potentially harm threatened species around Clyde including: Tree hollows within 200m of water bodies may be used as nesting grounds for the Southern Myotis” (page 1). It is unclear if tree hollows are proposed to be removed and this needs to be clarified, including details on the proposed number of hollows to be removed to ensure replacement hollows are available prior to removing the hollows, particularly as Section 5.4.2 states “no mature of hollow trees are removed without first consulting an ecologist”.</p> <p>EES notes that Table 2 at 10.2(b) (iii) indicates a Post Clearance Report will provide details on the number of hollows and the corresponding nest box requirements to offset impacts (page 9). It is important that prior to clearing any hollows that provide potential habitat for Southern Myotis and/or any other native hollow dependent fauna that replacement hollows are provided prior to removal of the tree hollows.</p>		

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			<p>5.3 Flora and Fauna Management</p> <p>Section 5.3 states Stage 1 flora and fauna management will include the following features:</p> <ul style="list-style-type: none"> • Procedures for demarcation and protection of retained vegetation both inside and adjacent to the construction footprint • Measures to reduce disturbance to sensitive fauna • Procedures for the clearing of vegetation and relocation of flora and fauna • Procedures of managing unexpected finds (endangered or threatened ecological communities discovered during construction) • Inspection and monitoring requirements <p>The Delta Group FFMP should include an explanation in Section 5.3 as to where it addresses these features. Southern Myotis Table 1 notes Condition of Approval C11 requires that the FFMP must include</p> <p>(a) site specific mitigation measures to manage impacts (including proposed techniques, timing, frequency, and responsibility of implementing)</p> <p>(b) measures to minimise disturbance to habitat associated with Myotis macropus / Southern Myotis, including demolition inspections by a suitably qualified ecologist of any vegetation to be cleared and any buildings or structures identified as potential roosting habitat for microbats that are to be demolished or refurbished.</p>		

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			<p>Section 5.4 of the FFMP notes the Southern Myotis is assumed to be present within the development site at Clyde as relevant foraging habitat is present downstream along the Duck River but due to the high volume of anthropogenic activity, there are no suitable buildings present on the worksite which are expected to be, at best, marginal roost sites".</p> <p>In terms of minimising impacts to the Southern Myotis (as required by Condition 11), Section 5.4.1 indicates that Delta will ensure that among other things:</p> <ul style="list-style-type: none"> • Prior to commencement of demolition at Clyde a suitably qualified ecologist will conduct searches, trapping and Anabat recording to determine bat abundance and roost locations pre-demolition. <p>EES recommends this measure is amended to also include the following wording:</p> <ul style="list-style-type: none"> • Prior to the removal of any hollow bearing trees that provide potential habitat for Southern Myotis or other microbats or commencement of demolition at Clyde a suitably qualified ecologist will conduct searches, trapping and Anabat recording to determine bat abundance and roost locations pre-demolition 		

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			<p>Condition of Approval MCoA D8 in Table 1 requires that in the event roosting sites are identified “bat boxes must be provided, or suitable habitat built within the Clyde Stabling and Maintenance facility site”. Table 1 indicates this is addressed in Section 5.4 of the FFMP, but Section 5.4 provides no details on what is meant by “or suitable habitat built within the Clyde Stabling and Maintenance Facility site” and what this involves. It only states that “bat boxes will be placed around the site to act as supplemental roosts”. Section 5.4 provides no details on the proposed location of the boxes if Southern Myotis are found to be present within the structures to be demolished or within tree hollows. While details on the nest box locations may depend on the findings of the pre-clearing inspection (which is yet to be undertaken) it would be helpful to know where the boxes could potentially be located and how many nest boxes the site could accommodate if required. The FFMP should specify that the bat boxes need to be provided prior to any removal of habitat.</p>		

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			<p>EES requests that the FFMP be revised to include a requirement that if any Southern Myotis are located during searches of human-built structures and consequent surveys, then a report on the surveys undertaken for Southern Myotis are provided to EES. The report should document methods and equipment used, dates/times, effort expended, weather conditions (including temperature ranges, wind speed and direction, amount, and nature of precipitation) recorded onsite during the surveys.</p> <p>If signs of bats are found, the FFMP should be revised considering the results of the surveys and further consultation with EES undertaken and the revised FFMP must address how the impacts to microbats will be avoided, minimised, and mitigated. Table 2 at 10.2(b)(iii) notes a Post Clearance Report will provide details on the number of hollows and the corresponding nest box requirements to offset impacts (page 9). It is important that replacement hollows are provided prior to clearing any existing hollows that provide potential habitat for Southern Myotis and/or any other native hollow dependent fauna.</p>		

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			<p>5.4.2 Minimising impacts on other flora and fauna EES recommends Section 5.4.2 is amended to include:</p> <ul style="list-style-type: none"> • pre-clearance inspections are to be conducted for all trees/vegetation and other habitat features that have been approved for removal (see Section 7.1) • no mature or hollow trees are removed without first consulting an ecologist and replacement hollows are provided nearby • any fauna captured will be relocated into areas of suitable habitat in proximity to the project site. <p>Replacement Tree Hollows As advised by EES at the meeting on 8 September it is important that replacement tree hollows are installed prior to removing any existing hollows. The FFMP should particularly outline that where hollow dependent native fauna are found using existing hollows, compensatory tree hollows must be provided prior to removing the tree hollows and prior to the release of the hollow dependent fauna unless the removed tree hollows can be relocated and installed on the same day they are removed. It is recommended the FFMP is amended accordingly.</p>		

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			<p>Reuse of removed trees and other fauna habitat EES recommends the FFMP outlines that habitat features identified during the pre-clearing inspections are to be reused by either the project, or the proponent consults with relevant public authorities, local community restoration/rehabilitation groups, Landcare groups etc to determine if the habitat features can be reused elsewhere in the locality. The FFMP should be amended to include:</p> <ul style="list-style-type: none"> o the ecologist /arborist will endeavour to individually remove sections of a tree containing a hollow or other habitat features for relocation and reuse by the project to enhance habitat. o native trees that are approved for removal (including hollows and tree trunks (greater than approximately 25-30cm in diameter and 2m in length) and other habitat features (such as logs and bush rock) should be relocated and reused by the project. <p>Where trees/habitat features are not able to be reused by the project the proponent should consult with relevant public authorities, local community restoration/rehabilitation groups, Landcare groups etc to determine if there is an interest for the reuse of suitable timber and root balls, bush rock etc in habitat enhancement and rehabilitation work off-site.</p>		

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			<p>7.1 Ecological Monitoring</p> <p>Section 7.1 of the FFMP states that “A pre-clearing inspection will be undertaken prior to the clearance of any trees by a suitable qualified ecologist and Delta’s contracted Environmental Manager”. The FFMP should identify the timing of when the pre-clearing inspections are to be undertaken.</p> <p>Section 7.1 notes the pre-clearing inspection will include:</p> <ul style="list-style-type: none"> a. Identification of hollow bearing trees or other habitat features b. Identification of any potential threatened flora and fauna c. A pre-clearance tree removal report, including total number of trees to be removed, locations of the trees to be removed, an assessment of the canopy area, and a brief justification for those trees removed to facilitate the safe undertaking of Demolition Works (note: this report and its data will be used to produce the post-clearing report) d. A check on the physical demarcation of the limit of clearing and e. The completion of any other pre-clearing requirements required by project approvals, permits or licenses. <p>EES recommends the above points (a) (b) and (c) in Section 7.1 are amended to include:</p> <ul style="list-style-type: none"> a. Identification of hollow bearing trees or other habitat features including any nests, dreys, logs, bush rock etc. b. Identification of any potential threatened and protected native flora and fauna c. A pre-clearance tree removal report, including total 		

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			<p>number of trees to be removed, locations of the trees to be removed, tree species, identify if the tree is a local native / non-local native or exotic species, an assessment of the canopy area, and a brief justification for those trees removed to facilitate the safe undertaking of Demolition Works (note: this report and its data will be used to produce the post-clearing report</p> <p>As advised by EES at the meeting on 8 September, the pre-clearing surveys should apply to all “protected animals” under the Biodiversity Conservation Act 2016 (BC Act) and not just threatened fauna. Sydney Metro West confirmed at the meeting that this would occur. It is important that the FFMP is amended to reflect this commitment, such as:</p> <ul style="list-style-type: none"> • The pre-clearing surveys are to apply to all “protected animals” under the Biodiversity Conservation Act 2016 (BC Act) and not just threatened fauna. Protected animals are defined in Schedule 5 of the BC Act to include any of the following that are native to Australia or that periodically or occasionally migrate to Australia (including their eggs and young) - <ul style="list-style-type: none"> o amphibians - frogs or other members of the class amphibia o birds - birds of any species o mammals - mammals of any species (including aquatic or amphibious mammals but not including dingoes) o reptiles - snakes, lizards, crocodiles, tortoises, turtles or other members of the class reptilia. • Provide guidance on subsequent relocation if 		

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			<p>required for any protected native fauna (including any threatened fauna not previously identified) found during the inspections. Any protected fauna found that is unable to relocate on its own must be relocated to appropriate nearby habitat.</p> <ul style="list-style-type: none"> • Mark hollow bearing trees, nests, dreys, logs where special attention may be required during vegetation clearing <p>This section should specify that pre-clearance inspections should be conducted for all trees/vegetation and other habitat features that have been approved for removal.</p> <p>Post-Clearing Report</p> <p>It is recommended the post clearance report includes details on the tree species removed and whether the trees removed were local native / non-local native or exotic species.</p> <p>Section 7.1 indicates that on completion of clearing in each location a post clearance report will be prepared, and the report will confirm the number of hollows impacted and the corresponding nest box requirements. As noted above it is important that replacement tree hollows are installed prior to removing any existing hollows. The FFMP should outline that replacement hollows are provided prior to removal of the hollows, particularly if the pre-clearance inspections identify native fauna using existing hollows, compensatory tree hollows must be provided prior to removing the tree hollows unless the removed hollows can be relocated and installed on the same day they are removed and prior to the release of the hollow dependent native fauna.</p> <p>End of Submission</p>		

AGENCY	DATE SENT FOR REVIEW	DATE RECEIVED COMMENTS	COMMENTS	DOCUMENT REFERENCE	HOW COMMENT HAS BEEN ADDRESSED
DPI Fisheries	27/08/2021	02/09/2021	<p>Thank you for your referral of 27/08/2021 seeking comment on the Draft Flora and Fauna Management Plan which is a Construction Environment Management Plan (CEMP) sub-plan. This consultation is a requirement as per Conditions of Approval for the Sydney Metro West (Stage 1 – Parramatta & Clyde Early Works) CSSI-10038.</p> <p>DPI Fisheries is responsible for ensuring that fish stocks are conserved and that there is no net loss of key fish habitats upon which they depend. To achieve this, DPI Fisheries ensures that developments comply with the requirements of the Fisheries Management Act 1994 (FM Act) (namely the aquatic habitat protection and threatened species conservation provisions in Parts 7 and 7A of the Act, respectively), and the associated Policy and Guidelines for Fish Habitat Conservation and Management (2013). DPI Fisheries is also responsible for ensuring the sustainable management of commercial, recreational and Aboriginal cultural fishing, aquaculture, marine parks and aquatic reserves within NSW.</p> <p>DPI Fisheries has reviewed the Flora and Fauna Management Sub Plan, Sydney Metro West (Stage 1 – Parramatta & Clyde Early Works) CSSI-10038 (25/08/2021, Delta Group Australia Pty. Ltd.).</p> <p>DPI Fisheries has no objections to the proposed Flora and Fauna Management Sub Plan (the Plan) and makes the following comments:</p> <ul style="list-style-type: none"> Delta Group Australia Pty. Ltd. (2021) report that no flora or fauna protected under the Fisheries Management Act (1994) will be affected in Stage 1 – Parramatta & Clyde Early Works. While mangroves are present adjacent 	SMWSDDS-DLT-1NL-EM-PLN-000038 Flora and Fauna Management Plan (revision 0)	Noted that DPI Fisheries “has no objections to the proposed Flora and Fauna Management Sub Plan”. No changes required based on the comments provided.

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			<p>to the Clyde Stabling and Maintenance Facility (Duck Creek), section 5.4.2 in the Plan states that mangroves will not be affected.</p> <ul style="list-style-type: none"> • DPI Fisheries understands that mangroves will be impacted in later stages of this project and we look forward to the opportunity to comment later. • Section 5.4.2 also states that waterway flow and fish passage will be maintained similar to current conditions during works. 		
City of Parramatta Open Spaces and Natural Resources Team	27/08/2021	21/09/2021	<p>The proposed works are not anticipated to significantly impact waterways/riparian zones in the Clyde precinct provided the relevant plans are implemented.</p> <p>One comment is made as follows: Section 5.4.1 of the F&F management plan states: “Bat boxes will be placed around the site to act as supplemental roosts”. And section CEMF 10.2 (a) states that the F&F management plan is to provide “details on the locations, monitoring program and use of nest boxes by fauna”.</p> <p>Please specify in the F&F management plan the details of these bat boxes, including number of boxes to be installed, the type of bat box designs to be used (keeping box longevity and box attachment method in mind), the location of box installation, the proposed monitoring, and commitment to providing the box location data to council in the event boxes are installed on council land (e.g. within the riparian corridors).</p>	SMWSDDS-DLT-1NL-EM-PLN-000038 Flora and Fauna Management Plan (revision 0)	<p>In relation to Delta's scope, the FFMSF was updated to address the comments from City of Parramatta including:</p> <ul style="list-style-type: none"> • An indicative area to place nesting boxes has been identified along the riparian vegetation adjacent to the works. Delta and SMW will liaise with Parramatta Council to finalise the locations where they are required. • The Works Procedure included in the updated Plan details the procedures and requirements associated with identifying bats, relocation and bat box requirements.

APPENDIX E – ENVIRONMENTAL REPRESENTATIVE ENDORSEMENT

Stuart Hodgson
Director Sustainability, Environment & Planning
Metro West
Sydney Metro
Transport for NSW
PO Box K659
HAYMARKET NSW 1240

5 November 2021

REF: FFMP REV6

Dear Stuart

RE: Sydney Metro Parramatta, Clyde and Westmead Enabling Work: Flora and Flora Management Plan (FFMP Rev 6 5/11/2021)

I refer to Sydney Metro's (SM) submission of the following document required by condition C1 of the Infrastructure Approval (SSI 10038) which was approved by the Department of Planning, Industry and Environment (DPIE) on 11 March 2021:

- Sydney Metro West, Delta Group Flora and Fauna Management Plan (FFMP Rev 6 dated 5 November 2021).

It is noted that:

- The FFMP has been developed in accordance with clause 10.2(a) of the Sydney Metro West CEMF and Condition C11
- DPIE has nominated the ER to endorse the FFMP under Condition C8 in a letter dated 24 September 2021.
- Previous versions of the document have been reviewed and updated following comments from the ER.
- A draft FFMP was issued to Parramatta and Cumberland Councils and other relevant agencies in accordance with Condition C5(b). The FFMP and other related Plans were discussed with the Councils and the agencies during (virtual) workshop presentations held on 8 and 9 September 2021.
- Comments on the FFMP were provided by the Councils and other government agencies on the FFMP and have been adequately addressed by Delta Group.
- Sydney Metro has also reviewed and commented on the document.

Following the above reviews the document is considered to contain information required by the Conditions of Approval (SSI 10038) and in particular Condition C11 in relation to the FFMP

As the approved Environmental Representative for the Metro West and as required by Conditions A30(d), on the basis of the above comments the Flora and Fauna Management Plan (FFMP Revision 6) is endorsed.

The endorsement is conditional on Delta obtaining and complying with any relevant approval, licence or permit required for the works; complying with relevant Conditions of Approval as they relate to the works; and appropriate notifications being issued prior to the works.

Yours sincerely



Jo Robertson

Environmental Representative – Sydney Metro West
CC: John Ieroklis, Matthew Marrinan, Ben Armstrong; Todd Solomon