Bradfield City Regional Stormwater Infrastructure: Addendum to Biodiversity Strategy and Impact Assessment Version 2

Bradfield Development Authority

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Template 2.8.1

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Abbreviations

Abbreviation	Description
BAM	Biodiversity Assessment Method 2020
BC Act	NSW *Biodiversity Conservation Act 2016*
BDAR	Biodiversity Development Assessment Report
BOS	Biodiversity Offset Scheme
CEMP	Construction Environmental Management Plan
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
Commonwealth DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
ELA	Eco Logical Australia
EP&A Act	NSW *Environmental Planning and Assessment Act 1979*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
FM Act	NSW *Fisheries Management Act 1994*
GIS	Geographic Information System
HBT	Hollow bearing tree
KFH	Key fish habitat
LEP	Local Environmental Plan
LGA	Local Government Area
MNES	Matters of National Environmental Significance
NSW	New South Wales
PCT	Plant Community Type
PMST	Protected Matters Search Tool
REF	Review of Environmental Factors
SEPP	State Environmental Planning Policy
TEC	Threatened Ecological Community
WIRES	NSW Wildlife Information, Rescue and Education Service Inc.
WM Act	NSW *Water Management Act 2000*
WoNS	Weeds of National Significance

Executive Summary

Eco Logical Australia Pty Ltd (ELA) was engaged by Bradfield Development Authority to prepare a Biodiversity Addendum which addresses the construction of Regional Stormwater Drainage and Realignment and Enhancement of Moore Gully at Bradfield City Centre as per the *Regional Stormwater Infrastructure, Sediment Basins, Wetlands and Pond Design* (Stantec, 2024) plans dated October 2024 provided by Bradfield Development Authority. The addendum is designed to review the existing *Bradfield City Centre Master Plan Application Biodiversity Strategy and Impact Assessment* prepared by Biosis Pty Ltd. (Biosis) (Biosis, 2023) and apply the assessment to the proposed Regional Stormwater Drainage and realignment and enhancement of Moore Gully works. The addendum will accompany a Review of Environmental Factors (REF) for these works undertaken on behalf of the Bradfield Development Authority. The REF Reference Design – Version 1 BSIA Addendum identified the RSI had a minor encroachment on ENV and non-certified land. The Detailed Design Version 2 was developed to avoid encroachment on ENV and non-certified land. The Bradfield Development Authority requested ELA to undertake an updated BSIA for the Version 2 footprint.

The proposed activity will modify a total of 12.40 ha of vegetation within the subject site. This includes impact to 7.58 ha of exotic grassland, 4.37 ha of four (4) Plant Community Types (PCT), 0.18 ha of a wetland and 0.27 ha of a dam area from within the subject site to facilitate the works. This report will support the Master Plan Application for the Bradfield City Centre and the associated REF.

The subject site is wholly contained on biodiversity certified land under the *Biodiversity Conservation Act 2016* (BC Act) and the *Order to confer biodiversity certification on the State Environmental Planning Policy (Sydney Region Growth Centres) 2006.* Biodiversity certification allows for development without the requirement to conduct impact assessments under the BC Act and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), including the preparation of five-part tests or species impact statements, at the assessment stage. Assessment of impacts to the aquatic ecology applies under the *Fisheries Management Act 1994* (FM Act) and is unrelated to biodiversity certification.

Assessment under the EPBC Act is not required as the entire Growth Centres were subject to a Strategic Assessment under the EPBC Act and approval was granted (signed 11 November 2009) for all urban development and associated infrastructure carried out in accordance with the Sydney Region Growth Centres program. Therefore, no assessments under the EPBC Act are required for the proposed action within the project area.

A desktop review of databases pertaining to the ecology and environmental features of the proposed subject site, as well as surrounding areas was conducted. Records of threatened species, populations, and communities within 5 km of the subject site were identified. A field survey was undertaken by Biosis to confirm the vegetation communities present within the subject site, with a habitat assessment also completed for threatened species identified through the desktop review (Biosis, 2023).

Four PCTs were identified within the subject site during Biosis field survey:

- PCT 781 Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion

- PCT 849 Grey Box – Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion
- PCT 1071 *Phragmites australis* and *Typha orientalis* coastal freshwater wetlands of the Sydney Basin Bioregion
- PCT 1800 Swamp Oak open forest on river flats of the Cumberland Plain and Hunter Valley

Each of these PCTs was identified as corresponding to a threatened ecological community (TEC) under the BC Act. There were four (4) BC Act TECs present within the subject site:

- PCT 781 corresponds to *Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* – endangered under the BC Act
- PCT 849 corresponds to *Cumberland Plain Woodland of the Sydney Basin Bioregion* – critically endangered under the BC Act
- PCT 1071 corresponds to *Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* – endangered under the BC Act
- PCT 1800 corresponds to *Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* – endangered under the BC Act.

The EPBC Act listed TECs within the subject site are:

- *Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest* (High condition only. Moderate and low condition did not meet the EPBC Act condition thresholds) – critically endangered
- *Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community* (based on floristic assemblage (Biosis 2023)) – endangered
- *River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria* (based on floristic assemblage (Biosis 2023)) – critically endangered.

No threatened flora was encountered within the subject site during the field survey (Biosis, 2023). The likelihood of occurrence table (Appendix A) determined that the subject site could provide potential habitat for threatened fauna species *Myotis macropus* (Southern Myotis) which is listed as vulnerable under the BC Act. All occurrences of TECs and habitat for Southern Myotis occur on biodiversity certified land. Therefore, further assessment of impacts is not required.

In 2021, Biosis conducted an Aquatic Ecological Assessment of Moore Gully and found that it was a 4th order chain of ponds and constructed dams, with Type 1 key fish habitat present. They assessed water quality, and fish and macroinvertebrate populations, and determined that the watercourse was in poor condition. ELA inspected the gully in March 2024, knowing that the proposed activity involves removing online dams and realigning about 600 m of channel between the western property boundary and Thompsons Creek to the east. No threatened species, populations or communities listed under the FM Act have the potential to occur in Moore Gully. Under s.199 of the FM Act, consultation with DPI Fisheries is needed to realign this watercourse.

Mitigation measures have been recommended to minimise the potential impacts of the proposed activity and improve environmental outcomes across the subject site.

1. Introduction

1.1. Background

Eco Logical Australia Pty Ltd (ELA) was engaged by Bradfield Development Authority to prepare a Biodiversity Addendum which addresses the construction of Regional Stormwater Infrastructure (RSI) and Realignment and Enhancement of Moore Gully (the proposal) at Bradfield City Centre as per the *Regional Stormwater Infrastructure, Sediment Basins, Wetlands and Pond Design* (Stantec, 2024) plans dated October 2024 provided by Bradfield Development Authority. The addendum is designed to review the existing *Bradfield City Centre Master Plan Application Biodiversity Strategy and Impact Assessment* (Biosis, 2023) prepared by Biosis Pty Ltd. (Biosis) and apply the assessment to the proposed Regional Stormwater Drainage and realignment and enhancement of Moore Gully works. The addendum will accompany a Review of Environmental Factors (REF) for these works undertaken on behalf of the Bradfield Development Authority. The REF Reference Design – Version 1 BSIA Addendum identified the RSI had a minor encroachment on ENV and non-certified land. The Detailed Design Version 2 was developed to avoid encroachment on ENV and non-certified land. The Bradfield Development Authority requested ELA to undertake an updated BSIA for the Version 2 footprint.

The proposed works will require the modification of 7.58 ha of exotic grassland, 4.37 ha of four Plant Community Types (PCTs), 0.18 ha of a wetland and 0.27 ha of dam areas, and is wholly contained within biodiversity certified land recognised under the BC Act and the *Order to confer biodiversity certification on the State Environmental Planning Policy (Sydney Region Growth Centres) 2006* (Biodiversity Certification Order).

This Biodiversity Addendum assesses impacts of the proposed activity on native vegetation, threatened species and their associated habitat features, endangered populations and threatened ecological communities listed under the BC Act, NSW *Fisheries Management Act 1994* (FM Act) and EPBC Act. The terrestrial impact assessments in this report are based on information gathered from database searches and a desktop assessment of the existing *Bradfield City Centre Master Plan Application Biodiversity Strategy and Impact Assessment* (Biosis, 2023). Field work was undertaken by ELA for aquatic ecology impact assessments. The report sets out the legislative context, methods used, likely impacts to biodiversity and recommendations to minimise these impacts.

The proposed activity footprint shown in Figure 1 shows the Detailed Design RSI Footprint in October 2024.

1.2. Subject site description

The following terms have been defined for the purposes of this assessment (Figure 1):

- *Subject site* – The area directly affected by the proposed activity - (footprint provided by Bradfield Development Authority – the extent of the land at Lot 3101, Deposited Plan (DP) 1282964.

The street address for the site is 215 Badgerys Creek Road, Bradfield. The proposed activity would occur on land located at Lot 3101, DP 1282964 which has a total area of 114.6 ha. The proposed activity is located between the localities of Greendale and Austral, approximately 13 km north of Narellan. The

subject site is bounded by land zoned as Enterprise and Mixed Use (under the State Environmental Planning Policy (Precincts - Western Parkland City) 2021) to the north, by Thompsons Creek and residential properties to the east and south, and by Badgerys Creek Road to the west. Historical aerial photographs show evidence that the land within the subject site has been used for agricultural purposes.

1.3. Proposed works

The proposal for consists of the following activities:

- Bulk earth works.
- Storm quality control (construction of a series of ponds with extended detention to attenuate flows and detain stormwater for reuse and the installation and design of splitter pits to direct flows from the development and external catchments into the appropriate treatment train).
- Stormwater quality/onsite detention (OSD) (construction of a series of sediment basins and wetlands and the installation of gross pollutant traps).
- Associated stormwater pipes and infrastructure.
- Riparian corridor landscaping.
- Realignment of the Moore Gully and its tributary with all appropriate scour protections.
- Maintenance access paths.
- Pedestrian access paths.

1.4. Purpose of the report

This Biodiversity Addendum provides the findings of a database search and literature review, a summary of the relevant statutory considerations, a review of the existing *Bradfield City Centre Master Plan Application Biodiversity Strategy and Impact Assessment* (Biosis, 2023) and an assessment of how the proposed works could affect the ecological values of the subject site.

This Biodiversity Addendum includes an assessment of impacts of the proposed activity on threatened species and communities listed under the BC Act. The assessment process is as follows:

- Identification of known or potential habitat for threatened species or communities within and adjacent to the subject site.
- Assessment of the likely impacts of the proposed works on any threatened species or communities with the potential to occur within the subject site.
- Identification of any additional controls or mitigation measures to reduce impacts.

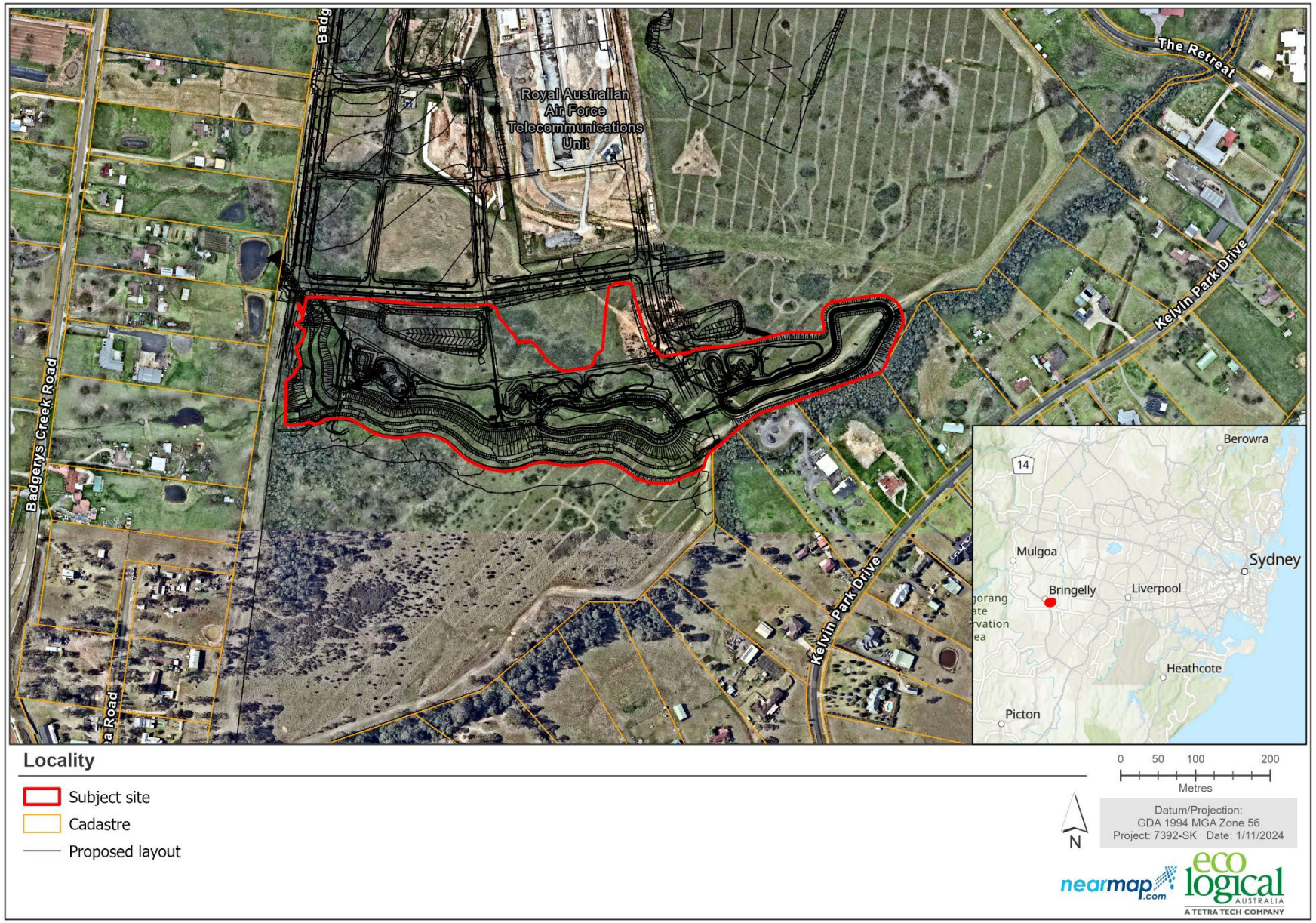

Figure 1: Location of the Detailed Design RSI Footprint

2. Legislative context

Table 1: Legislative context

Name	Relevance to the project
Commonwealth	
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The Commonwealth EPBC Act aims to protect Matters of National Environmental Significance (MNES), including vegetation communities and species listed under the EPBC Act. If an action is likely to have a significant impact on MNES, it is likely to be considered a 'Controlled Action' by the Commonwealth and requires assessment and approval by the Commonwealth to proceed. Assessment under the EPBC Act is not required as the entire Growth Centres were subject to a Strategic Assessment under the EPBC Act and approval was granted for all urban development and associated infrastructure carried out in accordance with the Sydney Region Growth Centres program. Therefore, no assessments under the EPBC Act are required for the proposed action within the project area.
State	
Environmental Planning and Assessment Act 1979 (EP&A Act)	The EP&A Act is the principal planning legislation for NSW. It provides a framework for the overall environmental planning and assessment of development proposals. The Bradfield Development Authority is both the proponent of the works and the consent authority under Part 5 of the EP&A act.
Biodiversity Conservation Act 2016 (BC Act)	The purpose of the BC Act is to maintain a healthy, productive, and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development. Section 8.4 (4) of the BC Act describes the effect of biodiversity certification in relation to development under Part 5 of the EP&A Act stating: "*A determining authority under Part 5 of the Environmental Planning and Assessment Act 1979 is not required under that Part to consider the effect on biodiversity of an activity to the extent that it is carried out on biodiversity certified land*." The subject site is wholly contained on biodiversity certified land under Part 8.7 of the BC Act by the Order of the NSW Minister for the Environment (Figure 2). The conditions for the biocertification are documented in the Minister's Order for consent. Biocertification negates the requirement to conduct impact assessments under section 5A of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act), thus turning off the requirements for five-part tests or species impact statements for development occurring on certified land. The proposed activity upholds the conservation purpose of the BC Act and will maintain a healthy, productive, and resilient environment by conserving biodiversity, maintaining ecosystems, supporting conservation, and reducing threats.
Fisheries Management Act 1994 (FM Act)	The FM Act governs the management of fish and their habitat in NSW. The schedules of the Act list key threatening processes and threatened species, populations and communities which must be addressed at the DA stage. The FM Act regulates the provision of permits required in relation to harm of protected marine vegetation, dredging, reclamation or obstruction of fish passage on Key Fish Habitat (KFH). This includes direct and indirect impacts, whether temporary or permanent. The proposed activity will involve impacts to KFH (associated with realignment of Moore Gully) which will require consultation with DPI Fisheries under s.199 of the FM Act.
Water Management Act 2000 (WM Act)	Watercourses exist within and surrounding the subject site. These have been mapped as 3rd, 4th and 5th order streams under the Strahler Classification System (Figure 3). Existing and proposed riparian corridors are included in Figure 4: Riparian The *Water Management (General) Regulation 2018* Clause 41 exempts public authorities from requiring a controlled activity approval.

Name	Relevance to the project
Biosecurity Act 2015	Under the Biosecurity Act, priority weeds have been identified for local government areas and assigned strategies to contain, remove or manage. Occupiers of land (this includes owners of land) have responsibility for taking appropriate action for priority weeds on the land they occupy. Nine priority weeds including *Asparagus aethiopicus* (Ground Asparagus), *Asparagus asparagoides* (Bridal Creeper), *Eichhornia crassipes* (Water Hyacinth), *Lantana camara* (Lantana), *Lycium ferocissimum* (African Boxthorn), *Olea europaea* subsp. *cuspidata* (African Olive), *Opuntia* sp. (Prickly pears), *Rubus fruticosus* sp. agg. (Blackberry), and *Senecio madagascariensis* (Fireweed) were present within the subject site.
Environmental Planning Instruments	
State Environmental Planning Policy (Biodiversity and Conservation) 2021	Chapter 2 of the SEPP, 'Clearing Native Vegetation in Non-Rural Areas', applies to development in urban areas and environmental conservation zones that does not require consent or activity approval. Chapter 4 Koala habitat protection 2021 of the SEPP is not relevant to the subject site, as the proposed activity would occur on biodiversity certified land. The subject site is located within the Hawkesbury-Nepean Catchment which is a regulated catchment in accordance with Chapter 6 of this SEPP. Therefore, development controls under Section 6.7 relating to aquatic ecology apply to this future development.
SEPP Precincts – Western Parkland City 2021 (Western Parkland SEPP)	The subject site is predominantly zoned MU - Mixed Use under the Western Parkland City SEPP. A small part of the site located in the north-western corner is zoned as ENT - Enterprise. The south-eastern edge of the subject site, along with two patches in the southwest corner and one isolated patch in the northwest corner, are zoned as ENZ – Environment and Recreation. The site is part of the South West Growth Centre Precinct and the Aerotropolis Precinct. Chapter 4 states that the aims of the Western Sydney Aerotropolis are as follows – *(a) To facilitate development in the Western Sydney Aerotropolis in accordance with the objectives and principles of the Western Sydney Aerotropolis Plan,* *(b) To promote sustainable, orderly and transformational development in the Western Sydney Aerotropolis,* *(c) To ensure development is compatible with the long-term growth and development of the Western Sydney Airport (including in relation to the operation of the Airport 24 hours a day) and other critical transport infrastructure,* *(d) To promote employment and world-class innovation and provide for residential development in suitable locations,* *(e) To recognise the physical and cultural connection of the local Aboriginal community to the land and to incorporate local Aboriginal knowledge, culture and tradition into development,* *(f) To preserve land for future infrastructure development,* *(g) To protect, maintain and enhance, and to minimise the impact of development on trees, vegetation, soil quality, the healthy of waterways and to contribute to the conservation of biodiversity,* *(h) To recognise and protect the ecological and cultural value of Wianamatta South Creek.* Chapter 4 goes on to define the requirements for clearing native vegetation as follows: ***4.25 Preservation of trees and vegetation in Environment and Recreation Zone and Cumberland Plain*** *1. The objectives of this section are—* *(a) to preserve the amenity of the Western Sydney Aerotropolis through the preservation of trees and vegetation, and* *(b) to promote the conservation of, and minimise the impact of development on, native vegetation.* *2. This section applies to land—* *(a) in the Environment and Recreation Zone, or* *(b) shown as "existing native vegetation" on the High Biodiversity Value Areas Map.*

Name	Relevance to the project

3. A person must not clear native vegetation on land to which this section applies without development consent.

4. Development consent under subsection (3) must not be granted unless the consent authority is satisfied that, in relation to the disturbance of native vegetation caused by the clearing—

(a) there is no reasonable alternative available to the disturbance of the native vegetation, and

(b) any impact of the proposed clearing on biodiversity values is avoided or minimised, and

(c) the disturbance of the native vegetation will not increase salinity, and

(d) native vegetation inadvertently disturbed for the purposes of construction will be re-instated where possible on completion of construction, and

(e) the loss of remnant native vegetation caused by the disturbance will be compensated by revegetation on or near the land to avoid a net loss of remnant native vegetation, and

(f) the clearing of the vegetation is unlikely to cause or increase soil erosion, salination, land slip, flooding, pollution or other adverse land or water impacts.

5. Development for the following purposes is prohibited on land shown as "high biodiversity value" on the High Biodiversity Value Areas Map—

(a) information and education facilities,

(b) kiosks,

(c) recreation areas other than a public park, reserve or garden,

(d) recreation facilities (outdoor).

6. State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 does not apply to land to which this section applies.

7. This section does not authorise the clearing of existing native vegetation within the meaning of the relevant biodiversity measures under Part 7 of Schedule 7 to the repealed Threatened Species Conservation Act 1995.

Note—

Clause 43 of the Biodiversity Conservation (Savings and Transitional) Regulation 2017 provides that the repeal of the Threatened Species Conservation Act 1995 does not affect the operation of Part 7 or 8 of Schedule 7 to that Act. Land to which this section applies is affected by the biodiversity certification provisions of that Act and provisions of State Environmental Planning Policy (Sydney Region Growth Centres) Policy 2006.

4.25A Clearing of native vegetation

1. This section applies to land shown as "existing native vegetation" on the High Biodiversity Value Areas Map.

2. Development consent must not be granted to development on the land unless the consent authority is satisfied that the development will not result in clearing of native vegetation.

3. Development for public utility undertakings, other than electricity generating works and water recycling facilities, may be carried out without development consent on the land.

4. A public authority, or a person acting on behalf of a public authority, must not carry out development comprising the clearing of native vegetation on the land unless the authority or person—

(a) has given written notice to the Planning Secretary, and

(b) considered submissions received from the Planning Secretary within 21 days after the notice is given.

The proposed activity is consistent with the zoning and land use, the aims of Chapter 4 of the SEPP.

Clause 2(a) the footprint of the proposal includes part of land zoned in the Environment and Recreation Zone.

Name	Relevance to the project
	Clause 2(b) is no longer applicable, with the footprint wholly avoiding the ENV on the High Biodiversity Values Area map. Clause 4.25 of the SEPP needs to be considered in the context of the Biocertification Order under the BC Act. Clause 8.4 of the BC Act States (4) Activities under Part 5 of the Planning Act An activity to which Part 5 of the Environmental Planning and Assessment Act 1979 applies which is carried out or proposed to be carried out on biodiversity certified land is taken, for the purposes of Part 5 of that Act, to be an activity that is not likely to significantly affect any threatened species or ecological community under this Act, or its habitat, in relation to that land. (5) A determining authority under Part 5 of the Environmental Planning and Assessment Act 1979 is not required under that Part to consider the effect on biodiversity of an activity to the extent that it is carried out on biodiversity certified land. (6) This section prevails This section has effect despite anything to the contrary in the Environmental Planning and Assessment Act 1979 or Part 7 of this Act. Part 7 of the BC Act details the requirements for biodiversity assessment and approvals under the Planning Act. Given clauses 8.4 (4), 8.4 (5) and 8.4 (6) of the BC Act, the biodiversity certication removes the need for consideration of biodiversity impacts for public authorities on biocertified land. As such, the Clause 4.25 (4) of the SEPP can be considered addressed. Further, it could be argued that Clause 4.25(3) does not apply to BDA as they are not considered a "Person" but a public authority. However, ELA suggests BDA obtains legal advice for certainty
State Environmental Planning Policy (Resilience and Hazards) 2021	The site does not have any areas that are littoral rainforest, coastal wetlands or coastal management areas.
State Environmental Planning Policy (Transport and Infrastructure) 2021	Chapter 4 address the aims of Major Infrastructure Corridors. The aims of the Chapter 4 are listed as: *(a) to identify land that is intended to be used in the future as an infrastructure corridor,* *(b) to establish appropriate planning controls for the land for the following purposes-* *i. To allow the ongoing use and development of the land until it is needed for the future infrastructure corridor,* *ii. To protect the land from development that would adversely impact on or prevent the land from being used as an infrastructure corridor in the future.* Section 4.9 of the T&I SEPP outlines the requirements for proposals which require excavation within, above, below and adjacent the infrastructure corridors. *4.9 Excavation in, above, below or adjacent to future infrastructure corridors* *1. This section applies to development that involves the penetration of ground to a depth of at least 2 metres below ground level (existing) on land—* *a. within, below or above a future infrastructure corridor, or* *b. within 25 metres (measured horizontally) of a future infrastructure corridor, or* *c. within 25 metres (measured horizontally) of the ground directly below a future infrastructure corridor, or* *d. within 25 metres (measured horizontally) of the ground directly above an underground future infrastructure corridor.*

Name	Relevance to the project
	2. *Before determining a development application (or an application for modification of a consent) for development to which this section applies, the consent authority must—* a. *within 7 days after the application is made, give written notice of the application to Transport for NSW, and* b. *take into consideration—* i. *any response to the notice that is received within 21 days after the notice is given, and* ii. *any guidelines issued by the Planning Secretary for the purposes of this section and published in the Gazette.* 3. *The consent authority must not grant consent to development to which this section applies without the concurrence of Transport for NSW.* 4. *In deciding whether to provide concurrence, Transport for NSW must take into account—* a. *the potential effects of the development (whether alone or cumulatively with other development or proposed development) on—* i. *the safety or structural integrity of existing or proposed infrastructure in the future infrastructure corridor, and* ii. *the safe and effective operation of existing or proposed future infrastructure in the future infrastructure corridor, and* b. *what measures are proposed, or could reasonably be taken, to avoid or minimise those potential effects.* 5. *Despite subsection (3), the consent authority may grant consent to development to which this section applies without the concurrence of Transport for NSW if 21 days have passed since the consent authority gave notice under subsection (2)(a) and Transport for NSW has not granted or refused to grant concurrence.* A major infrastructure corridor runs through the site (Figure 5). The works will require consultation with Transport for NSW under the T&I SEPP.
Western Sydney Aerotropolis Precinct Plan 2022	The final Aerotropolis planning package, including the Precinct Plan and State Environmental Planning Policy (SEPP) Amendment, was gazetted by Department of Planning and Environment (DPE) in March 2022 and the Development Control Plan Phase 2 was finalised in November 2022. The Aerotropolis comprises the new Western Sydney (Nancy-Bird Walton) International Airport surrounded by five initial precincts which include the Aerotropolis Core, Wianamatta– South Creek, Northern Gateway, Agri-business and Badgerys Creek. The proposed activity is consistent with the requirements for riparian corridors (Section 4.5.2) and biodiversity and vegetation corridors (Section 4.5.4) detailed in the Western Sydney Aerotropolis Precinct Plan.
Western Sydney Aerotropolis Development Control Plan 2022 Phase 2 (Phase 2 DCP)	The Western Sydney Aerotropolis Development Control Plan 2022 Phase 2 (Phase 2 DCP) provides development controls to supplement the WSAP, Western Parkland City SEPP, Western Sydney Aerotropolis Precinct Plan and the Phase 1 DCP. Its aim is to inform the preparation and assessment of master plans and Development Applications (DA). Section 2.4 (Vegetation and Biodiversity) of the Phase 2 DCP applies to native vegetation and biodiversity.

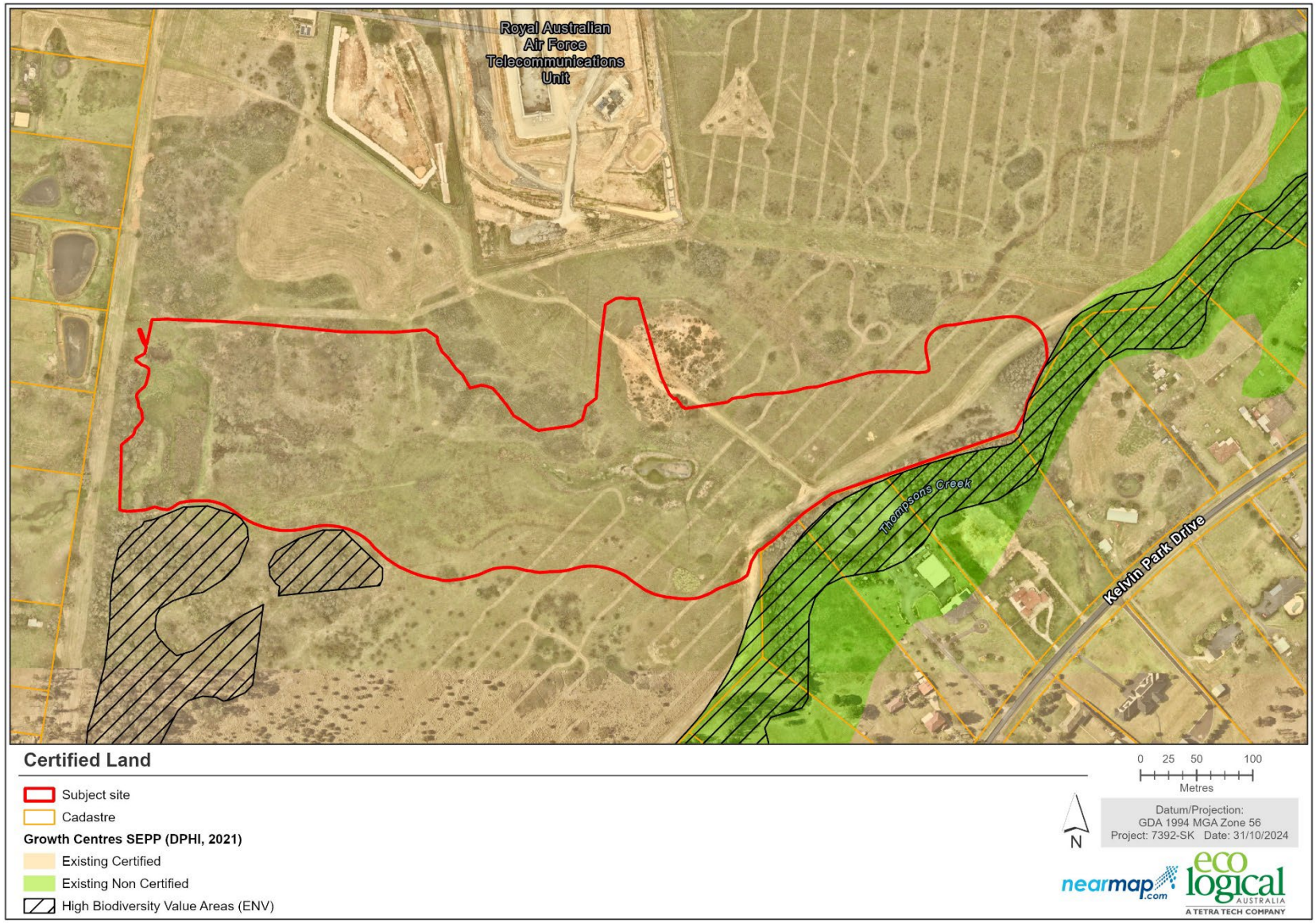

Figure 2: Biodiversity Certified Land

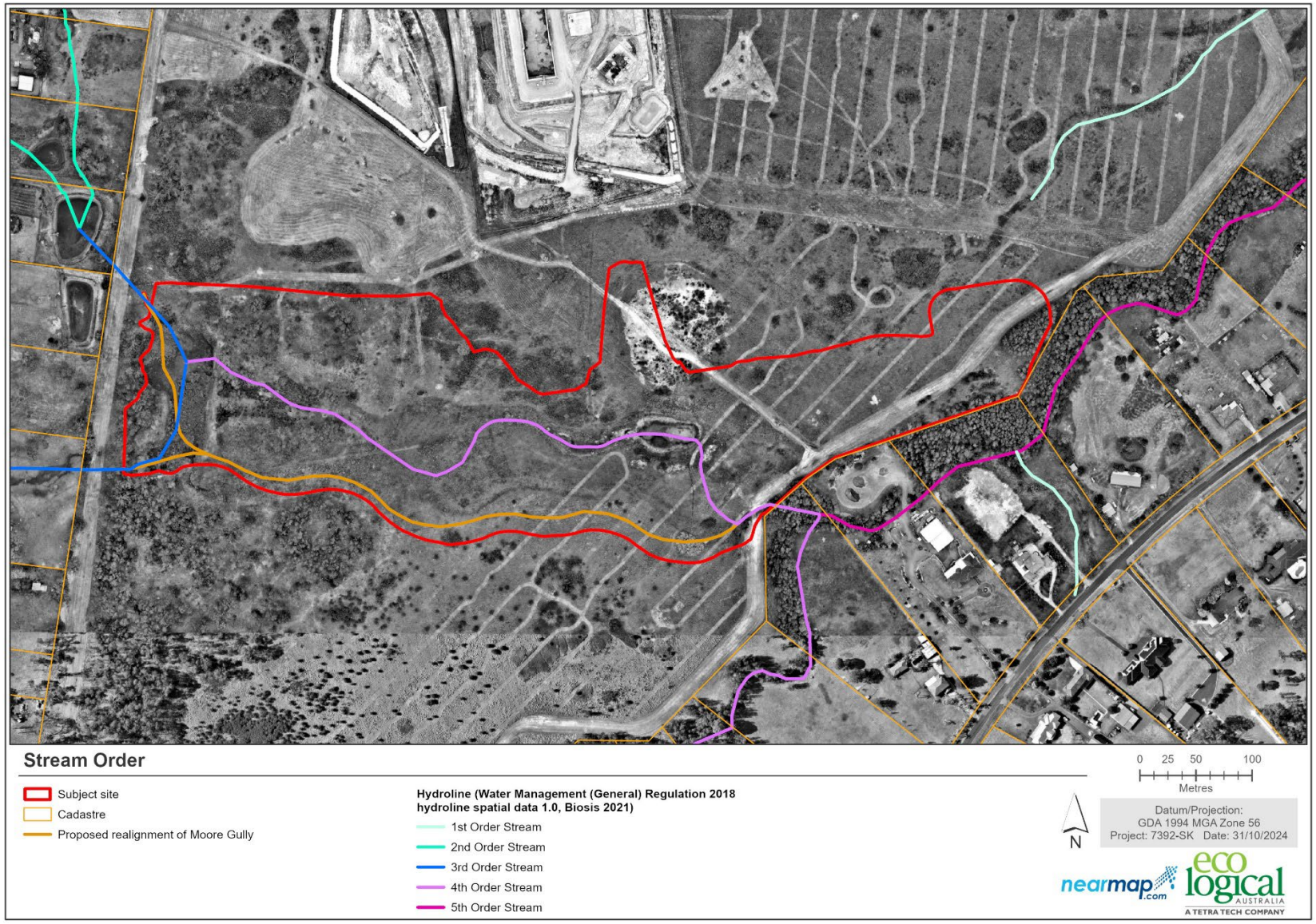

Figure 3: Stream Order (Strahler)

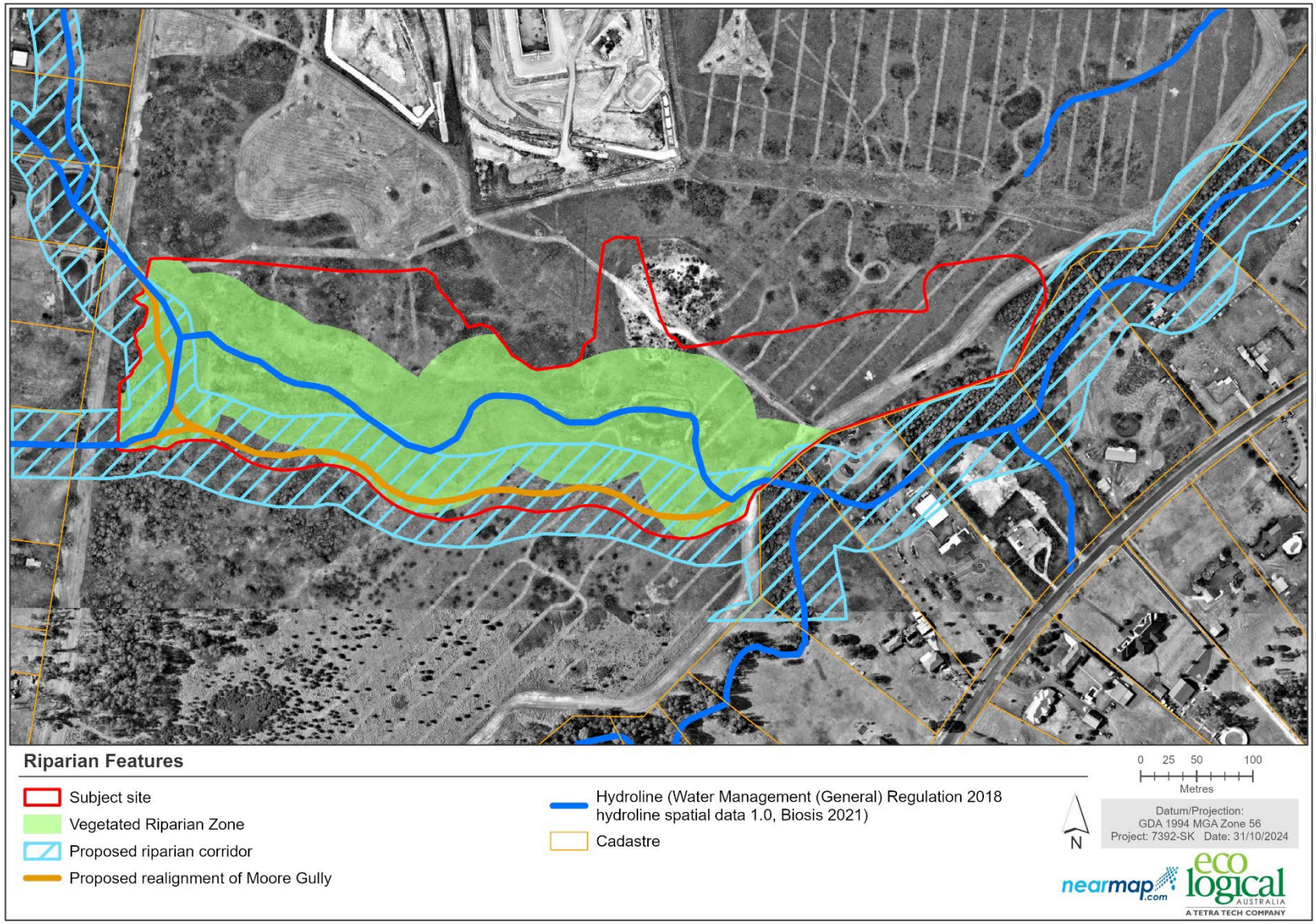

Figure 4: Riparian Features

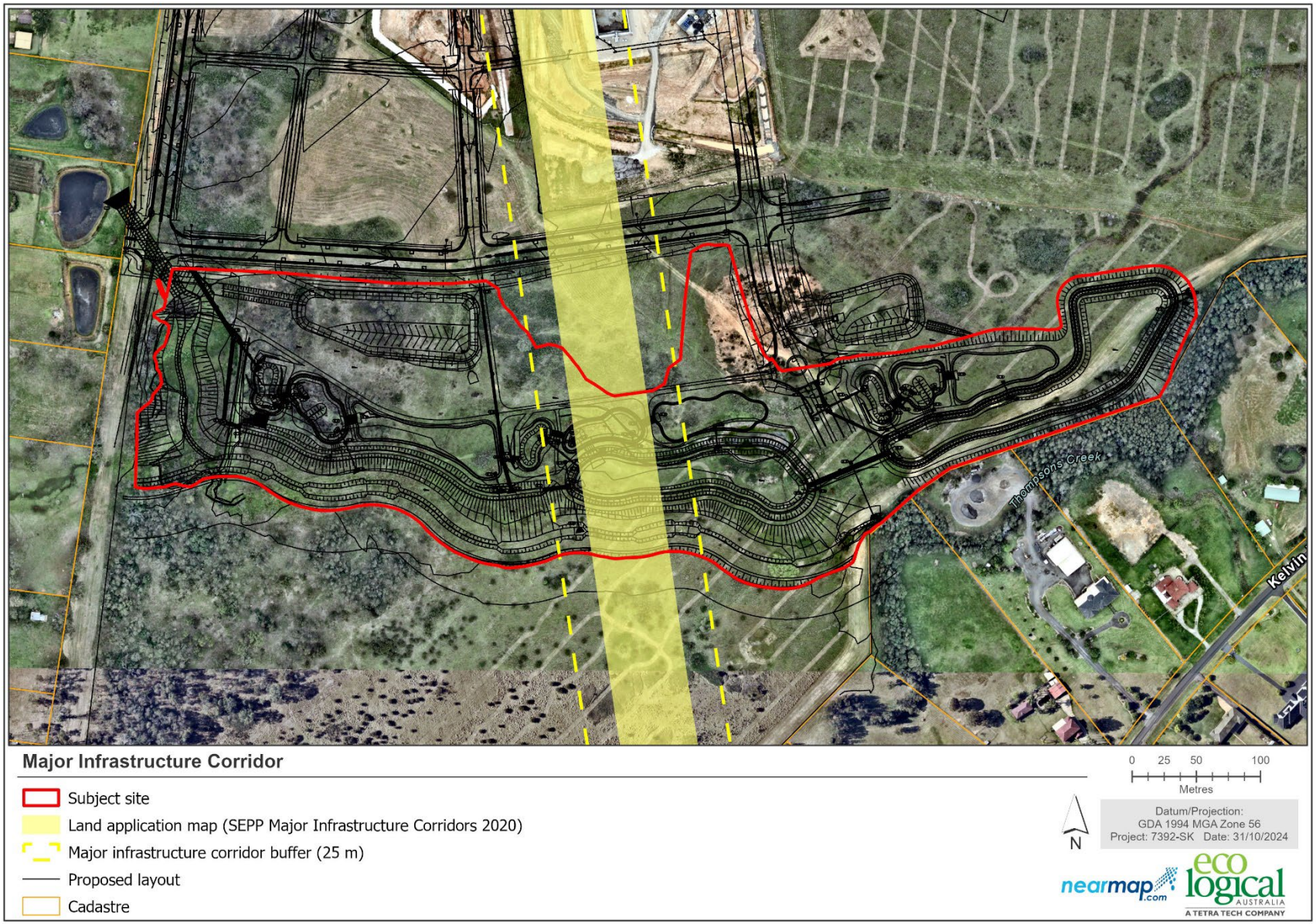

Figure 5: Major infrastructure corridor

3. Methodology

The methods used in the preparation of this Biodiversity Addendum are described in the following sections.

3.1. Literature review

A review of the available databases pertaining to the ecological and environmental features of the subject site was conducted to identify known biodiversity values, including records of threatened species, populations and communities. Databases that were reviewed included:

- BioNet (Atlas of NSW Wildlife) database search (5 km) threatened species, populations and ecological communities listed under the BC Act (DCCEEW 2024a) (accessed on 22 January 2024).
- Protected Matters Search Tool for MNES under the EPBC Act (Commonwealth DCCEEW 2024a) (accessed on 22 January 2024).
- Biodiversity Values Map (DCCEEW 2024b) (accessed 22 January 2024).
- NSW Planning Portal (DCCEEW 2024c) (accessed 22 January 2024).
- Aerial photography (Nearmap and Google Earth) and previous vegetation mapping (NPWS 2002, Tozer et al. 2010 and DPE 2022) to assess the extent of vegetation including mapped threatened ecological communities (TECs) listed under the BC Act and / or the EPBC Act (accessed 22 January 2024).
- NSW 1:25000 Hydroline (DPE 2018) (accessed 22 January 2024).
- DPI Fisheries Spatial Portal (accessed 26 March 2024).

In addition, relevant Geographic Information System (GIS) databases (soil, geology, drainage) were reviewed. Threatened species, populations and communities identified from BioNet were collated to produce a likelihood of occurrence table, which assesses the potential of identified threatened entities to occur at the subject site (Appendix A). This assessment guided the survey and impact assessment.

3.2. Field survey

A field survey was conducted for this assessment by Biosis ecologists on 8 and 9 September 2020. A secondary flora investigation was undertaken on 18 May 2021 (Biosis, 2023). On 18 May 2021 Biosis ecologists also conducted an aquatic assessment (Biosis, 2021). ELA visited the site on 19 March 2024 to review the proposed creek realignment.

The field surveys aimed to assess the following:

- Validation of existing vegetation mapping, determining plant community type (PCT), condition and extent.
- Threatened flora and fauna habitat assessment.
- Hollow bearing tree (HBT) search.
- Record any opportunistic fauna sightings.
- Validate existing watercourse mapping.
- Collection of physiochemical water quality variables.
- Sampling of aquatic macroinvertebrates and subsequent NSW AUSRIVAS rapid assessment.

- Survey for native fish in suitable habitats.
- Gather information for consultation with DPI Fisheries and collect water samples for a dam dewatering plan.

3.2.1. Vegetation communities

Ecologists from Biosis Pty Ltd applied random meander survey methodologies to determine the types of vegetation present (Biosis, 2023). Vegetation integrity data was collected through the competition of six vegetation plots undertaken in accordance with the *Biodiversity Assessment Method* (BAM) (DPIE 2020) (Biosis, 2023).

The species information gathered was then used to identify what vegetation community was present by using the NSW BioNet database for PCT determination and relevant Threatened Species Scientific Committee Final Determinations for potential TECs.

3.2.2. Habitat assessment

A habitat assessment was undertaken by Biosis Pty Ltd to determine the suitability of potential habitat for threatened species (Biosis, 2023). Opportunistic fauna sightings were noted during the field survey. Habitat features, such as hollow bearing trees, trees containing large cracks or fissures or flaky bark, culverts, bridges, rock outcrops and burrows were marked spatially with a hand-held GPS in the field (Biosis, 2023).

3.2.3. Aquatic Ecology Assessment

Biosis used baited fish traps, dip nets, water samples and a visual assessment to collect information on key fish habitat types, geomorphic style, instream condition and water pollution (Biosis 2021).

3.3. Survey limitations

Biosis Pty Ltd note that not all species may have been detected at the subject site during surveys due to species dormancy, seasonal conditions, the ephemeral status of waterbodies, and the migration and breeding behaviours of some fauna (Biosis, 2023). These factors were not considered to be a significant limitation to Biosis' surveys or finding (Biosis, 2023). The biodiversity assessments were undertaken in spring where the timing and extent of survey effort was considered sufficient at capturing most flowering species (Biosis, 2023).

4. Results

4.1. Desktop Literature review

4.1.1. Validated vegetation communities

As part of the desktop literature review, ELA examined the existing *Bradfield City Centre Master Plan Application Biodiversity Strategy and Impact Assessment* (Biosis, 2023). In this report Biosis Pty Ltd validated four different vegetation communities present within the subject site and observed that native vegetation has been modified by past disturbances (Biosis, 2023). These ecological values have been discussed in greater detail in Section 4.2.2.

4.1.2. Threatened flora and fauna

The BioNet Atlas search returned a total of 24 threatened fauna species (including migratory species) and 9 threatened flora species as occurring, or having the potential to occur, within a 5 km radius of the subject site. No threatened flora have been previously recorded within the subject site.

Threatened fauna species *Meridolum corneovirens* (Cumberland Plain Land Snail) has been previously recorded within the southwest corner of the subject site by Biosis Pty Ltd in September 2020 (Figure 7 and Figure 8) (Biosis, 2023). However this area is located on biodiversity certified land meaning that further assessment is not required for this area.

4.1.3. Watercourses and riparian habitat

Multiple watercourses occur within the subject site (Figure 3). These streams have been mapped as 3rd, 4th, and 5th order streams under the Strahler Classification System. DPI Fisheries map Moore Gully as key fish habitat.

Figure 6: Previously mapped vegetation communities (NSW SVTM 2023)

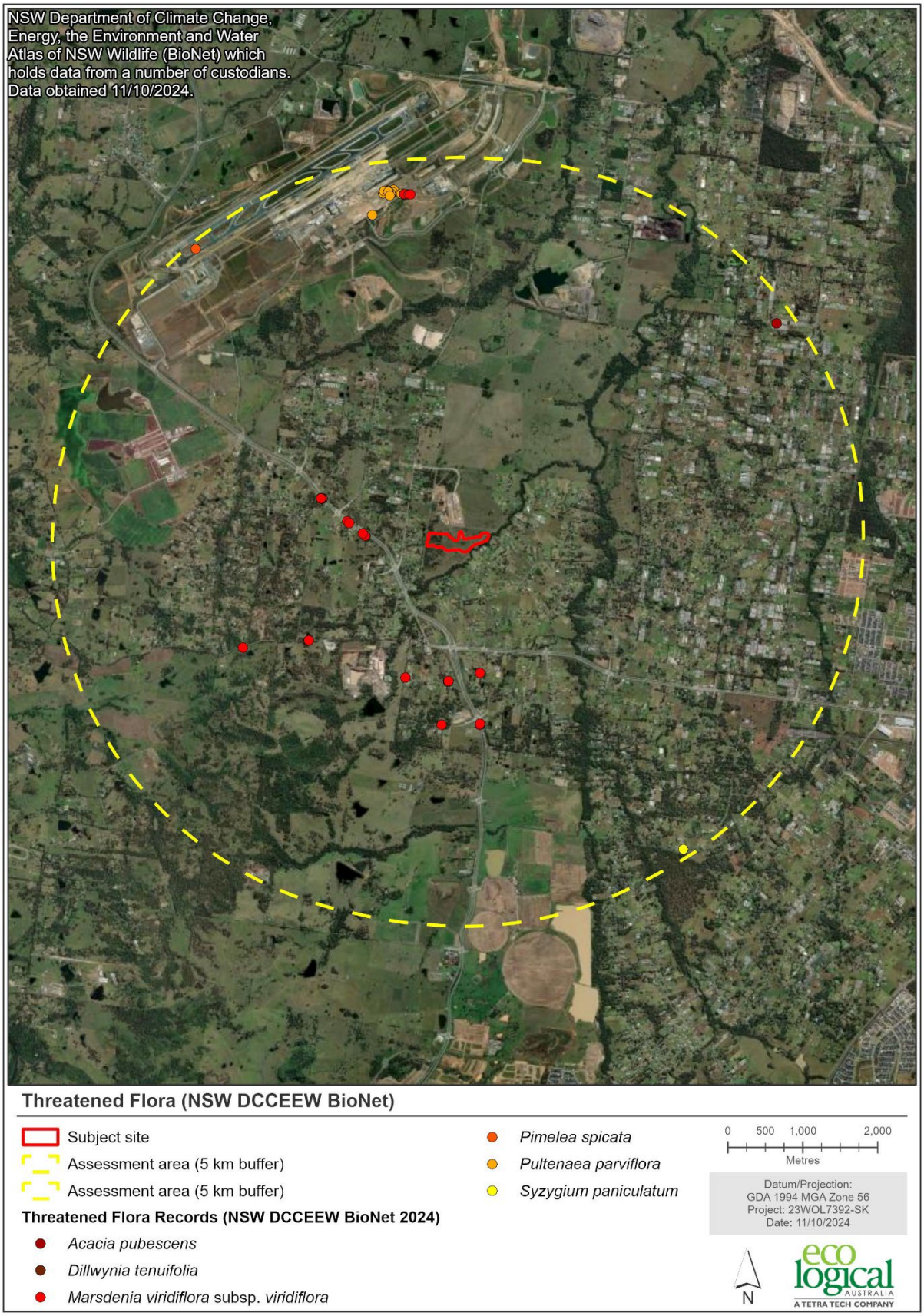

Figure 7: BioNet Threatened flora records within 5 km of the subject site (DPE 2023)

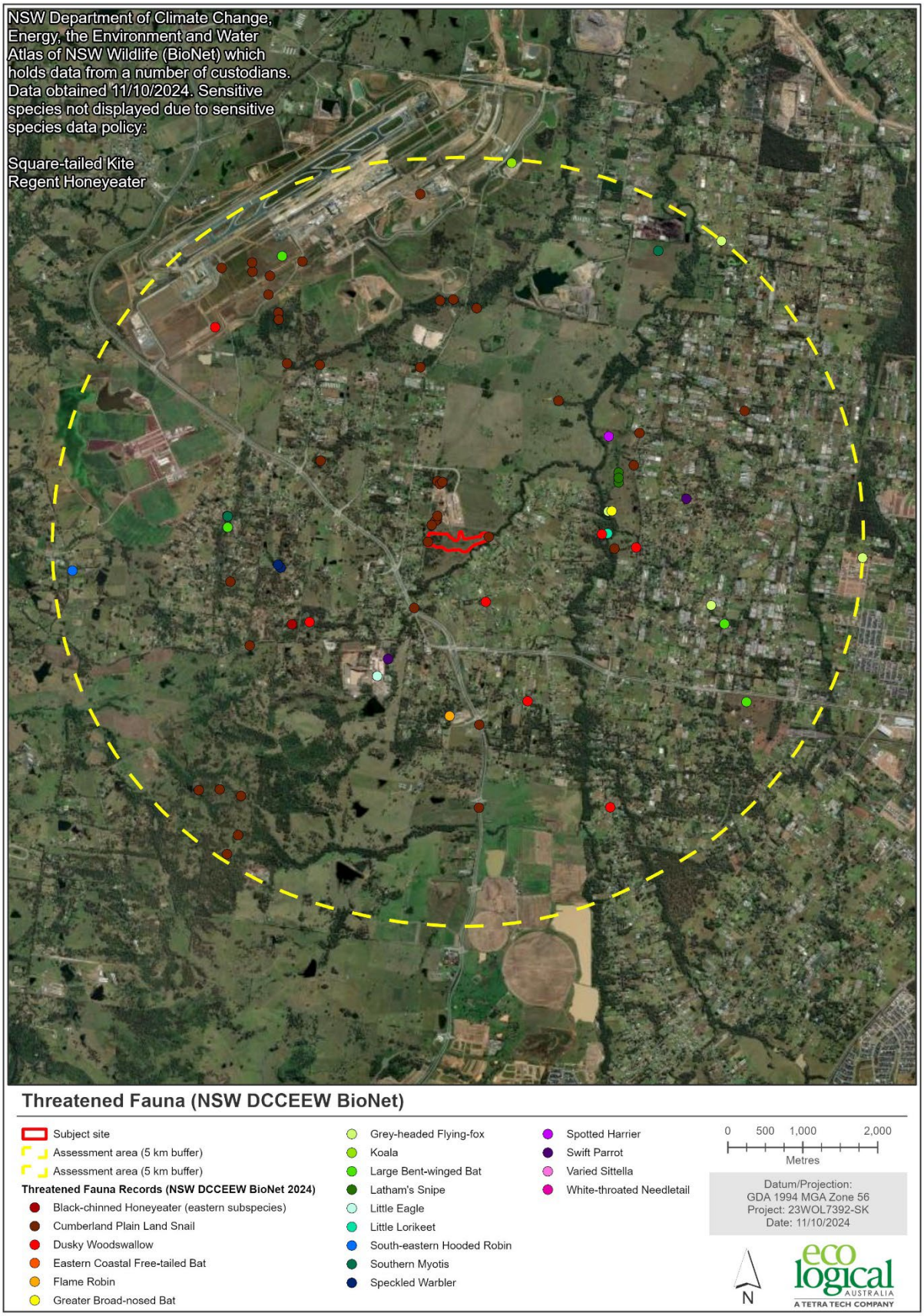

Figure 8: BioNet Threatened fauna records within 5 km of the subject site (DPE 2023)

4.2. Field survey

4.2.1. Soils and hydrology

According to the eSPADE NSW Soil and Land Information tool, the subject site is predominantly located on Blacktown (9030bt) soil landscapes. Blacktown soil landscapes occurs extensively on the Cumberland Lowlands and can be characterized by Ashfield Shale and Bringelly Shale geology of the Wianamatta Group (DPE 2023e). In this landscape the soils are characteristically shallow to moderately deep, hard setting mottled podzolic soils (DPE 2023e). A small portion of the subject site, along the southeastern boundary line, is also located on South Creek (9030sc) soil landscapes. Given that this soil landscape approximately corresponds to the drainage depressions of Thompsons Creek, the soil is likely to comprise Structured Plastic Clays and Structured Loams (DPE 2023e).

Watercourses exist within and surrounding the subject site (Figure 2). These have been mapped as 3rd, 4th and 5th order streams under the Strahler Classification System.

4.2.2. Validated vegetation communities

The subject site supports several Plant Community Types, scattered trees, watercourses, dams and wetlands (Biosis, 2023). Previous PCT numbers have been utilised prior to the release of the new East Coast PCT release. The field surveys undertaken on 8 September 2020, 9 September 2020 and 18 May 2021 by Biosis Pty Ltd recorded the presence of four PCTs within the subject site (Figure 9) (Biosis, 2023). These PCTs included:

- PCT 781 Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion
- PCT 849 Grey Box – Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion
- PCT 1071 *Phragmites australis* and *Typha orientalis* coastal freshwater wetlands of the Sydney Basin Bioregion
- PCT 1800 Swamp Oak open forest on river flats of the Cumberland Plain and Hunter Valley.

The PCTs recorded in varying condition states of low, moderate, and high. Table 2 lists the PCTs present, the PCT condition and the associated area within the subject site. Detailed descriptions of the vegetation type can be found in the existing *Biodiversity Strategy and Impact Assessment* (Biosis, 2023). Note that PCT 835 does not occur within the subject site but is present immediately adjacent to a portion of the southeast boundary of the subject site. The spatial extent of mapped vegetation within the subject site is shown on Figure 9.

Table 2: Validated vegetation community present within the subject site

PCT number	PCT name	Condition	Subject site (ha)
781	Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion	Moderate	0.43
849	Grey Box – Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	Low	0.88
		High	2.63
1071	Phragmites australis and Typha orientalis coastal freshwater wetlands of the Sydney Basin Bioregion	Moderate	0.22
1800	Swamp Oak open forest on river flats of the Cumberland Plain and Hunter Valley	High	0.21
		Total	4.37

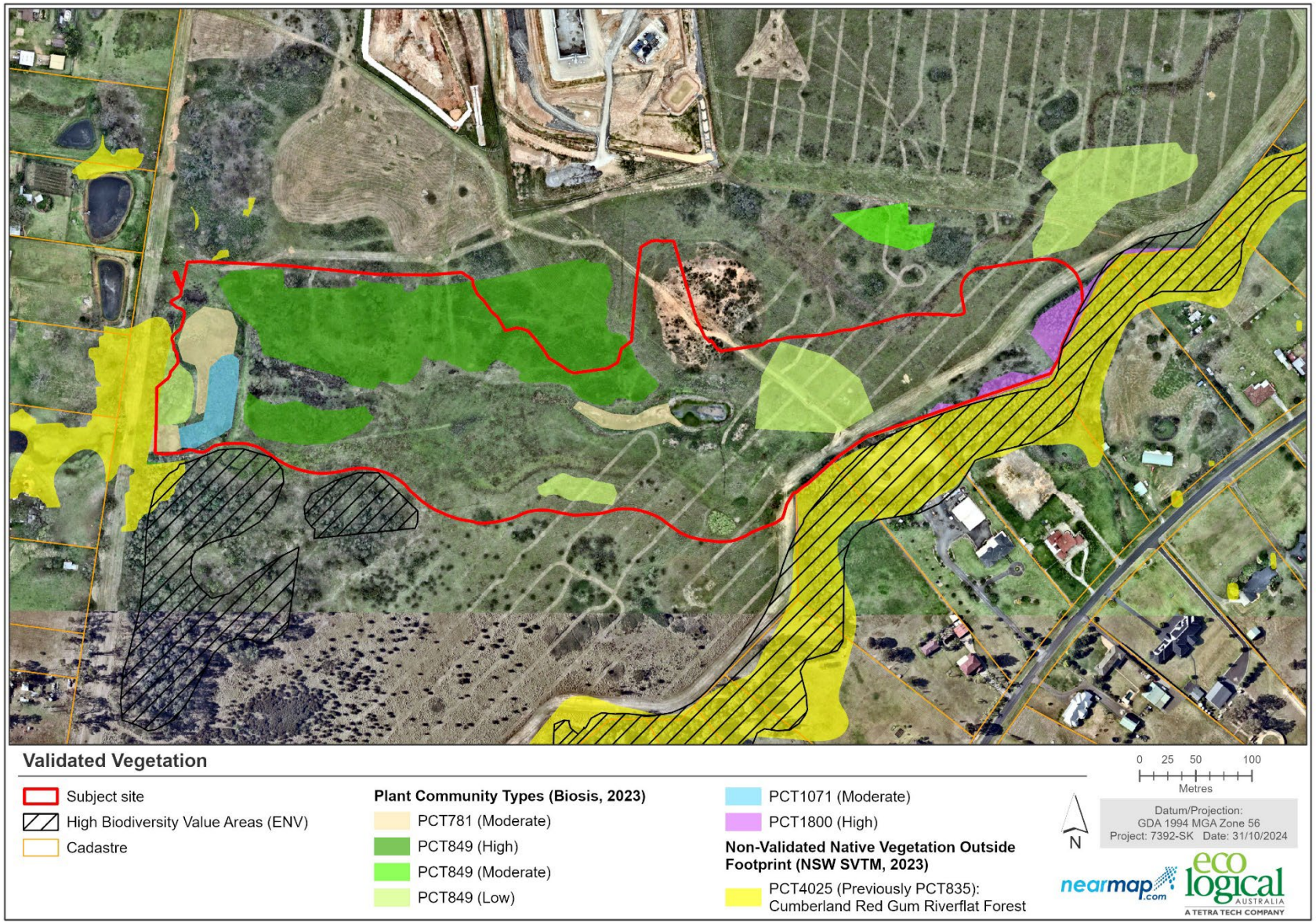

Figure 9: Validated vegetation communities and vegetation condition (Biosis, 2023)

4.2.3. Threatened ecological communities

There are four PCTs within the subject site. Each PCT has an associated threatened ecological community (TEC) within the subject site, however not each PCT met the condition thresholds for listing under the Commonwealth EPBC Act (Biosis, 2023). The threatened ecological communities and their associated listing under the BC Act and EPBC Act is listed in Table 3. Detailed descriptions of the TECs can be found in the existing *Biodiversity Strategy and Impact Assessment* (Biosis, 2023).

Table 3: Plant community types and associated threatened ecological communities based on Biosis findings

PCT ID	BC Act listing status	EPBC Act Listing status	Present within certified / non-biodiversity certified land
781	**Endangered -** *Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*	**No associated listings**	**Certified**
849	**Critically endangered -** *Cumberland Plain Woodland in the Sydney Basin Bioregion* (All conditions – low, moderate and high)	**Critically endangered -** *Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest* (High condition only. Moderate and low condition did not meet the EPBC Act condition thresholds).	**Certified**
1071	**Endangered -** *Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*	**No associated listings**	**Certified**
1800	**Endangered -** *Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*	**Endangered -** *Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community* (based on floristic assemblage (Biosis 2023))	**Certified**
835	**Endangered -** *River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*	**Critically endangered -** *River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria* (based on floristic assemblage (Biosis 2023))	**Outside subject site (immediately adjacent to biodiversity certified and non-certified land)**

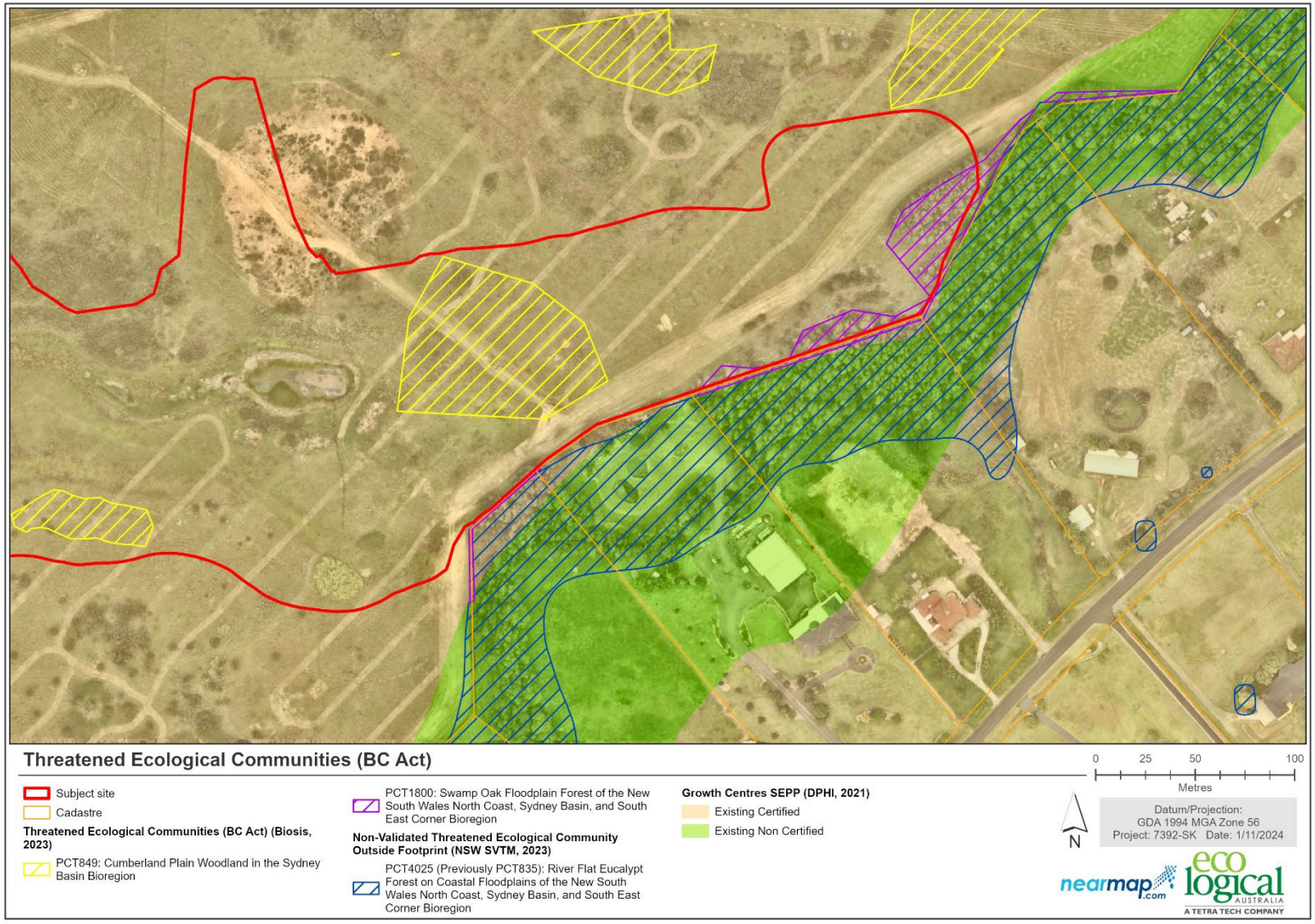

Figure 10: NSW BC Act Listed TECs

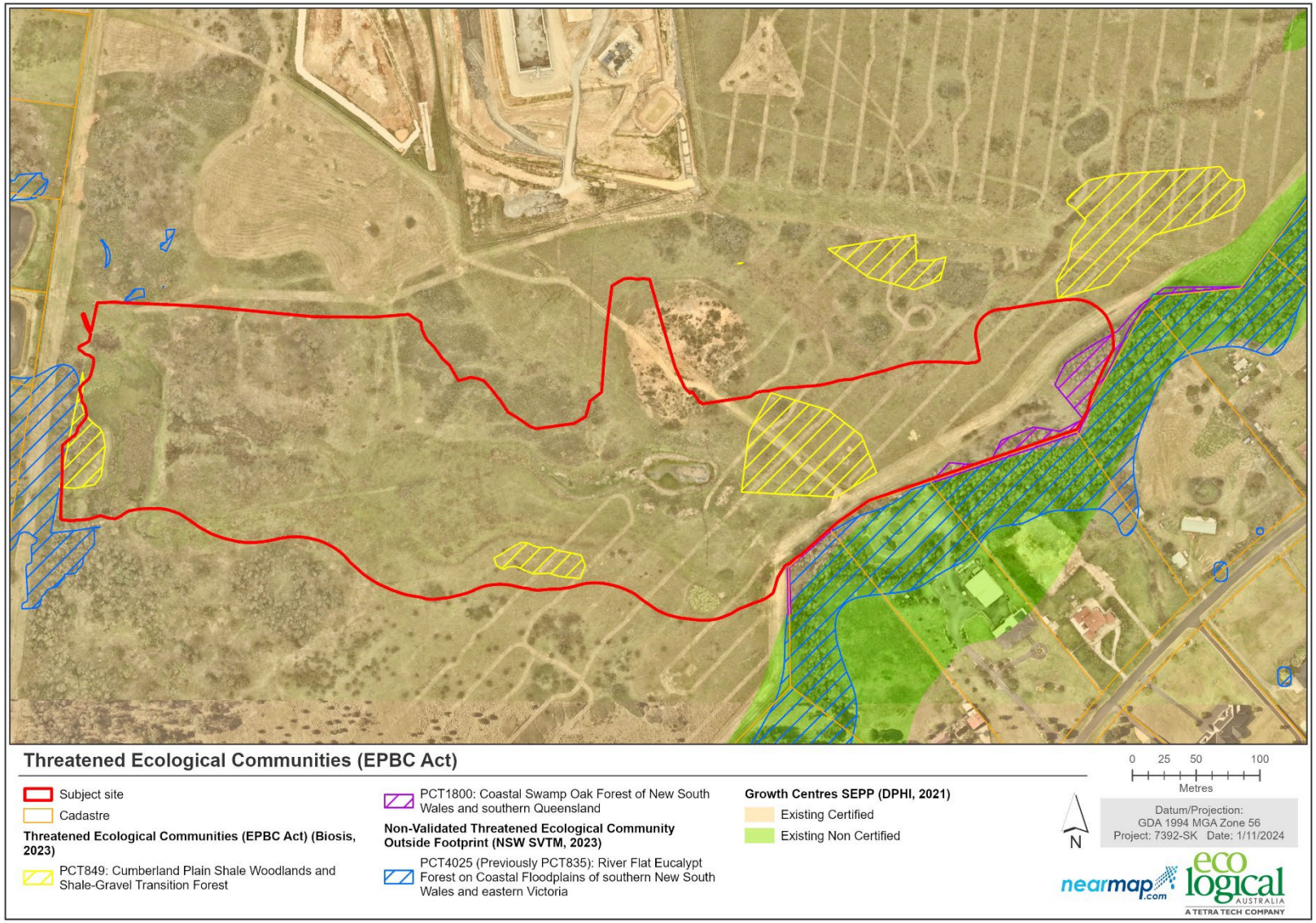

Figure 11: EPBC Act Threatened Ecological Communities.

4.2.3.1. NSW TECs

NSW BC Act listed TECs within the lot subject site are shown in Figure 10:

- *Cumberland Plain Woodland in the Sydney Basin Bioregion* - Critically endangered
- *Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* - Endangered

The TECs on non-biodiversity certified land adjacent to the subject site are shown in Figure 10. They are:

- *Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*
- *River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*.

Vegetation belonging to TEC *Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* occurs on non-biodiversity certified land adjacent to the subject site. The proposed activity may affect vegetation belonging to this TEC through indirect impacts such as temporary construction noise, vibration, sedimentation, and changes in water quality. Therefore a Test of Significance was undertaken for this TEC in Section 8.1.2.

Vegetation belonging to TEC *River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* occurs on non-biodiversity certified land immediately outside of the subject site to the southeast. The proposed activity may indirectly affect vegetation belonging to this TEC through temporary construction noise, vibration, sedimentation and changes in water quality. Therefore a Test of Significance was undertaken for this TEC in Section 8.1.3.

Mitigation measures have been included for potential indirect impacts to these TECs.

4.2.3.2. Commonwealth TECs

The EPBC Act listed TECs within the subject site are shown in Figure 11 and listed below:

- *Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest* (High condition only. Moderate and low condition did not meet the EPBC Act condition thresholds) – critically endangered
- *Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community* (based on floristic assemblage (Biosis 2023)) – endangered
- *River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria* (based on floristic assemblage (Biosis 2023)) – critically endangered.

There is potential for indirect impacts to occur to Coastal Swamp Oak Forest and River-flat Eucalypt Forest where these communities occur outside of the subject site on non-certified land. However, the significant impact criteria has not been applied, as Commonwealth has endorsed the Growth Centres SEPP, and any impacts to EPBC listed entities within the SEPP are considered offset elsewhere throughout the growth centres.

4.2.4. Flora and fauna habitat assessment

Species which were recorded during the flora and fauna assessments can be found in Appendix 1 and Appendix 2 of the existing *Biodiversity Strategy and Impact Assessment* (Biosis, 2023). During the flora assessment in September 2020 Biosis Pty Ltd observed four individuals of a threatened species, *Marsdenia viridiflora* subsp. *viridiflora,* adjacent to the north-west boundary of the subject site (Biosis, 2023). This threatened species is listed as an endangered population under the BC Act. Individuals were not observed to occur within the subject site (Biosis, 2023). A current list of threatened entities recorded or predicted to occur within the subject site have been compiled by ELA and provided in Appendix A.

A more detailed description of the flora and fauna site investigations can be found in the existing *Biodiversity Strategy and Impact Assessment* (Biosis, 2023).

Potential foraging habitat for threatened fauna species *Myotis macropus* (Southern Myotis) occurs on non-biodiversity certified land located outside of the subject site along a 4th order Strahler watercourse known as Thompson's Creek. The proposed activity may indirectly affect this potential foraging habitat through temporary construction noise, vibration, sedimentation and changes in water quality. Therefore, a Test of Significance was undertaken for this species in Section 8.1.1.

4.2.5. Biosecurity Act 2015

The *Biosecurity Act 2015* and regulations provide specific legal requirements for state level priority weeds. Under the Act all plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated, or minimised, so far as is reasonably practicable.

Of the weeds identified during Biosis Pty Ltd field survey, nine species are listed as state priority weeds and six are listed as Weeds of National Significance (WoNS). The weeds present, their priority listing under the Act, their associated asset / value at risk and whether they are WoNS, are presented in Table 4 below.

Table 4: Weeds of national significance and state priority weeds observed during the site inspection

Scientific Name	Common Name	WoNS	Priority Weed Level
Asparagus aethiopicus	Ground Asparagus	-	State priority - Asset Protection
Asparagus asparagoides	Bridal Creeper	-	State priority - Asset Protection
Eichhornia crassipes	Water Hyacinth	WoNS	State priority – Eradication and/or Containment
Lantana camara	Lantana	WoNS	State priority - Asset Protection
Lycium ferocissimum	African Boxthorn	WoNS	State priority - Asset Protection
Olea europaea subsp. *cuspidata*	African Olive	-	State priority - Asset Protection
Opuntia sp.	Prickly pears	WoNS	State priority - Asset Protection

Scientific Name	Common Name	WoNS	Priority Weed Level
Rubus fruticosus sp. agg.	Blackberry	WoNS	State priority - Asset Protection
Senecio madagascariensis	Fireweed	WoNS	State priority - Asset Protection

4.2.6. Aquatic Ecology

The banks and water within Moore Gully were assessed by Biosis in 2021 as being mostly low to moderate condition, with a very small area of high condition (Figure 12). Biological and physicochemical water quality monitoring results indicate impaired water quality and poor stream health conditions along the extent of Moore Gully within the subject site. One species of fish was recorded, the invasive *Gambusia holbrooki* (Plague Minnow). The geomorphic style prior to historic catchment clearing would have been a chain of ponds. Currently, through earthworks the ponds are now two farm dams, but still connected with a preferential flow path. Type 1 – highly sensitive key fish habitat was present, on the basis of the following characteristics:

- The chain of ponds waterway form that covers the extent of Moore Gully excluding the constructed dams within the subject site support the native aquatic plant species *Ranunculus inundatus* (River Buttercup) and *Paspalum distichum* (Water Couch) throughout the channel zone.
- Both on-line dams also contain native aquatic vegetation.
- A number of other plant species representative of wetland conditions occur throughout the channel zone in areas that are clearly inundated or contain surface water for significant periods
- Large woody debris greater than 300 mm in width is present in limited amounts and areas.

In 2021, Biosis mapped patches and isolated occurrences of significant aquatic weeds in the watercourse: *Eichhornia crassipes* (Water Hyacinth) and *Juncus acutus* (Spiny Rush) (Figure 12). In 2024, ELA observed that the small area of Water Hyacinth in the eastern dam had spread to the majority of the deeper waterbody. The cover of Water Hyacinth and Spiny Rush in and around the western dam is similar. Site photographs from March 2024 are shown below in Figure 13 to Figure 17, indicating current condition and the proposed realignment area. ELA recorded very low dissolved oxygen concentration in both dams and, due to the dense macrophyte growth and limited hydrological connection to other habitats, our assessment is only species tolerant of poor-quality habitat could sustain a population in Moore Gully. One Eastern Long-necked Turtle was observed in the grass next to the western dam. This species is known to travel overland seeking preferred habitat.

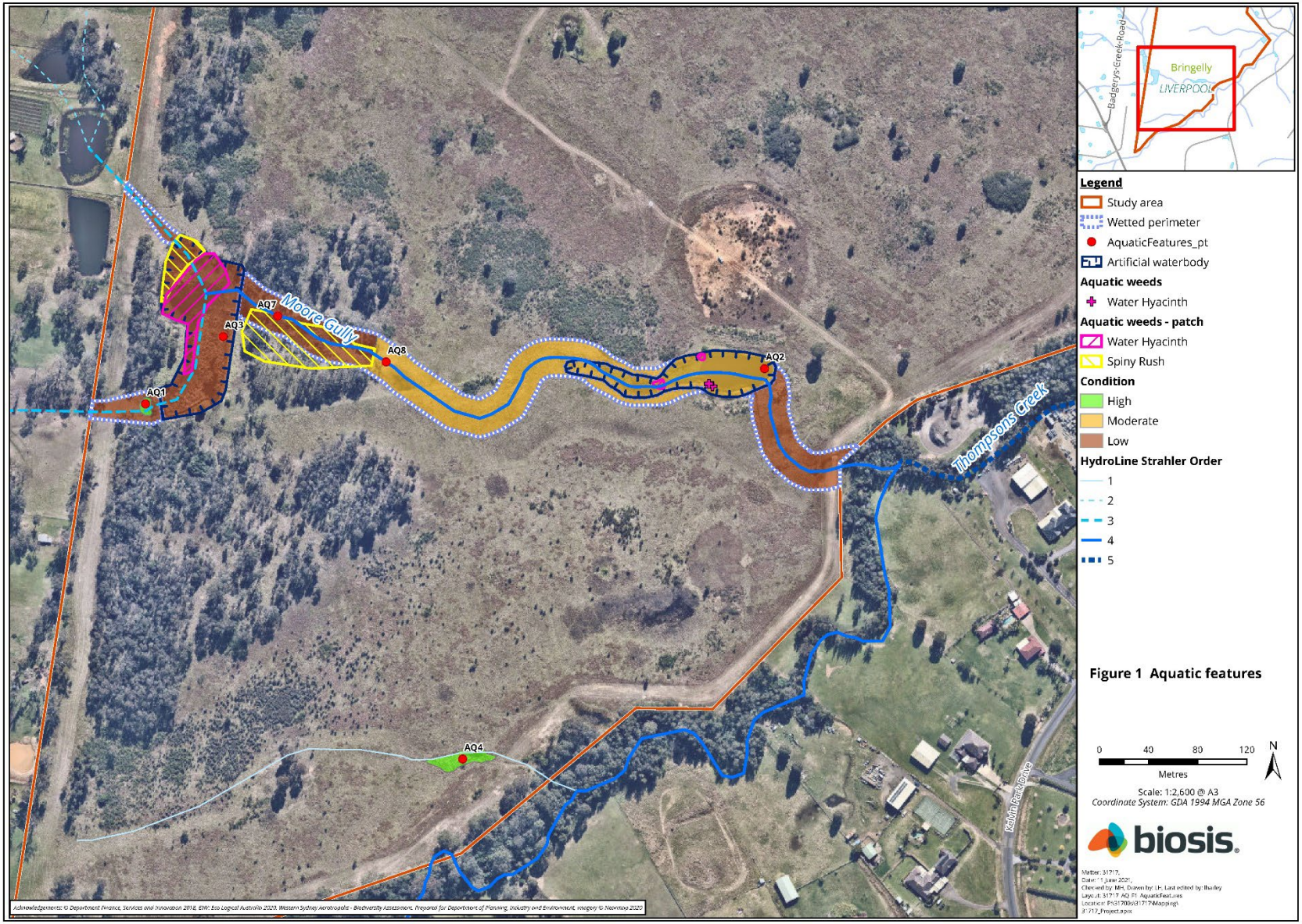

Figure 12: Aquatic features (Biosis 2021)

Figure 13: Eastern dam smothered by Water Hyacinth (floating bright green) and Blackberry to the right

Figure 14: Moore Gully facing east towards Thompsons Creek (blue line current flow, red line approx. proposed realignment)

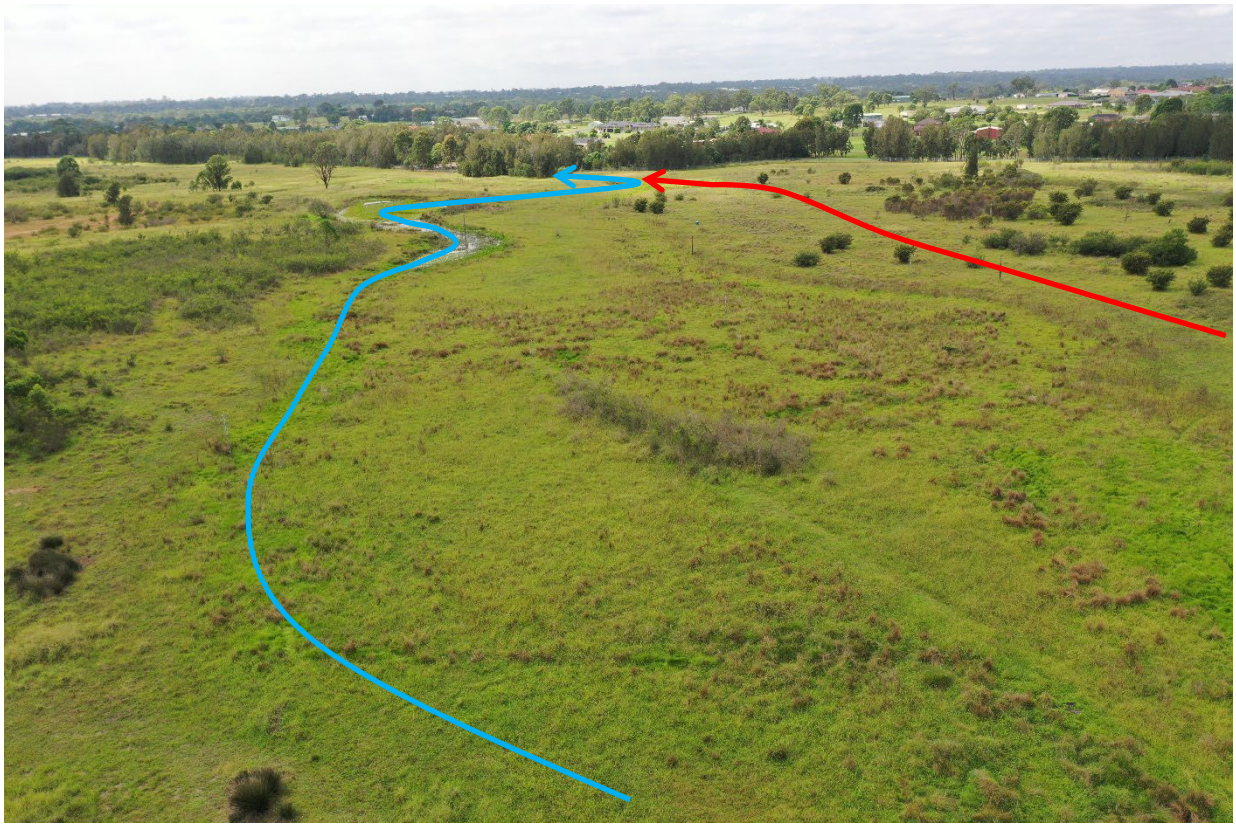

Figure 15: Same view as Figure 14, but from further west (blue line current flow, red line approx. proposed realignment)

Figure 16: Moore Gully facing west (blue line current flow, red line approx. proposed realignment from western dam)

Figure 17: Western dam smothered by Water Hyacinth (floating bright green) and Spiny Rush (dark patches on floodplain) (blue line current flow, red line approx. proposed realignment from western dam)

5. Impact Assessment

5.1. Direct Impacts

The extent of the works equates to 12.40 ha where direct impacts will occur. These direct impacts will occur wholly on biodiversity certified land.

5.1.1. NSW Biodiversity Conservation Act 2016

If a species, population, or ecological community listed under Schedules 1 or 2 of the BC Act is likely to be affected by the proposed action, either directly or indirectly, the factors set out to establish if there is likely to be a significant impact on that species, population, ecological community or habitat, must be assessed. Section 7.3 of the BC Act sets out five factors that must be addressed as part of a Test of Significance. A Species Impact Statement (SIS) is required if, through application of the five-part test, an action is considered likely to have a significant impact on threatened species, populations or ecological communities.

The proposed activity would result in the clearing of groundcover vegetation (mainly removal of grasses) and Moore Gully to make way for bulk earthworks, the construction of stormwater quality control ponds including the installation of splitter pits, installation of gross pollutant traps, the creation of sediment basins, wetlands and scour protections, installation of stormwater pipes and associated infrastructure and the construction of maintenance and pedestrian access paths.

The extent of the vegetation clearing within the subject site is based on the latest development plan provided by Bradfield Development Authority in October 2024 and shown in Figure 1. It is assumed that no direct vegetation removal will occur outside of the subject site. It is anticipated that 7.58 ha of exotic grassland, 4.37 ha of mapped PCTs, 0.18 ha of a wetland, and 0.27 ha of dam areas will be modified within the subject site.

No impact assessments have been applied for direct impacts to BC Act listed entities, as the entire development footprint is located on certified land.

5.1.2. Commonwealth EPBC Act

The EPBC Act listed TECs within the subject site are:

- *Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest* (High condition only. Moderate and low condition did not meet the EPBC Act condition thresholds) – critically endangered
- *Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community* (based on floristic assemblage (Biosis 2023)) - endangered
- *River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria* (based on floristic assemblage (Biosis 2023)) – critically endangered.

No threatened flora or fauna listed under the EPBC Act were identified in the subject site during survey, however the native vegetation may provide foraging habitat for the Grey-headed Flying-fox. The significant impact criteria has not been applied for direct impacts to MNES, as the entire development footprint is located on certified land.

5.1.3. Riparian landscaping and Key Fish Habitat

The proposed activity will include riparian corridor landscaping. It is recommended that this space is planted with locally native plants belonging to the TEC *River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria*.

Realignment of Moore Gully would result in the removal of key fish habitat:

- 600 m length of moderate and low condition constructed dams, channels and ephemeral overland flow paths (Type 1 key fish habitat).
- <100 m^2 of high condition wetland vegetation upstream of the western dam (Type 1 key fish habitat).

Moore Gully is a Type 1 – highly sensitive key fish habitat, but its condition and shape do not make it very valuable for fish. It has thick aquatic weeds and low dissolved oxygen concentrations that are not suitable for most native fish in Sydney. The species that can live in such conditions are native waterbugs and invasive small fish (e.g. Plague Minnow). Moore Gully is likely to be more significant for the lower-order organisms that contribute to the food web in the catchment by replenishing food resources. The new watercourse that would replace Moore Gully will be about 80 m south of it and would not resemble a chain of ponds or have deep pools for fish. Stantec (2024) has prepared designs for the site, with a typical cross-section of the proposed creek (sheet 4), showing a 0.5 m wide channel for low flow, 3 m wide bank that is 1 m high, 10 m wide floodplain and surrounding batters.

The landscape plans by Taylor Brammer (2024) show that riparian plants will be planted in the corridor and channel/banks (Figure 18). During construction, straw bales will be put every 30 m to slow down water and catch sediment. These barriers might create small pools and facilitate water plant growth that should provide suitable habitat for waterbugs. When these barriers break down or are taken away, and growth of the riparian plants reaches a suitable level, the watercourse will aim to achieve a channel which mimics a natural channel, this design has been proposed to mitigate the loss of Moore Gully.

In regard to meeting the DPI Fisheries "general policy – fish habitat conservation and management" (avoid, minimise, mitigate) and "no net loss" of habitat enforced as a condition of consent, the scale of the future Bradfield City and associated stormwater infrastructure does not avoid or minimise harm to key fish habitat (realignment of Moore Gully). Harm would be mitigated through provision of a new watercourse and riparian vegetation. Section 3.3.3.2 of the *Fisheries NSW Policy and Guidelines for Fish Habitat Conservation and Management* (Fairfull 2013) requires a 2:1 habitat offset requirement where impacts to Types 1-3 key fish habitat cannot be avoided.

Further, the *NSW Biodiversity Offsets Policy for Major Projects: Aquatic Biodiversity* requires a 2:1 offset for impacts to Types 1-3 key fish habitat. The replacement channel is unlikely to meet a 2:1 offset ratio for Type 1 key fish habitat, as the dimensions are similar but the type of proposed habitat does not include chain of ponds features. However, given the low to moderate condition of the habitat to be lost (low dissolved oxygen, dense weeds, dams, overland flow path), discussion with DPI Fisheries is recommended to identify if additional offsets are required in this case.

Two pedestrian crossings are proposed across the realigned Moore Gully. As they are single span bridges with FRP mini-mesh decking, the impact to aquatic habitat is minor.

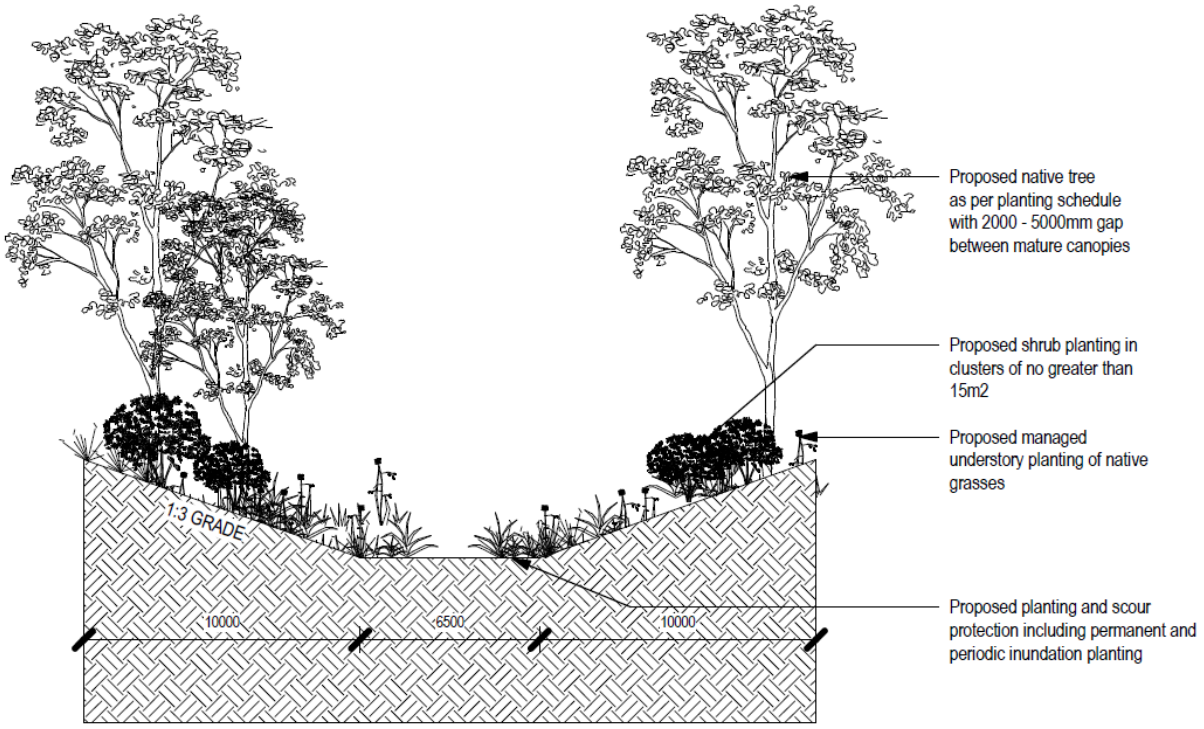

Figure 18: Typical section of Moore Gully realignment – creek and creek bank (Taylor Brammer, 2024)

5.2. Indirect Impacts

Indirect impacts occur when project-related activities affect species or ecological communities in a manner other than direct loss. During the proposed activity, noise, dust, and alterations to watercourses could have an indirect impact on fauna.

During the proposed activity there is also a risk that sediment runoff may affect adjacent native vegetation and water quality and habitats of downstream watercourses. This impact is proposed to be managed via a sediment and erosion control plan, as recommended in Section 6.

The proposed activity may result in the introduction and spread of weeds into adjacent areas if weed propagules are brought in or carried out by machinery. If hygiene protocols are adhered to (Section 6), this risk can be managed and reduced. Indirect impacts would be controlled through the implementation of mitigation measures outlined in Section 6.

5.2.1. BC Act

As the proposed activity may indirectly affect potential habitat occurring outside of the subject site to the southeast on non-certified land, a Test of Significance was undertaken for the following entities (Appendix B):

- *Myotis macropus* (Southern Myotis)
- *Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*

- *River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria.*

5.2.2. EPBC Act

Indirect impacts may occur to Coastal Swamp Oak Forest, River-flat Eucalypt Forest and Grey-headed Flying-fox foraging habitat where these communities and habitat occurs outside of the subject site on non-certified land. However, the significant impact criteria has not been applied, as the Commonwealth has endorsed the Growth Centres SEPP, and any impacts to EPBC Matters of National Environmental Significance (MNES) within the SEPP are considered offset elsewhere throughout the growth centres. This includes impacts to MNES on non-certified land.

5.2.3. Key threatening processes

There are two key threatening processes as listed under the BC Act associated with the proposed works:

- Clearing of native vegetation.
- The proposed activity won't introduce any exotic grasses but may slightly exacerbate the spread of weeds. Hygiene protocols should be adopted to mitigate the further spread of weeds.

There is one key threatening process as listed under the FM Act associated with the proposed works:

- Degradation of native riparian vegetation along New South Wales water courses.

5.3. Fisheries Management Act 1994

There is no potential for threatened species, populations or communities listed under the FM Act to occur in Moore Gully, or in the Thompsons Creek catchment. Therefore, an assessment of significance under Division 12 Section 221ZV of the FM Act is not required.

6. Mitigation measures

Vegetation removal and bulk earthworks will be conducted using heavy earthmoving machinery. The indirect impact zone is anticipated to occur 10 m from the edge of the proposed activity and accounts for likely indirect impacts such as temporary construction noise, vibration, sedimentation and changes in water quality. The exception is in Thompsons Creek where, if large amounts of turbid water are released from the site, water quality impacts can affect kilometres of aquatic habitat downstream. Mitigation measures would minimise the potential indirect impacts on the subject site and improve environmental outcomes.

6.1. Construction Environmental Management Plan (CEMP)

A Construction Environmental Management Plan (CEMP) should be prepared with relevant mitigation measures to manage potential impacts on biodiversity values within the subject site. The CEMP should include:

- A Sediment and Erosion Control Plan.
- The establishment of clearly defined areas, such as the development area and any 'no-go' areas, adjacent to the work site boundaries that are not to be in any way disturbed or damaged by the development.
- A plan for sediment fencing to be placed 2 m either side of the subject site.
- Measures to divert surface runoff away from areas of soil disturbance.
- Measures to prevent tracking of soils / sediments from work site to roadways, footpaths and drainage lines as a result of work vehicle / machinery movement.
- Management of vehicle and machinery movement to be confined to designated tracks and work areas.
- Direction that work will not take place during or after heavy rain (typically >15 millimetres (mm) in 24 hours) when doing so is likely to cause soil erosion or soil structural damage.
- Instructions for dealing with orphaned or injured native animals which may be using the site at the time of development construction and include the contact details for the NSW Wildlife Information, Rescue and Education Service Inc. (WIRES).
- Dam Dewatering Plan (ELA, 2024), which includes procedures to relocate aquatic fauna form the two dams (e.g. turtles and eels).

6.2. Pre-construction works

A weed eradication management plan should be prepared and implemented prior commencement of development. This plan should aim to prevent the spread of priority weeds (e.g. Water Hyacinth) and introduction of pathogens (e.g. *Phytophthora cinnamomi*) around the subject site and eliminate the risk of transporting biological material off the site. Under the *Biosecurity Act 2015* there is a need to conduct the proposed activity in a manner that prevents, eliminates or minimises the biosecurity risk that listed weed species pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk of spreading these weeds or increasing their impacts must be prevented, eliminated or minimised, so far as is reasonably practicable.

6.3. During construction

It is recommended that the following mitigation measures are implemented during construction:

- Ensure fertilisers, turf, mulch, weeds and imported soils are not unintentionally introduced into bushland areas (i.e., through natural drainage pathways or general proximity).
- No chemicals or rubbish may be allowed to escape the construction area.
- All chemicals must be correctly stored within bunding.
- Equipment, heavy machinery and materials must be situated in designated lay-down areas in portions of cleared land where they are least likely to cause erosion.
- Work vehicle access must be restricted to designated work areas and existing formed access tracks/roadways.
- An experienced and qualified ecologist be present to supervise vegetation removal and care and relocate fauna (if present), including dewatering of dams.
- Loss of hollows should be offset through the installation of compensatory habitat such as nest boxes prior to clearing at a rate of 2:1 (nest boxes: hollows lost).
- That Significant Trees as identified in the DCP are identified and avoided.
- That a Vegetation Management Plan (VMP) be developed for the works and includes revegetation and compensatory planting measures. The VMP should include specific guidance around species, locations and densities to compensate for the removal of vegetation caused by the development as well as guidance on avoiding and minimising impacts to vegetation.

If unexpected, threatened flora or fauna are discovered, works would stop immediately, and an unexpected threatened species find procedure should be implemented.

The subject site contains two macropod populations, Eastern Grey kangaroos (*Macropus giganteous*) and Swamp wallabies (*Wallabia bicolor*), both of which are protected native species under the BC Act.

It is suggested Specialist Fauna Management Plan is undertaken by an experienced, specialist contractor, with key management areas of:

- Welfare Monitoring: Ongoing checks and necessary provisions are maintained to ensure the wellbeing of the macropod population.
- Relocation Efforts: Strategies are in place to manage population levels and support ongoing site activities, including relocation as needed.
- Population Assessment: Surveys and other monitoring methods are utilised to evaluate the population and inform management decisions.

These strategies ensure compliance with the EP&A Act, BC Act and *Prevention of Cruelty to Animals Act 1979*, by addressing the environmental impacts on local fauna, maintaining the welfare of the kangaroo population, and ensuring effective site management in line with animal welfare laws.

7. Conclusions

Eco Logical Australia Pty Ltd (ELA) was engaged by Bradfield Development Authority to prepare a Biodiversity Addendum which addresses the construction of Regional Stormwater Drainage and Realignment and Enhancement of Moore Gully at Bradfield City Centre as per the *Regional Stormwater Infrastructure, Sediment Basins, Wetlands and Pond Design* (Stantec, 2024) plans dated October 2024 provided by Bradfield Development Authority. The addendum is designed to review the existing *Bradfield City Centre Master Plan Application Biodiversity Strategy and Impact Assessment* prepared by Biosis Pty Ltd (Biosis) (Biosis, 2023) and apply the assessment to the proposed Regional Stormwater Drainage and realignment and enhancement of Moore Gully works. The addendum will accompany a Review of Environmental Factors (REF) for these works undertaken on behalf of the Bradfield Development Authority.

The proposed activity will modify a total of 12.40 ha of vegetation within the subject site. This includes impact to 7.58 ha of exotic grassland, 4.37 ha of four (4) Plant Community Types (PCT), 0.18 ha of a wetland and 0.27 ha of a dam area from within the subject site to facilitate the works. This report will support the Master Plan Application for the Bradfield City Centre and the associated REF.

The subject site is wholly contained on biodiversity certified land under the *Biodiversity Conservation Act 2016* (BC Act) and the *Order to confer biodiversity certification on the State Environmental Planning Policy (Sydney Region Growth Centres) 2006.* Biodiversity certification allows for development without the requirement to conduct impact assessments under the BC Act and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), including the preparation of five-part tests or species impact statements, at the assessment stage. Assessment of impacts to the aquatic ecology applies under the *Fisheries Management Act 1994* (FM Act) and is unrelated to biodiversity certification.

Assessment under the EPBC Act is not required as the entire Growth Centres were subject to a Strategic Assessment under the EPBC Act and approval was granted (signed 11 November 2009) for all urban development and associated infrastructure carried out in accordance with the Sydney Region Growth Centres program. Therefore, no assessments under the EPBC Act are required for the proposed action within the project area.

A desktop review of databases pertaining to the ecology and environmental features of the proposed subject site, as well as surrounding areas, was conducted. Records of threatened species, populations, and communities within 5 km of the subject site were identified. A field survey was undertaken by Biosis to confirm the vegetation communities present within the subject site, with a habitat assessment also completed for threatened species identified through the desktop review (Biosis, 2023).

Four PCTs were identified within the subject site during Biosis field survey:

- PCT 781 Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion
- PCT 849 Grey Box – Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion
- PCT 1071 *Phragmites australis* and *Typha orientalis* coastal freshwater wetlands of the Sydney Basin Bioregion

- PCT 1800 Swamp Oak open forest on river flats of the Cumberland Plain and Hunter Valley

Each of these PCTs was identified as corresponding to a threatened ecological community (TEC) under the BC Act. There were four (4) BC Act TECs present within the subject site:

- PCT 781 corresponds to *Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* – endangered under the BC Act
- PCT 849 corresponds to *Cumberland Plain Woodland of the Sydney Basin Bioregion* – critically endangered under the BC Act
- PCT 1071 corresponds to *Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* – endangered under the BC Act
- PCT 1800 corresponds to *Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* – endangered under the BC Act.

The EPBC Act listed TECs within the subject site are:

- *Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest* (High condition only. Moderate and low condition did not meet the EPBC Act condition thresholds) – critically endangered
- *Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community* (based on floristic assemblage (Biosis 2023)) – endangered
- *River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria* (based on floristic assemblage (Biosis 2023)) – critically endangered.

No threatened flora was encountered within the subject site during the field survey (Biosis, 2023). The likelihood of occurrence table (Appendix A) determined that the subject site could provide potential habitat for threatened fauna species *Myotis macropus* (Southern Myotis) which is listed as vulnerable under the BC Act. All occurrences of TECs and habitat for Southern Myotis occur on biodiversity certified land. Therefore, further assessment of impacts is not required.

In 2021, Biosis conducted an Aquatic Ecological Assessment of Moore Gully and found that it was a 4th order chain of ponds and constructed dams, with Type 1 key fish habitat present. They assessed water quality, and fish and macroinvertebrate populations, and determined that the watercourse was in poor condition. ELA inspected the gully in March 2024, knowing that the proposed activity involves removing online dams and realigning about 600 m of channel between the western property boundary and Thompsons Creek to the east. No threatened species, populations or communities listed under the FM Act have the potential to occur in Moore Gully. Under s.199 of the FM Act, consultation with DPI Fisheries is needed to realign this watercourse.

Mitigation measures have been recommended to minimise the potential impacts of the proposed activity and improve environmental outcomes across the subject site

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Appendix A Likelihood of Occurrence table

An assessment of likelihood of occurrence was made for threatened species, populations, ecological communities and migratory species identified from the database searches. Five terms for the likelihood of occurrence of species are used in this report. This assessment was based on database or other records, presence or absence of suitable habitat, features of the proposal site, results of the site inspection and professional judgement. Some Migratory or Marine species identified from the Commonwealth database search have been excluded from the assessment, due to lack of habitat. The terms for likelihood of occurrence are defined below:

- 'known' = the species was or has been observed on the site;
- 'likely' = a medium to high probability that a species uses the site;
- 'potential' = suitable habitat for a species occurs on the site, but there is insufficient information to categorise the species as likely to occur, or unlikely to occur;
- 'unlikely' = a very low to low probability that a species uses the site; and
- 'no' = habitat within the subject site and in the vicinity is unsuitable for the species.

A test of significance was conducted for threatened species that were recorded within the subject site or had a higher likelihood of occurring and were not recorded during the site visit. It is noted that some threatened fauna species that are highly mobile, wide ranging and vagrant may use portions of the subject site intermittently for foraging. For these fauna species, the habitat present and likely to be affected is not considered to be important to the threatened species, particularly in relation to the amount of similar habitat remaining in the surrounding landscape.

Information provided in the habitat associations' column has primarily been extracted (and modified) from the Commonwealth Species Profile and Threats Database and the NSW Threatened Species Profile Database.

Table 5: Likelihood of occurrence for Threatened Ecological Communities within the subject site

Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Likelihood of occurrence
ECOLOGICAL COMMUNITIES				
Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion		E	Found in the Sydney Basin Bioregion, mostly in the Cumberland IBRA sub-region, with small occurrences in the Sydney Cataract, Wollemi and Burragorang sub-regions. It occurs primarily in the Castlereagh area in the north-west of the Cumberland Plain with other known occurrences near Holsworthy, Kemps Creek and Longneck Lagoon. Occurs primarily on Tertiary sands and gravels of the Hawkesbury-Nepean river system. At Agnes Banks it primarily occurs on aeolian (wind-blown) sands overlying Tertiary alluvium. Found on flat or gently undulating terrain in rain shadow areas typically receiving 700–900 mm annual rainfall. The ecological community occurs primarily at low elevations up to 80 m above sea level (ASL), including old ridges, dunes and terraces.	No. Ecological community not identified within subject site.
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community		**E**	**This ecological community is found within the South Eastern Queensland (SEQ), NSW North Coast (NNC), Sydney Basin (SYB) and South East Corner (SEC) IBRA7 bioregions and is found in coastal catchments, mostly at elevations of less than 20 m above sea-level (ASL) that are typically found within 30 km of the coast. Coastal Swamp Oak Forest is often found in association with other vegetation types such as coastal saltmarsh, mangroves, freshwater wetlands, littoral rainforests or swamp sclerophyll forests in a 'mosaic' of coastal floodplain communities. The structure of Coastal Swamp Oak Forest can vary from forest to woodland depending on its location in the landscape and disturbance history (Commonwealth DCCEEW 2024).**	**Yes. Ecological community is present within the subject site in high condition. However this TEC occurs on biodiversity certified land therefore further assessment is not required.**
Cooks River/Castlereagh Ironbark Forest of the Sydney Basin Bioregion	E	CE	Occurs in western Sydney, with the most extensive stands occurring in the Castlereagh and Holsworthy areas. Smaller remnants occur in the Kemps Creek area and in the eastern section of the Cumberland Plain. Mainly occurs on clay soils derived from the deposits of ancient river systems (alluvium), or on shale soils of the Wianamatta Shales.	No. Ecological community not identified within subject site.
Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest	**CE**	**CE**	**Endemic to the shale hills and plains of the Sydney Basin Bioregion in NSW, occurring primarily in, but not limited to, the Cumberland Sub-region. Flat to undulating or hilly terrain, at elevations up to approximately 350 m above sea level. Predominantly associated with clay soils, that are derived from Wianamatta Shale**	**Yes. Ecological community is present within the subject site in low, moderate and high condition. However this**

Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Likelihood of occurrence
			geology. Minor occurrences may be present on other soil groups, notably Holocene Alluvium and soils derived from the Mittagong Formation.	**TEC occurs on biodiversity certified land therefore further assessment is not required.**
Elderslie Banksia Scrub Forest in the Sydney Basin Bioregion		CE	A type of scrubby forest or woodland limited to sandy substrates associated with deep Tertiary sand deposits above the present-day Nepean River floodplain, primarily in the Camden area within the Macarthur District of south-western Sydney, New South Wales (NSW). Key elements of the canopy include *Banksia integrifolia* subsp. *integrifolia* (Coast Banksia), *Angophora subvelutina* (Broad-leaved Apple), *Eucalyptus botryoides x E. saligna* (a natural hybrid of Bangalay and Sydney Blue Gum) and various other species of Eucalyptus over a mostly shrubby understorey.	No. Ecological community not identified within subject site.
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	**E**	**CE**	**Found on the river flats of the coastal floodplains. Known from parts of the Local Government Areas of Port Stephens, Maitland, Singleton, Cessnock, Lake Macquarie, Wyong, Gosford, Hawkesbury, Baulkham Hills, Blacktown, Parramatta, Penrith, Blue Mountains, Fairfield, Holroyd, Liverpool, Bankstown, Wollondilly, Camden, Campbelltown, Sutherland, Wollongong, Shellharbour, Kiama, Shoalhaven, Palerang, Eurobodalla and Bega Valley. Associated with silts, clay-loams and sandy loams, on periodically inundated alluvial flats, drainage lines and river terraces associated with coastal floodplains.**	**Yes. Ecological community is present immediately adjacent to the subject site on non-biodiversity certified land. A test of significance has been undertaken for this TEC (Table 9).**
Shale Sandstone Transition Forest of the Sydney Basin Bioregion	**CE**	**CE**	**Occurs at the edges of the Cumberland Plain in western Sydney, most now occurs in the Hawkesbury, Baulkham Hills, Liverpool, Parramatta, Penrith, Campbelltown and Wollondilly local government areas. Intergrade between clay soils from the shale rock and earthy and sandy soils from sandstone, or where shale caps overlay sandstone.**	No. Ecological community not identified within subject site.
Western Sydney Dry Rainforest and Moist Woodland on Shale	E	CE	Very restricted; occurs most commonly in the far southern section of the Cumberland Plain, in the Razorback Range near Picton. Outlying occurrences have been recorded at Grose Vale and Cattai. Restricted to hilly country where it occurs on the sheltered lower slopes and in gullies. Occurs on clay soils derived from Wianamatta shale.	No. Ecological community not identified within subject site.

Table 6: Likelihood of occurrence for threatened flora and fauna species within the subject site

Scientific name	Common name	BC Act Status	Distribution and Habitat	BioNet records within 5 km	Likelihood of occurrence	Impact assessment required
FLORA						
Acacia pubescens	Downy Wattle	V	Occurs on alluviums, shales and at the intergrade between shales and sandstones. The soils are characteristically gravely soils, often with ironstone. Also known to occur in open woodland and forest, in a variety of plant communities, including Cooks River/Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland.	1	No - lack of suitable habitat	No
Dillwynia tenuifolia		E2, V	The core distribution is the Cumberland Plain from Windsor and Penrith east to Dean Park near Colebee. Other populations in western Sydney are recorded from Voyager Point and Kemps Creek in the Liverpool LGA, Luddenham in the Penrith LGA and South Maroota in the Baulkham Hills Shire. In western Sydney, may be locally abundant particularly within scrubby/dry heath areas within Castlereagh Ironbark Forest and Shale Gravel Transition Forest on tertiary alluvium or laterised clays. May also be common in transitional areas where these communities adjoin Castlereagh Scribbly Gum Woodland. At Yengo, is reported to occur in disturbed escarpment woodland on Narrabeen sandstone. *Eucalyptus fibrosa* is usually the dominant canopy species. *Eucalyptus globoidea*, E. *longifolia*, E. *parramattensis*, E. *sclerophylla* and E. *sideroxylon* may also be present or codominant, with *Melaleuca decora* frequently forming a secondary canopy layer.	526	No – subject site is outside of core distribution, TECs absent, lack of suitable shrubby/dry heath habitat	No
Grevillea juniperina subsp. *juniperina*	Juniper-leaved Grevillea	V	Endemic to Western Sydney, centred on an area bounded by Blacktown, Erskine Park, Londonderry and Windsor with outlier populations at Kemps Creek and Pitt Town. Grows on reddish clay to sandy soils derived from Wianamatta Shale and Tertiary alluvium (often with shale influence), typically containing lateritic gravels. Recorded from Cumberland Plain Woodland, Castlereagh Ironbark Woodland, Castlereagh Scribbly Gum Woodland and Shale/Gravel Transition Forest.	1	No - lack of suitable habitat	No
Grevillea parviflora subsp. *parviflora*	Small-flower Grevillea	V	Grows in sandy or light clay soils usually over thin shales, often with lateritic ironstone gravels and nodules. Sydney region occurrences are usually on Tertiary sands and alluvium, and soils derived from the Mittagong Formation.	14	No - lack of suitable habitat	No

Scientific name	Common name	BC Act Status	Distribution and Habitat	BioNet records within 5 km	Likelihood of occurrence	Impact assessment required
			Soil landscapes include Lucas Heights or Berkshire Park. Occurs in a range of vegetation types from heath and shrubby woodland to open forest. In Sydney it has been recorded from Shale Sandstone Transition Forest and in the Hunter in Kurri Sand Swamp Woodland. however, other communities occupied include *Corymbia maculata* - *Angophora costata* open forest in the Dooralong area, in Sydney Sandstone Ridgetop Woodland at Wedderburn and in Cooks River / Castlereagh Ironbark Forest at Kemps Creek. Found over a range of altitudes from flat, low-lying areas to upper slopes and ridge crests. Often occurs in open, slightly disturbed sites such as along tracks.			
Marsdenia viridiflora subsp. *viridiflora*	*Marsdenia viridiflora* R. Br. subsp. *viridiflora* population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas	E2	Recent records are from Prospect, Bankstown, Smithfield, Cabramatta Creek and St Marys. Previously known north from Razorback Range. Grows in vine thickets and open shale woodland. The species is known or predicted in Cumberland and Sydney Cataract IBRA sub-regions.	39	No - lack of suitable habitat. This species was recorded outside the north-west boundary of the subject site (Biosis, 2023), but is not known to occur within the subject site or surrounding the proposed Moore Gully alignment.	No
Persoonia nutans	Nodding Geebung	E1, P	Restricted to the Cumberland Plain in western Sydney, between Richmond in the north and Macquarie Fields in the south. The species has a disjunct distribution, with the majority of populations (and 99% of individuals) occurring in the north of the species range in the Agnes Banks, Londonderry, Castlereagh, Berkshire Park and Windsor Downs areas. Core distribution occurs within the Penrith, and to a lesser extent Hawkesbury, local government areas, with isolated and relatively small populations also occurring in the Liverpool, Campbelltown, Bankstown and Blacktown local government areas. Southern populations occupy tertiary alluvium, but extend onto shale	6	No - lack of suitable habitat	No

Scientific name	Common name	BC Act Status	Distribution and Habitat	BioNet records within 5 km	Likelihood of occurrence	Impact assessment required
			sandstone transition communities and into Cooks River / Castlereagh Ironbark Forest.			
Pimelea spicata	Spiked Rice-flower	E1	Two disjunct areas; the Cumberland Plain (Marayong and Prospect Reservoir south to Narellan and Douglas Park) and the Illawarra (Lansdowne to Shellharbour to northern Kiama). Occurs on well-structured clay soils. *Eucalyptus moluccana* (Grey Box) communities and in areas of ironbark on the Cumberland Plain. Coastal Banksia open woodland or coastal grassland in the Illawarra.	1	No - lack of suitable habitat	No
Pultenaea parviflora		E1	Endemic to the Cumberland Plain. Core distribution is from Windsor to Penrith and east to Dean Park. Outlier populations are recorded from Kemps Creek and Wilberforce. May be locally abundant, particularly within scrubby/dry heath areas within Castlereagh Ironbark Forest and Shale Gravel Transition Forest on tertiary alluvium or laterised clays. May also be common in transitional areas where these communities adjoin Castlereagh Scribbly Gum Woodland. *Eucalyptus fibrosa* is usually the dominant canopy species.	133	No - lack of suitable habitat	No

Scientific name	Common name	BC Act Status	EPBC Act Status	Distribution and Habitat	Records within 5 km	Likelihood of occurrence	Impact assessment required
FAUNA							
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V		Widespread in NSW from coast to inland including the western slopes of the Great Dividing Range and farther west. Species have also been recorded in southern and southwestern Australia. Woodlands and dry open sclerophyll forest, usually eucalypts and mallee associations. Also have recordings in shrub and heathlands and various modified habitats, including regenerating forests. In western NSW, this species is primarily associated with River Red Gum/Black Box/Coolabah open forest/woodland and associated with larger river/creek systems.	7	No – lack of suitable habitat.	No
Calidris acuminata	Sharp-tailed Sandpiper		M	Occurs along the entire coast of NSW, and sometimes in freshwater wetlands in the Murray-Darling Basin. Littoral and estuarine habitats, including intertidal mudflats, non-tidal swamps, lakes and lagoons on the coast and sometimes inland.	1	No – lack of suitable habitat	No
Chthonicola sagittata	Speckled Warbler	V		The species is most frequently reported from the hills and tablelands of the Great Dividing Range, and rarely from the coast. Lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area.	3	No - lack of suitable habitat	No

Scientific name	Common name	BC Act Status	EPBC Act Status	Distribution and Habitat	Records within 5 km	Likelihood of occurrence	Impact assessment required
Circus assimilis	Spotted Harrier	V		The Spotted Harrier occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. Preys on terrestrial mammals (e.g. bandicoots, bettongs, and rodents), birds and reptile, occasionally insects and rarely carrion.	1	No - lack of suitable habitat	No
Daphoenositta chrysoptera	Varied Sittella	V		The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. Distribution in NSW is nearly continuous from the coast to the far west. Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.	2	No – lack of suitable habitat.	No
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V		South-east coast and ranges of Australia, from southern Qld to Victoria and Tasmania. In NSW, records extend to the western slopes of the Great Dividing Range. Tall (greater than 20 m) moist habitats.	1	No – lack of suitable habitat.	No
Gallinago hardwickii	Latham's Snipe		M	Migrant to east coast of Australia, extending inland west of the Great Dividing Range in NSW. Freshwater, saline or brackish wetlands up to 2000 m above sea-level; usually freshwater swamps, flooded grasslands or heathlands.	5	No – lack of suitable habitat.	No
Glossopsitta pusilla	Little Lorikeet	V		In NSW, found from the coast westward as far as Dubbo and Albury. Dry, open eucalypt forests and woodlands,	2	No – lack of suitable habitat.	No

Scientific name	Common name	BC Act Status	EPBC Act Status	Distribution and Habitat	Records within 5 km	Likelihood of occurrence	Impact assessment required
				including remnant woodland patches and roadside vegetation.			
Haliaeetus leucogaster	White-bellied Sea-Eagle	V		Distributed along the coastline of mainland Australia and Tasmania, extending inland along some of the larger waterways, especially in eastern Australia. Freshwater swamps, rivers, lakes, reservoirs, billabongs, saltmarsh and sewage ponds and coastal waters. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, forest and urban areas.	4	No – lack of suitable habitat.	No
Hieraaetus morphnoides	Little Eagle	V		Distributed throughout the Australian mainland except the most densely forested parts of the Dividing Range escarpment. Occupies habitats rich in prey within open eucalypt forest, woodland or open woodland. Sheoak or acacia woodlands and riparian woodlands of interior NSW are also used. For nest sites it requires a tall living tree within a remnant patch, where pairs build a large stick nest in winter and lay in early spring.	2	No - lack of suitable habitat.	No
Hirundapus caudacutus	White-throated Needletail		V, M	Migratory and usually seen in eastern Australia from October to April. Breeds in forests in south-eastern Siberia, Mongolia, the Korean Peninsula and northern Japan June-August. More common in coastal areas, less so inland.	2	No – lack of suitable habitat.	No
Lathamus discolor	Swift Parrot	E1	CE	Migrates from Tasmania to mainland in Autumn-Winter. In NSW, the species mostly occurs on the coast and southwest slopes. Box-ironbark forests and woodlands.	5	No – lack of suitable habitat.	No
Lophoictinia isura	Square-tailed Kite	V		In NSW, it is a regular resident in the north, north-east and along the major west-flowing river systems. It is a	3	No – lack of suitable habitat.	No

Scientific name	Common name	BC Act Status	EPBC Act Status	Distribution and Habitat	Records within 5 km	Likelihood of occurrence	Impact assessment required
				summer breeding migrant to the south-east, including the NSW south coast. Timbered habitats including dry woodlands and open forests, particularly timbered watercourses.			
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)			Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark (*Eucalyptus sideroxylon*), White Box (E. *albens*), Inland Grey Box (E. *microcarpa*), Yellow Box (E. *melliodora*), Blakely's Red Gum (E. *blakelyi*) and Forest Red Gum (*E. tereticornis*). Also inhabits open forests of smooth-barked gums, stringybarks, ironbarks, river sheoaks (nesting habitat) and tea-trees.	1	No - lack of suitable habitat	No
Meridolum corneovirens	Cumberland Plain Land Snail	E		Lives in small areas on the Cumberland Plain west of Sydney, from Richmond and Windsor south to Picton and from Liverpool west to the Hawkesbury and Nepean Rivers at the base of the Blue Mountain. Primarily inhabits Cumberland Plain Woodland (a critically endangered ecological community). This community is a grassy, open woodland with occasional dense patches of shrubs. It is also known from Shale Gravel Transition Forests, Castlereagh Swamp Woodlands and the margins of River-flat Eucalypt Forest, which are also listed communities. Lives under litter of bark, leaves and logs, or shelters in loose soil around grass clumps.	51	No – lack of suitable habitat	No
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V		Found along the east coast from south Queensland to southern NSW. Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roost mainly in tree hollows	7	No – lack of suitable habitat	No

Scientific name	Common name	BC Act Status	EPBC Act Status	Distribution and Habitat	Records within 5 km	Likelihood of occurrence	Impact assessment required
				but will also roost under bark or in man-made structures.			
Miniopterus australis	Little Bent-winged Bat	V		East coast and ranges of Australia from Cape York in Queensland to Wollongong in NSW. Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. Roosts in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats.	2	No – lack of suitable habitat	No
Miniopterus orianae oceanensis	Large Bent-winged Bat	V		Occurs along the east and north-west coasts of Australia. Roosting habitat includes caves, derelict mines, storm-water tunnels, buildings and other man-made structures. This species hunts in forested areas, catching moths and flying insects above the treetops.	7	No – lack of suitable habitat.	No
Myotis macropus	**Southern Myotis**	**V**		**The Southern Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. It is rarely found more than 100 km inland, except along major rivers. Forage over streams and pools catching insects and small fish by raking their feet across the water surface. Generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage.**	**8**	**Potential – suitable foraging habitat present**	**Yes**
Neophema pulchella	Turquoise Parrot	V		The Turquoise Parrot's range extends from southern Queensland through to northern Victoria, from the coastal plains to the western slopes of the Great Dividing Range. Lives on the edges of eucalypt	2	No – lack of suitable habitat.	No

Scientific name	Common name	BC Act Status	EPBC Act Status	Distribution and Habitat	Records within 5 km	Likelihood of occurrence	Impact assessment required
				woodland adjoining clearings, timbered ridges and creeks in farmland. Nests in tree hollows, logs or posts, from August to December.			
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)	Koala	*E*	E	The Koala has a fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In New South Wales, koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests, with some smaller populations on the plains west of the Great Dividing Range.	1	No – lack of suitable habitat.	No
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	Along the eastern coast of Australia, from Bundaberg in Qld to Melbourne in Victoria. Subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.	11	No - lack of suitable habitat	No
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V		Forages in most habitats across its very wide range, with and without trees. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows.	2	No - lack of suitable habitat	No
Scoteanax rueppellii	Greater Broad-nosed Bat	V		The Greater Broad-nosed Bat is found mainly in the gullies and river systems that drain the Great Dividing Range, from north-eastern Victoria to the Atherton Tableland. It extends to the coast over much of its range. In NSW it is widespread on the New England Tablelands, however does not occur at altitudes above 500 m. Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest,	8	No – lack of suitable habitat.	No

Scientific name	Common name	BC Act Status	EPBC Act Status	Distribution and Habitat	Records within 5 km	Likelihood of occurrence	Impact assessment required
				though it is most commonly found in tall wet forest. Roosting habitat includes tree hollows.			

Appendix B BC Act Test of Significance

Under Part 7, Division 1 of the NSW BC Act, the test of significance is to be taken into account for the purposes of determining whether a proposed works or activity is likely to significantly affect threatened species or ecological communities, or their habitats. This test has been applied to ecological communities and species listed under the BC Act that are considered to be potentially impacted by the proposal.

Species and TECs that have been assessed against the test of significance were identified through the development of the Likelihood of Occurrence table (Appendix A). The following listed species and TECs are assessed below:

- *Myotis macropus* (Southern Myotis)
- *River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria*
- *Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*

8.1.1. BC Act Test of Significance for *Myotis macropus* (Southern Myotis)

The Southern Myotis is listed as vulnerable under the BC Act. Approximately 0.60 ha of potential foraging habitat may be indirectly affected by the proposed works through temporary construction noise, vibration, sedimentation and changes in water quality.

Table 7: BC Act Test of Significance for Southern Myotis

BC Act	Question	Response
7.3.1 a)	In the case of a threatened species: whether the proposed works or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction	*Myotis macropus* (Southern Myotis) roost close to water in hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage (NSW DCCEEW 2020). The Southern Myotis forages over streams and pools catching insects and small fish by raking their feet across the water's surface (NSW DCCEEW 2020). Foraging habitat is present within the development footprint in the form of dams and watercourses and will be directly affected by the proposed activity. However this area is located on biodiversity certified land meaning that further assessment is not required for this area. There is potential for the proposed activity to indirectly affect Southern Myotis foraging habitat on non-biodiversity certified land located outside of the subject site along a 4th order Strahler watercourse known as Thompson's Creek. This indirect impact zone is anticipated to occur 10 m from the edge of the proposed activity. This area equates to 0.60 ha of potential Southern Myotis foraging habitat and accounts for likely indirect impacts such as temporary construction noise, vibration, sedimentation and changes in water quality. Hollow-bearing trees, bridges and culverts, which can provide potential roosting and breeding habitat for this species, will not be removed as part of the proposed activity.

BC Act	Question	Response
		The proposed activity also involves riparian corridor landscaping within the subject site which has potential to improve the quality of Southern Myotis foraging habitat along Thompsons Creek in the future. Due to the likely minor impacts on foraging habitat for this species that it would only indirectly affect foraging habitat, the proposed activity is unlikely to have an adverse effect on the life cycle of this species such that a viable local population is likely to be placed at risk of extinction.
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed works or activity: Is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction	N/A
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed works or activity is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.	N/A
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed works or activity	No foraging habitat will be removed from non-biodiversity certified land as part of the proposed activity. However the quality of approximately 0.60 ha of potential foraging habitat for this species may be indirectly modified. There is also potential for the quality of Southern Myotis habitat along Thompsons Creek to improve in the future as a result of riparian corridor landscaping along Moore Gully.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed works or activity	The activity will affect the edge of a large, continuous patch of Southern Myotis habitat, meaning that no habitat is expected to be isolated or fragmented for this species as a result of the proposed activity.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.	The foraging habitat to be indirectly affected represents a small area of potential habitat compared to the extent of similar habitat for this species available within the locality. A network of watercourses exists in close proximity to Thompsons Creek and would likely be utilised as potential foraging habitat for this wide-ranging species. The indirect effects to the quality of foraging habitat along Thompsons Creek would not diminish the importance of the surrounding habitats. The tenure of the land has not been identified as being of conservation significance for this species in

BC Act	Question	Response
		the locality. Therefore, the area of potential foraging habitat to be indirectly affected is considered to be of low importance to the long-term survival of this species in the locality.
7.3.1 d)	Whether the proposed works or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).	No declared areas of outstanding biodiversity value are likely to be affected.
7.3.1 e)	Whether the proposed works or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	The proposed activity will result in the operation of the following key threatening processes: • Invasion of native plant communities by exotic species; • Reduction in stream water quality affecting food resources.
Conclusion	**Is there likely to be a significant impact?**	**No. A significant impact is not likely.** • **The activity would not affect the lifecycle of this species such that it would be at risk of extinction** • **Roosting and/or breeding habitat would not be removed** • **Foraging habitat would not be directly removed or fragmented for this highly mobile species** • **The importance of the habitat is not critical to this species survival.**

8.1.2. BC Act Test of Significance for Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions

This TEC is listed as endangered under the BC Act. There is approximately 17.47 ha of this TEC in the local occurrence within 5 km of the subject site (based on aerial imagery, not field validated). A total of 0.35 ha of this TEC occurs within the subject site where approximately 0.32 ha of this TEC occurs on biodiversity certified and approximately 0.03 ha of this TEC occurs on non-biodiversity certified land. Areas of this TEC which occur on non-biodiversity certified land will be directly affected by the proposed works through vegetation removal. Approximately 0.29 ha of this TEC may also be indirectly affected through temporary construction noise, vibration, sedimentation and changes in water quality.

Table 8: BC Act Test of Significance for *Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*

BC Act	Question	Response
7.3.1 a)	In the case of a threatened species: whether the proposed works or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction	N/A

BC Act	Question	Response
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed works or activity: Is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction	This TEC occurs within the development footprint on non-biodiversity certified land and occurs along Thompsons Creek. Approximately 0.03 ha of this TEC would be directly removed as part of the proposed activity. This TEC has an extensive presence in the locality as approximately 17.47 ha of this TEC occurs within 5 km of the subject site (based on aerial imagery, not field validated). There is an anticipated indirect impact zone of 10 m from the edge of the proposed activity. This area equates to 0.29 ha and accounts for likely indirect impacts such as temporary construction noise, vibration, sedimentation and changes in water quality. As Thompsons Creek is connected to Moore Gully, the realignment of Moore Gully, the associated bulk earthworks, and the potential modification of water quality and sedimentation may indirectly affect the quality of this TEC. As part of the creek re-alignment works, erosion and sedimentation control measures would be adopted. These measures include diverting surface runoff away from areas of soil disturbance, preventing tracking of sediment via vehicles and machinery from the worksite to drainage lines, placing sediment fencing 2 metres either side of the subject site and ceasing works during or after heavy rains (typically >15mm in 24 hours). Overall, the effect is minimal considering it is a small area that will experience direct vegetation removal and indirect effects, and other larger, continuous areas of this TEC exist nearby. These are minor disturbances and are unlikely to adversely affect the extent of the community within the locality such that it would be placed at risk of extinction.
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed works or activity is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.	The proposed activity would directly affect up to 0.03 ha of Swamp Oak Floodplain Forest that has been identified as occurring in high condition. Biosis ecologists validated that this TEC has a high Swamp Oak canopy cover with a reduced native mid and ground storey (Biosis, 2023). Exotic species were also encountered in this area, such as African Olive and Lantana (Biosis, 2023). The proposal will modify the composition of 0.03 ha of this ecological community through vegetation removal however it is unlikely to place the community at risk of extinction in the local occurrence. Indirect effects to this TEC, such as changes in water quality and sedimentation may cause a substantial and permanent change in species composition. There is also potential for the quality and composition of this TEC to improve in the future as a result of riparian corridor landscaping along Moore Gully creek which may indirectly benefit the nearby Swamp Oak Floodplain Forest. Overall, the proposed activity is unlikely to adversely alter the composition of this ecological community such that it is placed at risk of extinction in the local occurrence.
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed works or activity	The proposed activity will remove approximately 0.03 ha of Swamp Oak Floodplain Forest occurring on non-biodiversity certified land. As Thompsons Creek (where this TEC has been approximately mapped) is connected to Moore Gully, the realignment of Moore Gully and the associated bulk earthworks may indirectly affect the quality of Swamp Oak Floodplain Forest in the immediate area

BC Act	Question	Response
		through changes in water quality and sedimentation. Indirect effects to this TEC is expected to affect 0.03 ha of vegetation comprising Swamp Oak Floodplain Forest, causing a substantial and potentially permanent change in the species composition of 0.17% of the occurrence of the ecological community within the 5 km of the subject site.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed works or activity	The proposed activity would directly affect 0.03 ha and indirectly affect 0.29 ha of this TEC on non-biodiversity certified land. There are large continuous areas of this TEC occurring in close proximity to the subject site. The proposed works would not diminish the importance of these surrounding areas of Swamp Oak Floodplain Forest. Given that the area to be affected is small in relation to the TEC remaining in surrounding bushland, the proposed works would not significantly affect habitat critical to the viability of Swamp Oak Floodplain Forest. Fragmentation of Swamp Oak Floodplain Forest will not occur as vegetation would be removed from the edge of a continuous patch of this TEC where no gaps between two or more patches of the ecological community would be created. No area of this TEC is expected to be isolated or fragmented as a result of the proposed activity.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.	The Conservation Advice for Swamp Oak Floodplain Forest 2018 identifies patches that are of a reasonable size and in the best condition as the most critical to the survival of this TEC (DoE, 2018). According to Biosis Pty Ltd, the portions of this TEC within the subject site were observed to be in high condition (Biosis, 2023). As field surveys were not required for this Biodiversity Addendum, it has been assumed that areas of this TEC occurring immediately outside of the subject site are also of a high condition. While this TEC is considered to be of a high condition, the area of 0.03 ha is not considered to be a reasonable size for this area of the Swamp Oak Floodplain Forest to be assumed critical to the long-term survival of this TEC. It is not expected that the effects of the proposed activity will adversely affect this TEC such that its existence is placed at risk in the locality.
7.3.1 d)	Whether the proposed works or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).	No declared areas of outstanding biodiversity value are likely to be affected.
7.3.1 e)	Whether the proposed works or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	The proposed activity will result in the operation of the following key threatening processes: • Invasion of native plant communities by exotic perennial grasses • Clearing of native vegetation.
Conclusion	**Is there likely to be a significant impact?**	**No. A significant impact is not likely.** • **A small portion of this TEC (0.03 ha) will be removed** • **The TEC will not be fragmented**

BC Act	Question	Response
		• **This TEC has an extensive local occurrence** • **Riparian corridor landscaping occurring post works may benefit the quality and composition of this TEC.**

8.1.3. BC Act Test of Significance for *River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria*

This TEC is listed as endangered under the BC Act. There is approximately 514.08 ha of this TEC in the local occurrence within 5 km of the subject site (based on aerial imagery, not field validated). Approximately 0.60 ha of this TEC may be indirectly affected by the proposed works through temporary construction noise, vibration, sedimentation and changes in water quality.

Table 9: BC Act Test of Significance for *River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria*

BC Act	Question	Response
7.3.1 a)	In the case of a threatened species: whether the proposed works or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction	N/A
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed works or activity: Is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction	This TEC does not occur within the development footprint but occurs immediately adjacent to a portion of the southeast boundary of the subject site, associated with Thompsons Creek. This area occurs on non-biodiversity certified land. This TEC has an extensive presence in the locality as approximately 514.08 ha of this TEC occurs within 5 km of the subject site (based on aerial imagery, not field validated). There is an anticipated indirect impact zone of 10 m from the edge of the proposed activity. This area equates to 0.60 ha and accounts for likely indirect impacts such as temporary construction noise, vibration, sedimentation and changes in water quality. As Thompsons Creek is connected to Moore Gully, the realignment of Moore Gully, the associated bulk earthworks, and the potential modification of water quality and sedimentation may indirectly affect the quality of this TEC. As part of the creek re-alignment works, erosion and sedimentation control measures would be adopted. These measures include diverting surface runoff away from areas of soil disturbance, preventing tracking of sediment via vehicles and machinery from the worksite to drainage lines, placing sediment fencing 2 metres either side of the subject site and ceasing works during or after heavy rains (typically >15mm in 24 hours). Overall, the effect is minimal considering it is an indirect effect and other larger, continuous areas of this TEC exist nearby. These are minor disturbances and are unlikely to adversely affect the extent of the community within the locality such that it would be placed at risk of extinction.

BC Act	Question	Response
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed works or activity is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.	Indirect effects to this TEC, such as changes in water quality and sedimentation may cause a substantial and permanent change in species composition. There is also potential for the quality and composition of this TEC to improve in the future as a result of riparian corridor landscaping along Moore Gully creek which may indirectly benefit the nearby River Flat Eucalypt Forest. Overall, the proposed activity is unlikely to adversely alter the composition of this ecological community such that it is placed at risk of extinction in the local occurrence.
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed works or activity	The proposed activity will not remove River-flat Eucalypt Forest occurring on non-biodiversity certified land. As Thompsons Creek (where this TEC has been approximately mapped) is connected to Moore Gully, the realignment of Moore Gully and the associated bulk earthworks may indirectly affect the quality of River-flat Eucalypt Forest in the immediate area through changes in water quality and sedimentation. Indirect effects to this TEC is expected to affect 0.60 ha of vegetation comprising River-flat Eucalypt Forest, causing a substantial and potentially permanent change in the species composition of 0.12% of the occurrence of the ecological community within the 5 km of the subject site.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed works or activity	The proposed activity will not remove River-flat Eucalypt Forest occurring on non-biodiversity certified land. No area of this TEC is expected to be isolated or fragmented as a result of the proposed activity.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.	The Approved Conservation Advice for River-flat Eucalypt Forest 2020 identifies areas that are in the best condition as the most critical to the survival of this TEC (DAWE, 2020b). According to Biosis Pty Ltd, the portions of this TEC within the subject site were observed to be in high condition (Biosis, 2023). As field surveys were not required for this Biodiversity Addendum, it has been assumed that areas of this TEC occurring immediately outside of the subject site are also of a high condition. While these areas of River-flat Eucalypt Forest are assumed important to the long-term survival of this TEC, it is not expected that the indirect effects of the proposed activity will adversely affect this TEC such that its existence is placed at risk in the locality as this TEC will not be directly removed.
7.3.1 d)	Whether the proposed works or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).	No declared areas of outstanding biodiversity value are likely to be affected.
7.3.1 e)	Whether the proposed works or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	The proposed activity will result in the operation of the following key threatening processes: • Invasion of native plant communities by exotic perennial grasses

BC Act	Question	Response
		• Clearing of native vegetation.
Conclusion	**Is there likely to be a significant impact?**	**No. A significant impact is not likely.** • **The TEC will not be directly removed or fragmented** • **This TEC has an extensive local occurrence** • **Riparian corridor landscaping occurring post works may benefit the quality and composition of this TEC.**

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