Review of Environmental Factors Addendum

Mamre Road Precinct Wastewater Network Addendum

1 Determination

This Review of Environmental Factors Addendum (REFA) assesses potential environmental impacts of Mamre Road Precinct Wastewater Network project. It was prepared under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), with Sydney Water both the proponent and determining authority.

The Sydney Water Project Manager is accountable for ensuring the proposal is carried out as described in this REFA and the Mamre Road Precinct Wastewater Network project, Nov 2021 (approved REF). Additional environmental impact assessment may be required if the scope of work or work methods described in this REFA change significantly following determination.

Decision Statement

The main potential construction environmental impacts of the proposal are impacts to biodiversity. No operational impacts are anticipated. The proposal will not be carried out in a declared area of outstanding biodiversity value and is not likely to significantly affect threatened species, populations or ecological communities, or their habitats. Therefore, a Species Impact Statement (SIS) and Biodiversity Development Assessment Report (BDAR) is not required.

Given the nature, scale and extent of impacts and implementation of the mitigation measures outlined in this REFA and the approved REF, the proposed work is unlikely to have a significant impact on the environment. Therefore, we do not require an Environmental Impact Statement (EIS) and the proposal may proceed.

Certification

I certify that I have reviewed and endorsed this REFA and, to the best of my knowledge, it is in accordance with the EP&A Act and the Environmental Planning and Assessment Regulations (EP&A Regulation). The proposal has been considered against matters listed in section 171 (Appendix A) and the guidelines approved under section 170 of the EP&A Regulation and the information it contains is neither false nor misleading.

Prepared by:	Reviewed by:	Endorsed by:	Approved by:
[redacted] Senior Environmental Scientist Sydney Water Date: 22/05/2025	[redacted] Environmental Assessment Team Manager Sydney Water Date 23/05/2025	[redacted] Project Manager Sydney Water Date: 26/05/2025	[redacted] Senior Manager Environment and Heritage Sydney Water Date: 26/05/2025

2 Proposal Summary

Aspect	Detailed description
Proposal location	The proposal is part of the Mamre Road Precinct program and is on Mamre Road, Kemps Creek, in the Penrith Local Government Area (Penrith LGA). The proposal is at DP Lot 9 DP 812284.
Approved REF	Mamre Road Precinct – Wastewater Network, November 2021.

Proposal scope	The proposal scope in the approved REF involves the construction and operation of a new wastewater network to service the Mamre Road Precinct. The network key assets are:
	• two new wastewater pumping stations (SP1221 and SP1222) including two new wastewater overflow pipes
	• about 3 km of pressure pipeline between SP1221 and SP1222
	  ○ 1.6 km of DN315 pipe
	  ○ 1.4 km of DN355 pipe
	• about 3.6 km of gravity pipelines that connect the local precinct reticulation to the pumping stations
	  ○ 1.2 km of DN225 pipe
	  ○ 2 km of DN300 pipe
	  ○ 0.4 km of DN375 pipe
	• about 3.5 km of DN355 pressure pipeline between SP1221 and Ropes Creek carrier.

Proposal change	This REFA assesses changing the location of the wastewater overflow pipe from SP1222, refer to Figure 1. The construction methodology will change from open trench to micro tunnel. The proposal involves the following: • excavate the launch and exit pits, about 10 metres (m) by 5 m • remove about 260 m^2 of vegetation • install DN500 pipes via a micro tunnelling machine • restore affected areas, including backfill.
Justification for proposal change	The wastewater overflow pipe at SP1222 will be moved further north to avoid the overflow pipe clashing with future proposed stormwater basins. Sydney Water proposes to micro tunnel the overflow pipe to minimise vegetation impacts from open trenching. This change requires clearing about 170 m^2 of PCT 4025 and 90 m^2 of PCT 4023, which are associated with threatened ecological communities (TECs) (refer to Section 5 and Appendix C).

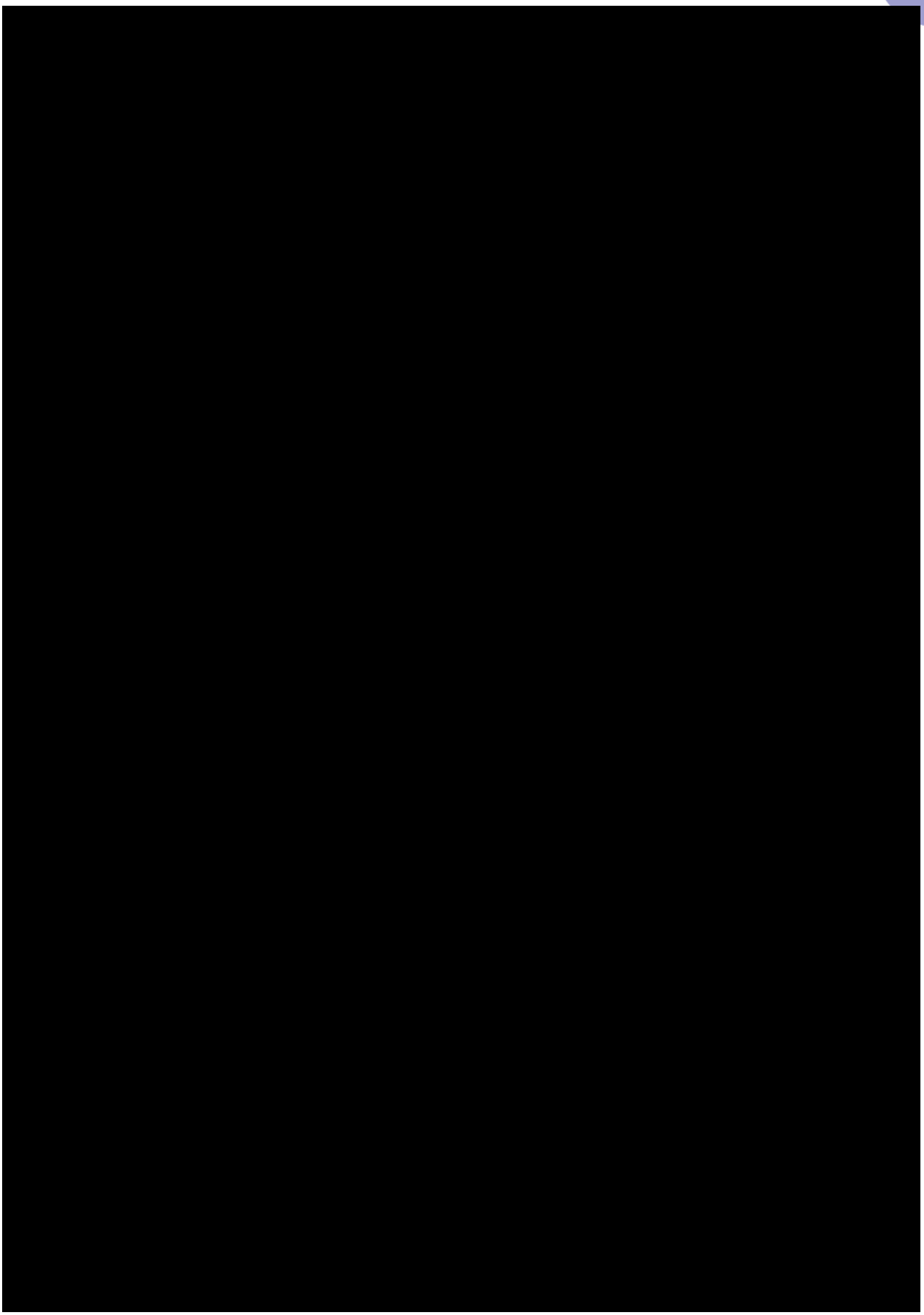


Figure 1 Proposal change

3 Consultation

Sydney Water must consult with councils and other authorities for work in sensitive locations or where the work may impact other agencies infrastructure or land (specified in the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (TISEPP).

As part of the approved REF, consultation was required under section 2.10 as the proposal impacts Council roads and/or related footpaths. This consultation was undertaken in 2021 and outlined in the approved REF.

For this proposal, Sydney Water notified the NSW Department of Planning, Housing and Infrastructure (DPHI) on 23 April 2025 in line with section 4.25A of the State Environmental Planning Policy (Precincts – Western Parkland City) 2021. The notification was made due to the proposed impact on vegetation mapped as High Biodiversity Value. No feedback has been received to date. Any subsequent feedback will be considered during detailed design.

Section 201A of the Environmental Planning and Assessment Regulation (2021) requires that Sydney Water notify DPHI within 30 days of a 'decision' to carry out an activity (i.e. proposal) on avoided land mapped under the Cumberland Plain Conservation Plan (CPCP) (DPE, 2022a). A decision is synonymous with the determination of the REF. Sydney Water notified DPHI in February 2025 and included a statement confirming the proposal is consistent with Part 2 of the CPCP Guidelines. DPHI responded on 30 April 2025 and raised no objections to the proposal. A further notification will be made post REFA determination to inform DPHI there are no changes to the proposal since the February 2025 notification.

Consultation with Fisheries was required under s 199 of the *Fisheries Management Act* 1994 as the works involve dredging and reclamation of a waterway classified as 'Key Fish Habitat'. Fisheries reviewed the proposal and had no objections to the proposed works. A re-notification was sent on 22 May 2025 to inform fisheries of the change in location of the wastewater overflow pipe. Any feedback received will be considered during detailed design.

4 Legislative consideration

There are additional legislative requirements above those already assessed in the approved REF are listed below.

Legislation	Additional considerations
SEPP (Transport and Infrastructure) 2021 (TISEPP)	Section 2.126(6) of TISEPP states that development for the purposes of sewage reticulation systems (which includes pumping stations and pipelines) may be carried out without consent on any land in the prescribed circumstances. Prescribed circumstances include where the development is carried out by or on behalf of a public authority. The proposal involves development of a sewerage reticulation system and as Sydney Water is a public authority, the proposal is permissible without consent.
State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BCSEPP)	**Water catchments (Chapter 6)** Chapter 6 of this SEPP applies as the proposal is within the Hawkesbury-Nepean Catchment, a regulated catchment area. Section 5 of this REF and

	Section 6 of the approved REF assesses potential environmental impacts on water quality and quantity, aquatic ecology, flooding, access, cultural heritage, flora and fauna, and scenic quality. The assessment confirmed that potential impacts are negligible and meet the requirements of part 6.2 of the SEPP. Further, s 171A of EP&A Regulation requires that a determining authority consider additional sections of the BC SEPP for works in regulated catchments. These are addressed in Appendix A. **Strategic conservation planning (Chapter 13)** The works are within the CPCP area on land mapped as certified – urban capable, excluded and avoided. Chapter 13 of this SEPP sets out planning controls to achieve the development and biodiversity outcomes of the CPCP. This proposal includes works on avoided land and requires consultation with DPHI (refer to Section 3).
State Environmental Planning Policy (Precincts - Western Parkland City) 2021 (WPC SEPP)	The proposal is within land to which Chapter 4 of this SEPP applies. The proposal is on land zoned: • RE1 Public recreation • ENZ Environment and Recreation. This proposal requires consultation with DPHI due to the proposed impact on vegetation mapped as High Biodiversity Value (refer to Section 3).
Cumberland Plain Conservation Plan Guidelines for Infrastructure Development 2022 (CPCP)	The proposal is on land classified under the CPCP as: • certified – urban capable land • avoided land. The proposal has been designed to avoid extensive native vegetation impacts on avoided land. However, some vegetation removal is required and therefore consultation with DPHI is required (refer to Section 3).

5 Additional environmental impacts and mitigation measures

The table below lists the additional environmental impacts that could result from the proposed change compared to the approved REF and the additional mitigation measures. All other environmental impacts and mitigation measures identified in the approved REF remain the same and will be incorporated into the contractor's CEMP.

Environmental impacts table		
Aspect	**Additional impacts**	**Additional mitigation measures**
Flora and fauna	An ecology assessment was carried out on 31 October 2024 to assess potential impacts (refer to Appendix C). The proposal is on land classified as avoided land under the CPCP. There is high weed incursion of the understorey within the study area, mainly by Perennial Ryegrass (*Lolium perenne*). Desktop searches indicated that one plant community type (PCT) is present within the study area (PCT 4025: Cumberland Red Gum Riverflat Forest). However, the site assessment confirmed that the vegetation conforms to PCT 4025 and PCT 4023: Coastal Valleys Riparian Forest, which is towards Kemps Creek creek line. The vegetation is degraded and disturbed, however both PCTs are associated with the following NSW *Biodiversity Conservation Act 2016* (BC Act) TECs: • PCT 4025 - River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions • PCT 4023 - Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions. About 170 m² of PCT 4025 and 90 m² of PCT 4023 require removal. One hollow bearing tree containing two hollows will require removal. No threatened flora or fauna species were observed during the site assessment. Although the study area is not mapped as koala habitat under the CPCP, TEC Swamp Oak Floodplain Forest includes potential koala habitat trees. However, none of these have a Diameter at Breast Height greater than 30 cm. The removal of this vegetation is unlikely to significantly impact the species as it would	Apply mitigation measures provided in the approved REF (November 2021), and the following: • record vegetation removed • replant about 680 m² of offset planting and establish four nest boxes or salvaged hollows • if clearing of native vegetation is required outside the impact area, these areas will require additional assessment by an ecologist • tree removal is to be confirmed by an arborist if impact to the Tree Root Zone is minimal and the trees can be retained. Tree Protection Zone details are provided within the Australian Standard 4970-2009 Protection of trees on development sites • koala-exclusion fencing is to be installed surrounding the proposed works, and it to be maintained the duration of the works. • any feedback received from Fisheries will be considered during detailed design.

	not fragment the local population, affect critical habitat, or interfere with the species recovery. A Test of Significance under the BC Act and Significant Impact Criteria assessment under the *Environment Protection and Biodiversity Conservation Act 1999* was not conducted for the koala as it was assessed as having a low likelihood of occurrence in the study area. A Test of Significance in accordance with the BC Act was undertaken for impacts to the 2 TECs. It was concluded that the project is unlikely to have a significant impact on the ecological communities or threatened species, therefore a Biodiversity Development Assessment Report is not required. The works involve dredging and reclamation of a waterway classified as 'Key Fish Habitat'. The potential impacts were assessed in the approved REF and Fisheries had no objections. A re-notification was sent on 22 May 2025 to inform fisheries of the change in location of the wastewater overflow pipe.	
Heritage	An Aboriginal Heritage Due Diligence assessment was commissioned for the approved REF. [redacted] Based on application of the mitigation measures in this REFA and the approved REF, potential impacts to Aboriginal heritage are not expected.	Apply mitigation measures provided in the approved REF (November 2021), and the following: • ensure the Aboriginal Heritage PAD site is demarcated, and a no-go zone established.

Environmental mitigation measures

General	
1.1	Should the proposal change from the REF, no further environmental assessment is required provided the change: • remains within the assessment/study area for the REF and has no net additional environmental impact or • is outside the assessment/study area for the REF but: - reduces impacts to biodiversity, heritage or human amenity or - avoids engineering (for example, geological, topographical) constraints and - after consultation with any potentially affected landowners and relevant agencies. The Contractor must demonstrate in writing how the changes meet these requirements, for approval by Sydney Water's Project Manager in consultation with the environmental and community representatives.

General	
1.2	Any feedback received from NSW Department of Planning, Housing and Infrastructure about the removal of high biodiversity vegetation (HBV) will be considered during detailed design.

6 Conclusion

This REFA assesses potential environmental impacts associated with the location and methodology change of the wastewater overflow pipe at SP1222 as part of the Mamre Road Precinct Wastewater Network project. Any additional environmental impacts are considered minor and potential impacts can be mitigated through implementation of the measures outlined in this REFA and the approved REF. The proposal is not likely to significantly impact the environment.

Appendix A – Section 171 and Section 171A checklist

Requirements in addition to the approved REF are considered in the table below.

Table A1 – Section 171 checklist

Section 171 checklist	REF finding
Any environmental impact on the ecosystems of the locality	The proposal will result in some environmental impacts to degraded/disturbed TECs. Temporary impacts will be offset in line with Sydney Water's Biodiversity Offset Guidelines. The proposal will lead to environmental improvements by ensuring a reliable wastewater service to collect and treat wastewater, minimising any impacts on the ecosystem.
Any impact on the habitat of any protected animals (within the meaning of the *Biodiversity Conservation Act 2016*)	The proposal will have a potential impact on the habitat of protected animals. Impacts to important habitat features are restricted to a small area containing koala habitat trees. The quantity of these specific habitat features to be impacted is low and is unlikely to adversely affect the occurrence or lifecycle of these species in the locality.

Section 171A of the EP&A Regulation requires the determining authority to take into account certain matters under Part 6.2 of the BCSEPP for a proposal within a regulated catchment.

As the proposal is within the Hawkesbury-Nepean catchment, the requirements of Section 171A(1) are applicable and are considered in Table A-2 below.

Table A2 – Section 171A checklist

Section 171A checklist (Development in regulated catchments)	REF finding
BCSEPP – Section 6.6(1) - Water quality and quantity In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider the following:	
(a) whether the development will have a neutral or beneficial effect on the quality of water entering a waterway	Wastewater systems are designed with emergency relief structures (ERS) to protect against internal surcharges in larger wet weather events if the wastewater storage capacity is exceeded. In these infrequent events, wastewater may be released to Kemps Creek. However, the proposal has been designed to minimise wet weather overflows as much as possible and will comply with Sydney Water's existing environment protection licence for the St Mary's wastewater system (EPL 1729).

(b) whether the development will have an adverse impact on water flow in a natural waterbody	The proposal will not adversely affect water flows within Kemps Creek during construction or operation.
(c) whether the development will increase the amount of stormwater run-off from a site	The proposal is underground, and will not increase the area of impervious surfaces. Landform restoration will ensure that the proposal will not increase the volume of stormwater run-off from the site.
(d) whether the development will incorporate on-site stormwater retention, infiltration or reuse	The wastewater overflow pipe operates below ground and will not increase the area of impervious surfaces. Provision for on-site stormwater retention, infiltration or reuse is not required.
(e) the impact of the development on the level and quality of the water table	The proposal may intercept groundwater during construction, however impacts to the level and quality of the groundwater are temporary and expected to be minor (refer to Section 6 of the approved REF).
(f) the cumulative environmental impact of the development on the regulated catchment	The proposal is required to support urban growth within the Mamre Road Precinct. Potential impacts from the proposal are expected to be limited and localised. With the implementation of the environmental mitigation measures in Section 6 of the approved REF, the potential for cumulative impacts between the proposal and other projects within the catchment is low.
(g) whether the development makes adequate provision to protect the quality and quantity of ground water.	As detailed in Section 6 of the approved REF, impacts to the level and quality of the groundwater are expected to be minor.
BCSEPP – Section 6.6(2) - Water quality and quantity Development consent must not be granted to development on land in a regulated catchment unless the consent authority is satisfied the development ensures:	
(a) the effect on the quality of water entering a natural waterbody will be as close as possible to neutral or beneficial	Wastewater systems are designed with ERSs to protect against internal surcharges in larger wet weather events if the wastewater storage capacity is exceeded. In these infrequent events, wastewater may be released to Kemps Creek. However, the proposal has been designed to minimise wet weather overflows as much as possible and will comply with Sydney Water's existing environment protection licence for the St Mary's wastewater system (EPL 1729).

(b) the impact on water flow in a natural waterbody will be minimised	The proposal will not modify or adversely affect water flows within Kemps Creek during construction or operation.

BCSEPP – Section 6.7(1) - Aquatic Ecology

In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider the following:

(a) whether the development will have a direct, indirect or cumulative adverse impact on terrestrial, aquatic or migratory animals or vegetation	The proposal requires removal of about 260 m^2 degraded/disturbed TECs. Temporary impacts will be offset in line with Sydney Water's Biodiversity Offset Guidelines. Direct, indirect or cumulative adverse impacts to terrestrial, aquatic or migratory animals or vegetation of the locality will be minor.
(b) whether the development involves the clearing of riparian vegetation and, if so, whether the development will require: (i) a controlled activity approval under the *Water Management Act 2000*, or (ii) a permit under the *Fisheries Management Act 1994* (FM Act)	Clearing of about 260 m^2 of degraded/disturbed TECs will occur within the riparian zone. Temporary impacts will be offset in line with Sydney Water's Biodiversity Offset Guidelines. Sydney Water is exempt from the need to obtain a controlled activity approval under the *Water Management Act 2000*. A permit under the FM Act is not required for the proposal. However, Fisheries were notified in accordance with Section 199 of the FM Act for works in the approved REF. Fisheries subsequently advised they have no objections to the proposal. A re-notification for this proposal was sent on 22 May 2025 to inform fisheries of the change in location of the wastewater overflow pipe. Any feedback received will be considered during detailed design.
(a) whether the development will minimise or avoid: (i) the erosion of land abutting a natural waterbody, or (ii) the sedimentation of a natural waterbody	Mitigation measures to minimise the potential for erosion and sedimentation impacts to areas adjacent to and within Kemps Creek are included in Section 6 of the approved REF.
(b) whether the development will have an adverse impact on wetlands that are not in the coastal wetlands and littoral rainforests area	There are no wetlands close to the proposal.
(c) whether the development includes adequate safeguards and rehabilitation measures to protect aquatic ecology	Mitigation measures to minimise the potential for aquatic ecology such as erosion and sedimentation controls and offset planting are included in Section 6 of the approved REF.

(d) if the development site adjoins a natural waterbody, whether additional measures are required to ensure a neutral or beneficial effect on the water quality of the waterbody	See response to 6.6 (1) and (2) above. Mitigation measures in addition to those in the approved REF and this REFA are not required.
BCSEPP – Section 6.7(2) - Aquatic Ecology Development consent must not be granted to development on land in a regulated catchment unless the consent authority is satisfied of the following:	
(a) the direct, indirect or cumulative adverse impact on terrestrial, aquatic or migratory animals or vegetation will be kept to the minimum necessary for the carrying out of the development	Appropriate mitigation measures are included in Section 6 of the approved REF to ensure that the cumulative impacts of the proposal on terrestrial, aquatic or migratory animals or vegetation are limited to the minimum extent necessary.
(b) the development will not have a direct, indirect or cumulative adverse impact on aquatic reserves	There are no aquatic reserves close to the proposal.
(c) if a controlled activity approval under the *Water Management Act 2000* or a permit under the *Fisheries Management Act 1994* is required in relation to the clearing of riparian vegetation—the approval or permit has been obtained	See response to 6.7(1) above.
(d) the erosion of land abutting a natural waterbody or the sedimentation of a natural waterbody will be minimised	Mitigation measures to minimise the potential for erosion and sedimentation impacts to areas adjacent to and within Kemps Creek are included in Section 6 of the approved REF.
(e) the adverse impact on wetlands that are not in the coastal wetlands and littoral rainforests area will be minimised	There are no wetlands in proximity to the proposal.
BCSEPP – Section 6.8(1) – Flooding	
In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider the likely impact of the development on periodic flooding that benefits wetlands and other riverine ecosystems	The proposed wastewater overflow point is on flood prone land. The proposal is not likely to adversely affect flood behavior given the works will not permanently change surface topography and drainage patterns. The risk of adverse impacts from future flood events that benefits riverine ecosystems during operation of the proposal is negligible.
BCSEPP – Section 6.8(2) – Flooding Development consent must not be granted to development on flood liable land in a regulated catchment unless the consent authority is satisfied the development will not:	

(a) if there is a flood, result in a release of pollutants that may have an adverse impact on the water quality of a natural waterbody, or	Mitigation measures to minimise the potential for construction erosion and sedimentation impacts to areas adjacent to and within Kemps Creek are included Section 6 of the approved REF. No pollutants would be released during proposal operation.
(b) have an adverse impact on the natural recession of floodwaters into wetlands and other riverine ecosystems	The proposal will not alter the existing contours of the land within the floodplain and will therefore not affect floodwater overland flow path(s).

BCSEPP – Section 6.9(1) - Recreation and public access

In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider:

(a) the likely impact of the development on recreational land uses in the regulated catchment	Not applicable
(b) whether the development will maintain or improve public access to and around foreshores without adverse impact on natural waterbodies, watercourses, wetlands or riparian vegetation	Not applicable

BCSEPP – Section 6.9(2) - Recreation and public access

Development consent must not be granted to development on land in a regulated catchment unless the consent authority is satisfied of the following:

(a) the development will maintain or improve public access to and from natural waterbodies for recreational purposes, including fishing, swimming and boating, without adverse impact on natural waterbodies, watercourses, wetlands or riparian vegetation	Not applicable
(b) new or existing points of public access between natural waterbodies and the site of the development will be stable and safe	Not applicable
(c) if land forming part of the foreshore of a natural waterbody will be made available for public access as a result of the development but is not in public ownership—public access to and use of the land will be safeguarded	Not applicable

Appendix B – Consideration of TISEPP consultation

TISEPP section	Yes	No
Section 2.10, council related infrastructure or services – consultation with council		
Will the work:		
Potentially have a substantial impact on stormwater management services provided by council?		X
Be likely to generate traffic that will strain the capacity of the road system in the LGA?		X
Connect to, and have a substantial impact on, the capacity of a council owned sewerage system?		X
Connect to, and use of a substantial volume of water from a council owned water supply system?		X
Require temporary structures on, or enclose, a public space under council's control that will disrupt pedestrian or vehicular traffic that is not minor or inconsequential?		X
Excavate a road or a footpath adjacent to, a road for which the council is the roads authority that is not minor or inconsequential?		X
Section 2.11, local heritage – consultation with council		
Is the work likely to affect the heritage significance of a local heritage item, or of a heritage conservation area (not also a State heritage item) more than a minor or inconsequential amount?		X
Section 2.12, flood liable land – consultation with council		
Will the work be on flood liable land (land that is susceptible to flooding by the probable maximum flood event) and will works alter flood patterns other than to a minor extent?		X
Section 2.13, flood liable land – consultation with State Emergency Services		
Will the work be on flood liable land (land that is susceptible to flooding by the probable maximum flood event) and undertaken under a relevant provision*, but not the carrying out of minor alterations or additions to, or the demolition of, a building, emergency works or routine maintenance? * (e) Div.14 (Public admin buildings), (g) Div. 16 (Research/ monitoring stations), (i) Div. 20 (Stormwater systems)?		X
Section 2.14, development with impacts on certain land within the coastal zone– council consultation		
Is the work on land mapped as coastal vulnerability area and inconsistent with a certified coastal management program?		X
Section 2.15, consultation with public authorities other than councils		
Will the proposal be on land adjacent to land reserved under the *National Parks and Wildlife Act 1974* or to land acquired under Part 11 of that Act*? If so, consult with DPIE (NPWS).*		X
Will the proposal be on land in Zone E1 National Parks and Nature Reserves or on a land use zone that is equivalent to that zone? *If so, consult with DPIE (NPWS)*		X
Will the proposal include a fixed or floating structure in or over navigable waters? If so, consult *TfNSW*		X
Will the proposal be on land in a mine subsidence district within the meaning of the *Coal Mine Subsidence Compensation Act 2017*? *If so, consult with Subsidence Advisory NSW.*		X
Will the proposal be on land in a Western City operational area specified in *the Western Parkland City Authority Act 2018,* Schedule 2 and have a capital investment value of $30 million or more? *If so, consult the Western Parkland City Authority*.		X

Appendix C – Biodiversity assessment memorandum

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Memorandum

To	**Prinya Khamphounvong**, Environmental Scientist, Environment & Heritage, Sydney Water	From	**Isabelle Andary-Geslin**, Consultant (Ecologist), Planning Partner – Author **Justin Sullivan** Associate (Ecologist), Planning Partner – Reviewer
Copy	N/A	Reference	**IN.P0001879.03.01.000001**
Date	**2025-01-16**	Pages (including this page)	**32**
Subject	**Biodiversity assessment memorandum of the proposed disturbance footprint for the Mamre Road Precinct northern pump station (SP1221) overflow pipe**		

1 Introduction

The Planning Partnership ecologists were engaged by Sydney Water Corporation (SWC) to undertake an ecological assessment of the site for the proposed new location of the northern pump station (SP1221) overflow pipe within the Mamre Road Precinct (Figure 1-1). Vegetation clearance is proposed to accommodate the receival pit (approximately 9 x 5m) at end of the of the overflow pipe, as well as a 7 x 30 m clearance area north of the receival pit to allow for heavy machinery access. The Impact Area of this ecological assessment is comprised of the receival pit and clearance area.

1.1 Scope and purpose of the assessment

The purpose of this biodiversity assessment was to provide an assessment of the ecological values within the Study Area, including the potential presence of native vegetation and/or significant flora, fauna, and ecological communities. This assessment identifies the environmental approvals that may be triggered under Commonwealth and state legislation. This assessment also provides identification of any key risk areas of the Proposal site, and recommendations for locating Proposal infrastructure to avoid impacts. This assessment is a memorandum to the *Mamre Road Wastewater Project Flora and Fauna Assessment* prepared by Biosis (2021).

The scope of this report includes:

- A Test of Significance (ToS) for the two Threatened Ecological Communities (TECs), if confirmed to be present
- A ToS for any potential threatened species, if habitat for threatened species is identified
- Consideration of the requirements of the Cumberland Plain Conservation Plan (CPCP) and SEPP
- A review of relevant ecological databases and previous reports
- Identification and mapping of:
  - Any patches of native vegetation
  - Any habitat that may support threatened flora, fauna or ecological communities
  - Any habitat features including nests, hollows, stags etc.



Pumping station design
Study area
Impact area
Waterways
Waterbodies



Source: Aurecon, TfNSW, NSW Spatial Services (DCS), ESRI, Nearmap Aerial Imagery dated 2024/01/25

1:2,500 @ A4
0 25 50 m

Projection: GDA2020 MGA Zone 56

Mamre Road **Biodiversity Memorandum**

Figure 1-1: Location of the Proposal

C:\Users\Aida.Tengku\Aurecon Group\5259951 - MRUS2 Project Team - P5259951_MRUS2\Proj\P5050118_MamreRoad_BiodiversityMemo_SW.aprx
Project No: P522314 Map Author: Aida.Tengku Date: 20/11/2024 Revision: 0

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Memorandum

1.2 Limitations

The outcomes of this report are limited to the ecological assessment undertaken for the Impact Area and immediate surrounds. This report is limited to the scope defined in Section 1.1. Should further information become available regarding the conditions at the Impact Area, the Planning Partnership reserves the right to review the report in the context of the additional information.

Ecological assessments can be undertaken at any time of year, however, seasonal variations can result in some flora and fauna not being detectable at certain times. Particularly, many flowering plant species are only detectable when producing flowers or fruits. In general, spring is considered the optimal period to undertake ecological field assessments in NSW. Consequently, the spring timing of the ecological field survey that informed this assessment was considered appropriate to ascertain the extent and condition of native vegetation and habitat in the Study Area.

This investigation is limited to a terrestrial ecological assessment. The section of impact area that extends into Kemps Creek, beyond the western limit of the study area (see Figure 1-1), is not subject to this investigation. Particularly, no aquatic assessment has been included in this scope.

2 Methodology

The following definitions apply to this assessment:

- **Study Area**: includes a buffer area surrounding the Impact Area (Figure 1-1)
- **Impact Area**: includes the proposed disturbance footprint (Figure 1-1).
- **Locality**: includes a 5 km radius around the Study Area boundary used for review of existing threatened species records.

The methodology included a desktop assessment, field investigation and impact assessment, as described in the sections below.

2.1 Desktop assessment

The desktop assessment is comprised of a review of current databases for information on native vegetation and threatened flora, fauna, and ecological communities listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and *Biodiversity Conservation Act 2016* (BC Act). This report is a memorandum to the *Mamre Road Wastewater Project Flora and Fauna Assessment* prepared by Biosis in 2021.

The methods adopted for the database search and impact assessment are outlined in the following sections.

2.1.1 Database search

The database searches undertaken provided a shortlist of the potential flora, fauna, and ecological communities that may occur within the Locality. The following databases were reviewed to inform the assessment:

- NSW BioNet Atlas database (NSW Government, 2024a)
- NSW BioNet Vegetation Classification (NSW Government, 2024b)

- Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool (DCCEEW, 2024)
- Existing vegetation mapping, published on the State Vegetation Type Map (SVTM) NSW extant Plant Community Type (PCT) (State Government of NSW and NSW DCCEEW, 2022)
- DPI Fisheries NSW Spatial Data Portal for Key Fish Habitat (DPI, 2024a)
- DPI WeedWise – Priority Weeds within the Greater Sydney Local Land Service Region (DPI, 2024b).

Note: BioNet records greater than 20 years old were considered no longer current and were excluded from consideration. This ensured only the most up-to-date and relevant records were reviewed.

2.2 Field assessment

The ecological field assessment was undertaken on 31 October 2024 by two Aurecon ecologists. The assessment included:

- PCT identification and mapping
- TEC identification and condition mapping
- Biodiversity constraints assessment and mapping
- Identification of trees containing habitat values (hollows, nests and dreys etc.)
- Priority weed identification
- Opportunistic targeted surveys for non-cryptic threatened flora with suitable survey period at the time of surveys
- Incidental fauna records.

2.3 Impact assessment and mitigation requirements

Under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), SWC must assess the environmental impact of all its activities. SWC must seek to avoid, minimise, and mitigate these impacts. Residual impacts resulting from SWC activities, must be offset as follows:

- Non-statutory impacts are non-significant impacts on native vegetation, trees, threatened biodiversity (i.e., TECs, threatened species, habitat of threatened species) or Matters of National Environmental Significance (MNES). Non-statutory impacts can be offset based on SWC's Biodiversity Offset Policy (Sydney Water, 2024)
- Statutory impacts are likely, predicted or known significant impacts on threatened biodiversity and MNES. Those impacts need to be offset in accordance with the BC Act and EPBC Act.

2.3.1 Non-statutory impacts

Non-significant residual impacts must be offset based on SWC Biodiversity Offset Guide (the Guide). Non-significant impacts apply to:

- **Minor Impact**: localised impacts, such as removal of an individual isolated tree (e.g. street tree or garden planting), or a small amount (< 100 m^2) of native vegetation removal (e.g. around a maintenance hole)
- **Moderate Impact**: larger scale impacts (> 100 m^2), that are not considered significant (e.g. removal of native vegetation associated with new infrastructure Proposals).

Where minor and moderate residual impacts are identified, residual impacts must be offset in accordance with the offset multipliers provided in the Guide (refer to Section 4 for assessment of impacts).

2.3.2 Statutory impacts

Where impacts on threatened biodiversity (i.e., TECs, threatened species, or their habitat) are likely to occur, an Assessment of Significance is undertaken to evaluate if the impacts resulting from the Proposal would be significant. Assessments of significance are undertaken based on:

- **Test of Significance** for threatened biodiversity listed under the BC Act and based on the criteria listed in Office of Environment and Heritage Threatened Species Test of Significance Guidelines (NSW Government and Office of Environment and Heritage, 2018). If a Proposal is predicted to result in significant impacts on threatened biodiversity, a Biodiversity Development Assessment Report (BDAR) in accordance with the Biodiversity Assessment Method (BAM) is required and offsets as per Biodiversity Offsets Scheme (BOS) apply.
- **Significant Impact Assessment** for MNES listed under the EPBC Act based on the significant impact criteria for each MNES as per the *Significant impact guidelines 1.1: MNES* (DEWHA, 2013). If a Proposal is predicted to result in significant impacts on MNES, a referral to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) is required for approval. Where required, offsets on MNES must meet the EPBC Act Environmental Offsets Policy. There are nine MNES consisting of:
  - World Heritage Properties
  - National Heritage Places
  - Wetlands of International Importance
  - TECs and threatened species
  - Migratory Birds
  - Marine areas
  - The Great Barrier Reef Marine Park
  - Nuclear Actions
  - A water resource, in relation to coal seam gas development and large coal mining development.

As detailed in *Mamre Road Wastewater Project Flora and Fauna Assessment* (Biosis, 2021), it is considered unlikely that a significant impact on any MNES would result from the Proposal.

3 Results

3.1 Desktop results

3.1.1 Database review

The review of relevant databases (PMST (DCCEEW, 2024) and BioNet (NSW Government, 2024a)) returned 27 listed threatened flora species and 60 listed threatened and/or migratory fauna species (including 37 birds, 16 mammals, three amphibians, two fish, one reptile and one gastropod) in the Locality.

There are records of threatened flora and fauna species within 10 km of the Study Area, including records of the following species within 1 km of the Study Area:

- Blue-billed Duck (*Oxyura australis*)
- Bush-pea (*Pultenaea parviflora*)
- Grey-headed Flying-fox (*Pteropus poliocephalius*)
- Juniper-leaved Grevillea (*Grevillea juniperina subsp. juniperina*)
- Nodding Geebung (*Persoonia nutans*)
- Parrot-pea (*Dillwynia tenuifolia*)
- White-bellied Sea-eagle (*Haliaeetus leucogaster*).

3.1.2 Existing mapped and identified vegetation

The SVTM for NSW extant PCTs (NSW Government and NSW DCCEEW, 2022) indicates that one PCT is mapped in the Study Area (Figure 3-1). A further two PCTs are mapped within 1 km of the Study Area. These PCTs are associated with four EPBC Act TECs, and five BC Act listed TECs (NSW Government, 2024b) (refer to Table 3-1).

Five EPBC Act listed TECs were identified in the PMST as likely to occur within 5 km of the Proposal area (DCCEEW, 2024). These include:

- Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion (Endangered)
- Cooks River/Castlereagh Ironbark Forest of the Sydney Basin Bioregion (Critically Endangered)
- Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (Critically Endangered)
- River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria (Critically Endangered)
- Western Sydney Dry Rainforest and Moist Woodland on Shale (Critically Endangered).

The vegetation directly adjacent to the Study Area was previously assessed and mapped by Biosis (2021) as:

- PCT 835: Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion
- PCT 1800: Swamp Oak open forest on riverflats of the Cumberland Plain and Hunter valley.

PCT 385 corresponds with the BC Act listed Endangered Ecological Community (EEC) River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions.

PCT 1800 corresponds with the BC Act listed EEC Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions.

Table 3-1. PCTs mapped within 1 km of the Study Area (NSW Government and NSW DCCEEW, 2022; NSW Government, 2024b)

PCTs	Potential associated TECs	Relation to the Study Area
3320: Cumberland Shale Plains Woodland	■ EPBC Act Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (CE) ■ BC Act Cumberland Plain Woodland in the Sydney Basin Bioregion (CE) ■ BC Act Shale Gravel Transition Forest in the Sydney Basin Bioregion (E)	Mapped within 1 km of the Study Area
3448: Castlereagh Ironbark Forest	■ EPBC Act Cooks River/Castlereagh Ironbark Forest of the Sydney Basin Bioregion (CE) ■ EPBC Act Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (CE) ■ BC Act Cooks River/Castlereagh Ironbark Forest in the Sydney Basin Bioregion (E) ■ BC Act Shale Gravel Transition Forest in the Sydney Basin Bioregion (E)	Mapped within 1 km of the Study Area
4025: Cumberland Red Gum Riverflat Forest	■ EPBC Act Elderslie Banksia Scrub Forest in the Sydney Basin Bioregion (CE) ■ EPBC Act River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria (CE) ■ BC Act Elderslie Banksia Scrub Forest (CE) ■ BC Act River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (E)	Mapped in the Study Area

3.1.3 Key fish habitat

The NSW Department of Primary Industries Fisheries spatial data portal (DPI, 2024a) indicated that the area of Kemps Creek located in the eastern side of Study Area is mapped as Key Fish Habitat (Hawkesbury-Nepean) (Figure 3-1).

No estuarine macrophytes are mapped within the Locality.

3.1.4 NSW Biodiversity values map and threshold tool

The Biodiversity Values Map identifies land with high biodiversity value, such as native vegetation, threatened species habitat and creek lines, that is particularly sensitive to impacts from development. The map can be used as a guide to assist in determining whether a Proposal would exceed the Biodiversity Offsets Scheme Threshold. The threshold has two elements:

- whether the amount of native vegetation being cleared exceeds a threshold area
- whether the impacts occur on an area mapped as containing high biodiversity value (NSW Government and Department of Planning and Environment, 2023).

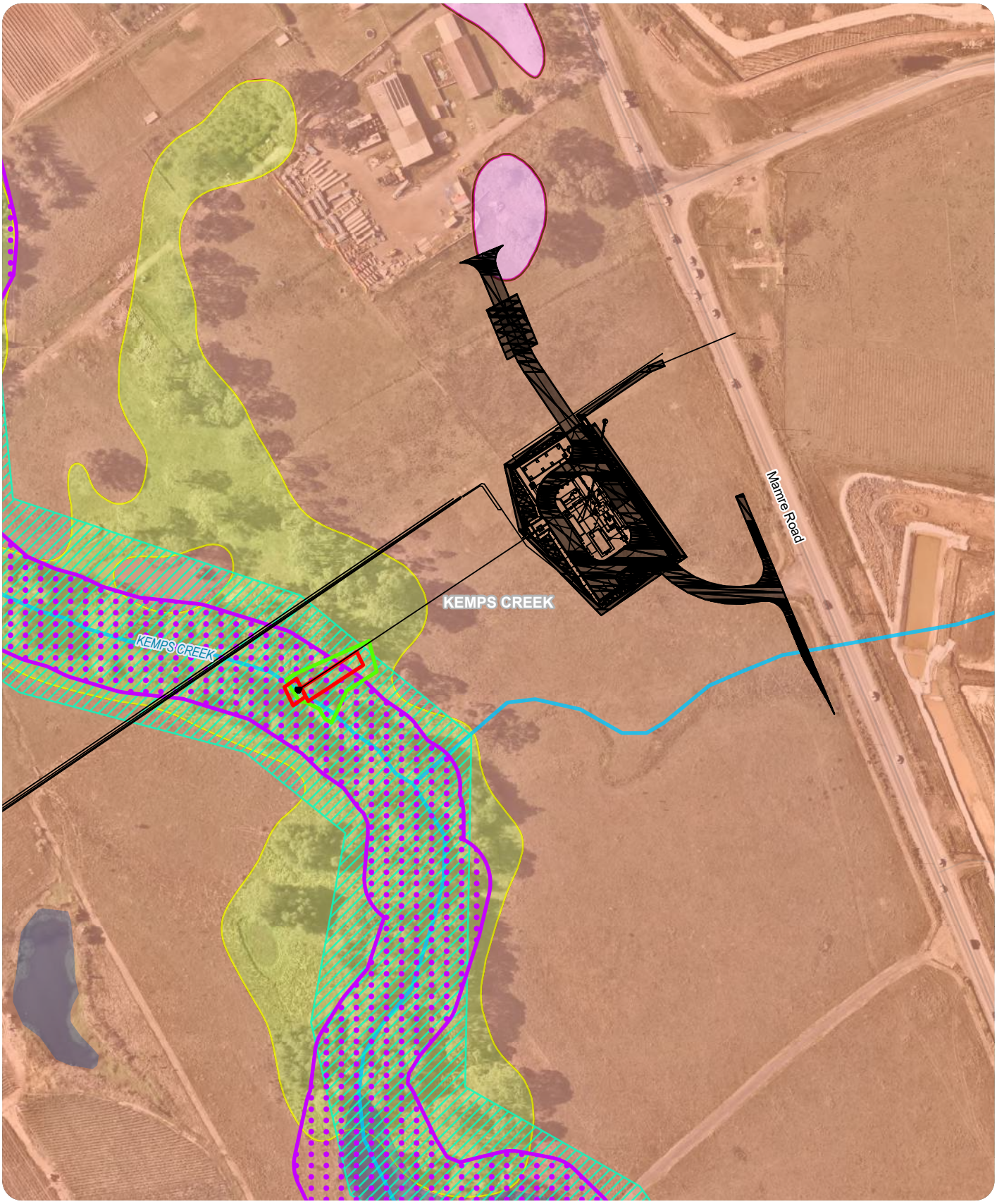
Vegetation in the west of the Study Area along Kemps Creek is mapped as Biodiversity Values Riparian Land (NSW Government and Department of Planning and Environment, 2023) (Figure 3-1).

3.1.5 Area of Outstanding Biodiversity Value

There are no Areas of Outstanding Biodiversity Value (AOBV) in the Locality.

3.1.6 Protected areas

The Study Area is classified as ‘Avoided Land’ under the CPCP, due to its high biodiversity values and/or strategic importance.



Pumping station design
Study area
Impact area
Waterways
Waterbodies
Key fish habitat

Biodiversity Values

Plant Community Type (SVTM)

0,Not classified
3448,Castlereagh Ironbark Forest
4025,Cumberland Red Gum Riverflat Forest



Source: Aurecon, TfNSW, NSW Spatial Services (DCS), ESRI, Nearmap Aerial Imagery dated 2024/01/25

1:2,500 @ A4
0 25 50 m

Projection: GDA2020 MGA Zone 56

Mamre Road **Biodiversity Memorandum**

Figure 3-1: Desktop assessment ecological values

C:\Users\Aida.Tengku\Aurecon Group\526951 - MRUS2 Project Team - P526951_MRUS2\Proj\P505018_MamreRoad_BiodiversityMemo_SW.aprx
Project No: P522314 Map Author: Aida.Tengku Date: 20/11/2024 Revision: 0

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Memorandum

3.2 Field assessment results

3.2.1 Site description

The Study Area comprises native and exotic vegetation west of Mamre Road and east of Kemps Creek. There is high weed incursion of the understorey within the Study Area, mainly by Perennial Ryegrass (*Lolium perenne*). There are no waterways within the Study Area. Ecological values of the Study Area, including vegetation and threatened species habitat, are discussed below, and shown in Figure 3-2.

3.2.2 Native vegetation

The Study Area is comprised of open woodland native canopy and a non-native ground cover.

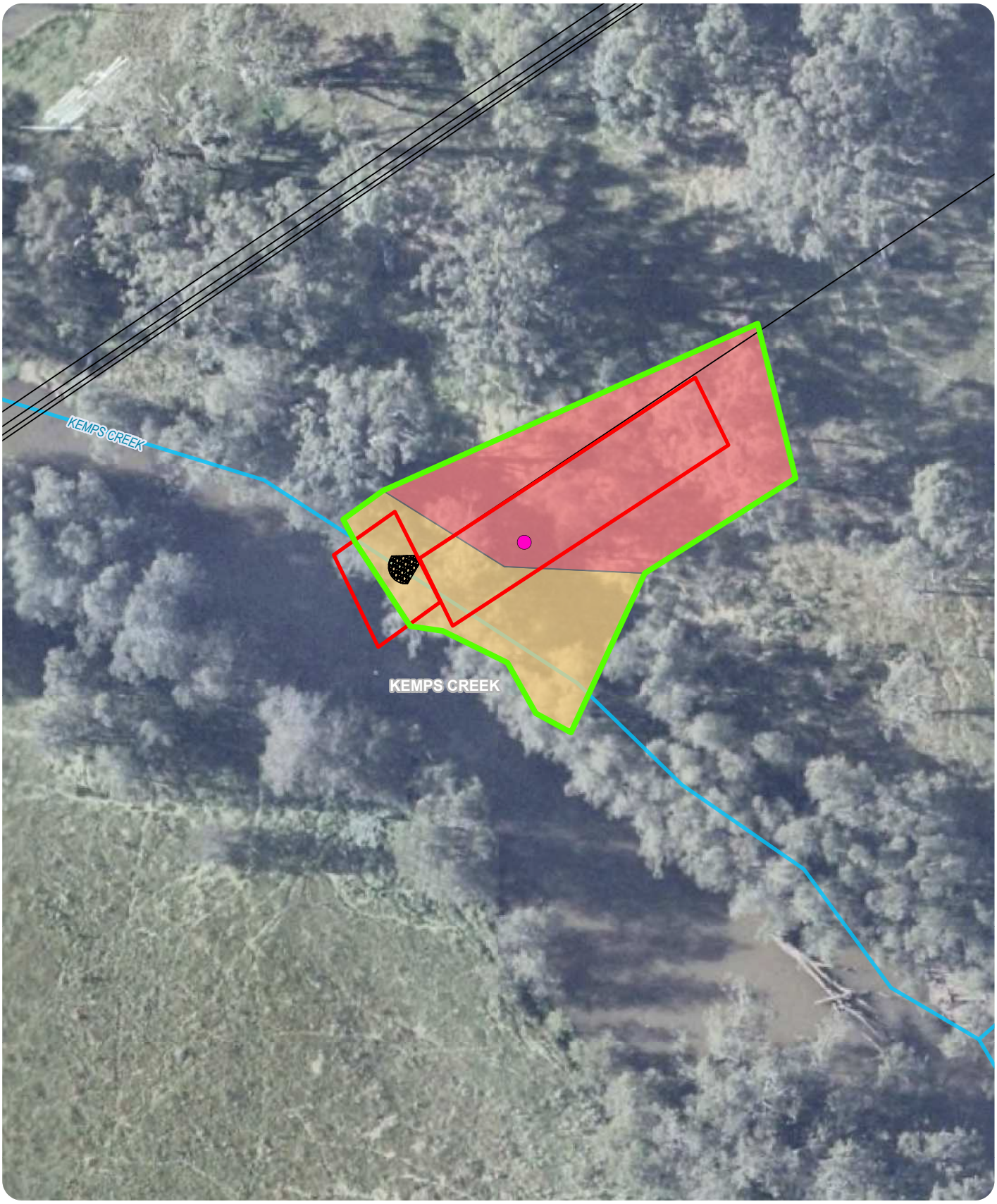
Away from the creek-line, the vegetation conforms to PCT 4025 (Cumberland Red Gum Riverflat Forest). The canopy was dominated by Cabbage Gum (*Eucalyptus amplifolia*), and Blackthorn (*Bursaria spinosa*). There was also Cabbage Gum regrowth. A high presence of non-native ground cover species was observed, including Purple Top (*Verbena bonariensis*), Solanum (*Solanum sisymbriifolium*) and Prairie Nymph (*Hibbertia lahue*). The dominant grass identified was Perennial Ryegrass.

Towards the creek line, the vegetation conforms to PCT 4023 (Coastal Valleys Riparian Forest). There was a dominance of Swamp She-Oak (*Casuarina glauca*) in the canopy, and a highly non-native understory including Wandering Trad (*Tradescantia fluminensis*).

3.2.3 Threatened ecological communities

Vegetation within the Study Area meets the description within the Final Determination Listing (NSW Government and Office of Environment and Heritage, 2024) for the BC Act Endangered Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (associated with PCT 4023) and BC Act Endangered River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (associated with PCT 4025).

Vegetation within the Study Area is relatively disturbed, subject to edge effects, and has an exotic dominant understorey. Regardless, the vegetation in the study area classifies as the two EECs as shown in Figure 3-2.



Pumping station design
Study area
Impact area
Waterways
Hollow bearing trees

Threatened Ecological Communities

Coastal Valleys Riparian Forest
Cumberland Red Gum Riverflat Forest



Source: Aurecon, TfNSW, NSW Spatial Services (DCS), ESRI, Nearmap Aerial Imagery dated 2024/01/25

1:500 @ A4
0 5 10 m

Projection: GDA2020 MGA Zone 56

Mamre Road **Biodiversity Memorandum**

Figure 3-2: Field assessment ecological values

C:\Users\Aida.Tengku\Aurecon Group\525951 - MRUS2 Project Team - P525951_MRUS2\Pro\P505018_MamreRoad_BiodiversityMemo_SW.aprx
Project No: P522314 Map Author: Aida.Tengku Date: 20/11/2024 Revision: 0

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Memorandum

3.2.4 Flora

During the field assessment, 13 flora species were recorded, 46% of which were native and 54% of which were exotic (Attachment 2). A full list of the flora species recorded in the Study Area is provided in Attachment 1 – Flora species recorded in the Study Area. No threatened flora species were recorded within the Study Area.

3.2.5 Fauna

During the field assessment, 11 non-threatened fauna species were recorded in the Study Area. Vegetation within the Study Area is heavily disturbed, and the Study Area contains limited habitat values. The Study Area is considered unlikely to support threatened fauna species identified in the *Mamre Road Wastewater Project Flora and Fauna Assessment* (Biosis, 2021). Fauna habitats present within the Impact Area include:

- Native trees – provides habitat for common bird species. There was one habitat tree identified within the Impact Area, with one large hollow and one small hollow. This tree was located near the creek line
- Dense predominantly exotic grass – provides habitat for small mammals, common bird species which prefer dense understory, and reptiles including snakes.

No threatened fauna species were opportunistically recorded.

4 Impact assessment

4.1 Details of the proposed works

Vegetation clearing is proposed within the Impact Area to accommodate the receival pit and heavy vehicle access to the receival pit. It is proposed that approximately 255 m^2 of native vegetation is cleared within the Impact Area. The Study Area covers approximately 621 m^2 of native vegetation.

4.2 Potential impacts on ecological values

4.2.1 Native vegetation and Threatened Ecological Communities

Two PCTs were identified within the Impact Area. Proposed impacts to native vegetation include:

- Removal of approximately **168 m^2** of native vegetation within PCT 4025 and approximately **87 m^2** native vegetation within PCT 4023
- Removal of one tree with two hollows within the Impact Area.

Two BC Act TECs were identified within the Impact Area. Impacts to TECs are:

- Removal of approximately **168 m^2** of BC Act Endangered River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions
- Removal of approximately **87 m^2** of BC Act Endangered Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions.

Although conforming to the Final Determination description for each BC Act TEC (NSW Government and Office of Environment and Heritage, 2024), the vegetation within the Study Area is considered relatively disturbed and degraded. Refer to Section 3.2.3 for details.

BC Act Test of Significance

Table 4-1 assesses whether the Proposal would cause a significant impact on the River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions as per Section 7.3 of the BC Act (NSW Government and Office of Environment and Heritage, 2018).

Table 4-1. BC Act Test of Significance: River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions

Test of Significance: River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions
(a) In the case of a threatened species, whether the proposed development 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 not a threatened species.
(b) In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:
(i) 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, or
The Study Area contains approximately 360 m^2 of native vegetation which conforms to BC Act Endangered River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions. The Proposal would remove approximately 168 m^2 of this vegetation within the Impact Area. The current extent of the community has not been assessed, however approximately 800 – 1,400 km^2 Coastal Floodplain Wetlands (including the community) remains (NSW Government 2023). As a result, the Impact Area can be considered to represent between 0.000012 – 0.000021% of the remaining community. Vegetation within the Study Area is relatively disturbed, subject to edge effects, and has an exotic dominant understorey. Therefore, the removal of the vegetation within the Impact Area would not reduce the extent of the community, such that its local occurrence is likely to be placed at risk of extinction.
(ii) 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 Proposal would directly remove approximately 168 m^2 of this vegetation within the Impact Area. Vegetation removal would not modify the composition of the community, as vegetation removal is indiscriminate and would not target one species or a group of species within the community. Vegetation removal is proposed at the understory, midstory, and canopy level. Therefore, the Proposal is would not substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.
(c) in relation to the habitat of a threatened species or ecological community:
(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and
The Study Area contains a total of approximately 360 m^2 of native vegetation which conforms to BC Act Endangered River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions. Of this, 168 m^2 is within the Impact Area. The Proposal would remove approximately 168 m^2 of this vegetation where it occurs within the Impact Area.

Test of Significance: River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions
(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and
The Study Area contains approximately 360 m^2 of the community. Vegetation approximately 100 m north west of the Impact Area along Kemps Creek is already fragmented by approximately 20 m. Clearing is localised to one patch of approximately 168 m^2 of the community. The Proposal would create a small fragment in vegetation of 7 – 9 m wide on the eastern side of Kemps Creek. This minor fragmentation would not be likely to block fauna species movements within the Study Area more than the current vegetation fragmentation 100 m north west of the Impact Area. As such, the Proposal would not substantially increase fragmentation impacts to the community. The Proposal is not likely to isolate one area of habitat from another.
(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality
The vegetation within the Impact Area is relatively disturbed and subject to edge effects. The small and localised patch of community proposed to be cleared is not considered of high importance to the long-term survival of the ecological community in the locality. Standard mitigation measures during construction work and the Proposal design including elements to reduce erosion and sediment dispersal to mitigate potential offsite impacts.
(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)
No AOBV are present or will be impacted by the Proposal.
(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process
In relation to this community, the Proposal is likely to include or exacerbate the following Key Threatening Processes listed under Schedule 4 of the BC Act: ■ Clearing of native vegetation, and ■ Removal of dead wood and dead trees. Native vegetation within the Study Area is relatively disturbed, subject to edge effects, and has an exotic dominant understorey. The Proposal would remove approximately 168 m^2 of native vegetation which conforms to BC Act Endangered River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions.
Conclusion
The Proposal would remove approximately 168 m^2 of native vegetation which conforms to BC Act Endangered River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions. Native vegetation within the Study Area is relatively disturbed, subject to edge effects, and has an exotic dominant understorey. The proposed vegetation clearing within the community is considered localised and of small scale. The impacts to the community as a result of the Proposal are **unlikely to be considered significant**.

Table 4-2 assesses whether the Proposal would cause a significant impact on the Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions as per Section 7.3 of the BC Act (NSW Government and Office of Environment and Heritage, 2018).

Table 4-2. BC Act Test of Significance: Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions

Test of Significance: Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions
(a) In the case of a threatened species, whether the proposed development 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 not a threatened species.
(b) In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:
(i) 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, or
The Study Area contains approximately 261 m^2 of native vegetation which conforms to BC Act Endangered Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions. The Proposal would remove approximately 87 m^2 of this vegetation within the Impact Area. The current extent of the community has not been assessed, however approximately 800 – 1,400 km^2 Coastal Floodplain Wetlands (including the community) remains (NSW Government, 2021). As a result, the Impact Area can be considered to represent between 0.0000061 – 0.000011 % of the remaining community. Vegetation within the Study Area is relatively disturbed, subject to edge effects, and has an exotic dominant understorey. Therefore, the removal of the vegetation within the Impact Area would not reduce the extent of the community, such that its local occurrence is likely to be placed at risk of extinction.
(ii) 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 Proposal would directly remove approximately 87 m^2 of this vegetation within the Impact Area. Vegetation removal would not modify the composition of the community, as vegetation removal is indiscriminate and would not target one species or a group of species within the community. Vegetation removal is proposed at the understory, midstory, and canopy level. Therefore, the Proposal is would not substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.
(c) in relation to the habitat of a threatened species or ecological community:
(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and
The Study Area contains a total of approximately 261 m^2 of native vegetation which conforms to BC Act Endangered Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions. Of this, 87 m^2 is within the Impact Area. The Proposal would remove approximately 87 m^2 of this vegetation where it occurs within the Impact Area.
(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and
The Study Area contains approximately 261 m^2 of the community. Vegetation approximately 100 m north west of the Impact Area along Kemps Creek is already fragmented by approximately 20 m. Clearing is localised to one patch of approximately 87 m^2 of the community. The Proposal would create a small fragment in vegetation of 7 – 9 m wide on the eastern side of Kemps Creek. This minor fragmentation would not be likely to block fauna species movements within the Study Area more than the current vegetation fragmentation 100 m north west of the Impact Area. As such, the Proposal would not substantially increase fragmentation impacts to the community. The Proposal is not likely to isolate one area of habitat from another.

Test of Significance: Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions
(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality
The vegetation within the Impact Area is relatively disturbed and subject to edge effects. The small and localised patch of community proposed to be cleared is not considered of high importance to the long-term survival of the ecological community in the locality. Standard mitigation measures during construction work and the Proposal design including elements to reduce erosion and sediment dispersal to mitigate potential offsite impacts.
(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)
No AOBV are present or will be impacted by the Proposal.
(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process
In relation to this community, the Proposal is likely to include or exacerbate the following Key Threatening Processes listed under Schedule 4 of the BC Act: ■ Clearing of native vegetation, and ■ Removal of dead wood and dead trees. Native vegetation within the Study Area is relatively disturbed, subject to edge effects, and has an exotic dominant understorey. The Proposal would remove approximately 87 m^2 of native vegetation which conforms to BC Act Endangered Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions.
Conclusion
The Proposal would remove approximately 168 m2 of native vegetation which conforms to BC Act Endangered Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions. Native vegetation within the Study Area is relatively disturbed, subject to edge effects, and has an exotic dominant understorey. The proposed vegetation clearing within the community is considered localised and of small scale. The impacts to the community as a result of the Proposal are **unlikely to be considered significant.**

4.2.2 Threatened species

No threatened flora or fauna species were recorded within the Study Area. Threatened species' likelihood of occurrence and consequent assessments for the Proposal are addressed in the *Mamre Road Wastewater Project Flora and Fauna Assessment* (Biosis, 2021) and are applicable to this report.

4.2.3 NSW Biodiversity values map and threshold tool

The Proposal's Impact Area covers approximately 0.026 ha of native vegetation. This is much lower than the 0.25 ha threshold for clearing, above which the Biodiversity Assessment Method (BAM) and Biodiversity Offsets Scheme apply. The amount of native vegetation being cleared does not exceed a threshold area. However, there is approximately 216.5 m^2 of biodiversity values mapped within the Impact Area. The Proposal would impact on an area mapped as containing Riparian Land (NSW Government and Department of Planning and Environment, 2023).

Although the Proposal contains mapped Riparian Land, the biodiversity assessment concludes that impacts to TECs and communities known to occur within the Proposal area is **unlikely** to constitute a

significant impact. In consideration of this, and as SW are a self-determining authority under Part 5, Division 5.1 of the EP&A Act, a BDAR is not compulsory or recommended.

4.3 Cumberland Plain Conservation Plan assessments

To be consistent with the CPCP's strategic assessment approval under Part 10 of the EPBC Act, essential infrastructure must be consistent with all objectives and biodiversity matters detailed in Table 4-3 and Table 4-4 below.

Table 4-3. Part 2, Section 2.3 of the Cumberland Plain Conservation Plan Guidelines for Infrastructure Development (DPE, 2022).

Objectives	Proposal compliance
Locate essential infrastructure in the certified-urban capable land in the nominated areas, where possible	N/A – The Proposed Action cannot be located in Certified-urban Capable Land as access to Kemps Creek is entirely within Avoided Land.
Design and site essential infrastructure to avoid or minimise environmental impacts	The essential infrastructure design has the smallest Impact Area possible while meeting function requirements.
Avoid or minimise direct impacts on threatened ecological communities listed in the EPBC Act, known populations of threatened flora species and koala habitat protected under the CPCP	N/A – No EPBC Act listed TECs or threatened flora within the Study Area.
Minimise or mitigate indirect and prescribed impacts on threatened ecological communities, species, and their habitats to best-practice standards	Direct impacts on threatened ecological communities include the removal of: ■ Approximately 168 m^2 of BC Act Endangered Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (associated with PCT 4023) ■ Approximately 87 m^2 of BC Act Endangered River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (associated with PCT 4025). Indirect impact on threatened fauna species includes the removal of: ■ One tree bearing two hollows ■ Approximately 255 m^2 of BC Act Endangered TECs. Vegetation within the Study Area is relatively disturbed, subject to edge effects, and has an exotic dominant understorey. No threatened species would be directly impacted by the Proposal. Indirect impacts are to be minimised by following mitigation measures detailed in Section 5.1 of this report.

Objectives	Proposal compliance
Minimise or mitigate indirect and prescribed impacts on the southern Sydney koala population to best-practice standards	The Study Area is not mapped as Koala habitat under the CPCP. However, 168 m^2 of TEC Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions is to be removed and does contain koala habitat trees (Cabbage Gum (*Eucalyptus amplifolia*)). None of the Cabbage Gums to be removed have a Diameter at Breast Height (DBH) greater than 30 cm. Indirect impacts are to be minimised and mitigated through following the mitigation measures detailed in Section 5.1 of this report. Direct impacts are to be mitigated through the Guide which directs SWC's biodiversity offset principles.
Biodiversity matters	**Proposal compliance**
Design and site essential infrastructure to avoid an adverse impact on biodiversity. Where an adverse impact cannot feasibly or practicably be avoided, minimise impacts by refining design elements.	The essential infrastructure design has the smallest Impact Area possible while meeting function requirements.
Avoid or minimise impacts on the following threatened ecological communities listed in the EPBC Act: ■ Shale Sandstone Transition Forest ■ Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest ■ River-Flat Eucalypt Forest ■ Coastal Swamp Oak (*Casuarina glauca*) Forest ■ Cooks River Castlereagh Ironbark Forest	N/A – No EPBC Act listed TECs within the Study Area.
Avoid or minimise direct impacts to populations of threatened flora species, prioritising avoiding impacts to known populations of: ■ *Grevillea parviflora subsp. parviflora* (Small-flower Grevillea) ■ *Persoonia bargoensis* (Bargo Geebung) ■ *Persoonia nutans* (Nodding Geebung) ■ *Genoplesium baueri* (Yellow Gnat-orchid) ■ *Pimelea spicata* (Spiked Rice-flower) ■ *Pultanea parviflora* (Sydney Bush Pea)	N/A – No threatened flora considered likely to occur within the Study Area. No threatened flora were identified during the field assessment.
Avoid or minimise direct impacts to koala habitat protected under the CPCP	N/A – The Study Area is not mapped as Koala habitat under the CPCP.
Design infrastructure within the Wilton and Greater Macarthur nominated areas to avoid impacts on koala habitat protected by the CPCP and maintain the function of koala movement corridor	N/A – The Proposal does not occur within the Wilton and Greater Macarthur nominated areas.

Objectives	Proposal compliance
Implement specific mitigation measures to address indirect and prescribed impacts on the southern Sydney koala population. This includes: ■ installing koala-exclusion fencing during construction ■ maintaining the integrity of any existing koala-exclusion fencing	No existing koala-exclusion fencing exists surrounding the Impact Area. The installation of koala-exclusion fencing during construction is specified in the mitigation measures in Section 5.1.
Develop and implement mitigation measures to address indirect and prescribed impacts on threatened ecological communities, threatened species and their habitats during the construction and operation of infrastructure. Refer to Appendix E of the CPCP for appropriate mitigation measures	Appropriate mitigation measures to address indirect and prescribed impacts on threatened ecological communities, threatened species and their habitats during the construction and operation of infrastructure are detailed in Section 5.1.
Fulfil biodiversity offset requirements under the BC Act and/or any other relevant legislation	Biodiversity offsets as per the Guide will be applied as detailed in Section 4.4 of this report.

Table 4-4. Part 3, Section 3.1 of the Cumberland Plain Conservation Plan Guidelines for Infrastructure Development (DPE, 2022).

Objectives	Proposal compliance
Protect threatened ecological communities, threatened species and their habitats	Direct impacts on threatened ecological communities and threatened species' habitat include the removal of: ■ Approximately 168 m^2 of BC Act Endangered Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (associated with PCT 4023) ■ Approximately 87 m^2 of BC Act Endangered River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (associated with PCT 4025) ■ One tree bearing two hollows. To encourage the conservation and recovery of ecological communities and threatened species' habitats, approximately 678 m^2 of offset planting is to occur and four nest boxes or salvaged hollows are to be established (Section 4.4), along with annual weeding of SWC's Mamre Road property for the three years (Section 5.1). No threatened species are assessed to be significantly impacted by the Proposal.

Objectives	Proposal compliance
Protect or enhance koala habitat and corridors	The Study Area is not mapped as Koala habitat under the CPCP. However, 168 m^2 of TEC Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions is to be removed and does contain koala habitat trees (Cabbage Gum (*Eucalyptus amplifolia*)). None of the Cabbage Gums to be removed have a Diameter at Breast Height (DBH) greater than 30 cm. Indirect impacts are to be minimised and mitigated through following the mitigation measures detailed in Section 5.1 of this report. Direct impacts are to be mitigated through the Guide which directs SWC's biodiversity offset principles.
Protect MNES	N/A – No MNES are present within the Study Area, and it is considered unlikely that a significant impact on a MNES would result from the Proposal (Biosis, 2021).
Encourage the conservation and recovery of ecological communities and their habitats	Direct impacts on threatened ecological communities include the removal of following relatively disturbed vegetation: ■ Approximately 168 m^2 of BC Act Endangered Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (associated with PCT 4023) ■ Approximately 87 m^2 of BC Act Endangered River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (associated with PCT 4025). To encourage the conservation and recovery of ecological communities and their habitats, approximately 678 m^2 of offset planting is to occur (Section 4.4), along with annual weeding of SWC's Mamre Road property for the three years (Section 5.1).
Biodiversity matters	**Proposal compliance**

Objectives	Proposal compliance
Avoid or minimise any adverse impacts on threatened ecological communities, threatened species and their habitats, both on the site of the activity and on adjoining land that is avoided land	Direct impacts on threatened ecological communities include the removal of: ■ Approximately 168 m^2 of BC Act Endangered Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (associated with PCT 4023) ■ Approximately 87 m^2 of BC Act Endangered River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (associated with PCT 4025). Indirect impact on threatened fauna species includes the removal of: ■ One tree bearing two hollows ■ Approximately 255 m^2 of BC Act Endangered TECs. Vegetation within the Study Area is relatively disturbed, subject to edge effects, and has an exotic dominant understorey. No threatened species would be directly impacted by the Proposal. Mitigation measures in Section 5.1 of this report detail actions to avoid or minimise any adverse impacts on threatened ecological communities, threatened species and their habitats, both on the site of the activity and on adjoining land that is avoided land.
Avoid or minimise any adverse impacts on habitat connectivity and fauna movement, including koala and wildlife corridors, both on the site of the activity and on adjoining land that is avoided land	The Study Area is not mapped as Koala habitat under the CPCP. However, 168 m^2 of TEC Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions is to be removed and does contain koala habitat trees (Cabbage Gum (*Eucalyptus amplifolia*)). None of the Cabbage Gums to be removed have a Diameter at Breast Height (DBH) greater than 30 cm. Indirect impacts are to be minimised and mitigated both within the Impact Area and on adjoining land through following the mitigation measures detailed in Section 5.1 of this report. Direct impacts are to be mitigated through the Guide which directs SWC's biodiversity offset principles.
Avoid or minimise any adverse impacts on the integrity and resilience of the biophysical, ecological, and hydrological environments, including surface and groundwater, and the quality of the natural flow of water in a riparian corridor	Mitigation measures in Section 5.1 of this report detail actions to avoid or minimise any adverse impacts on the integrity and resilience of the biophysical, ecological, and hydrological environments, including surface and groundwater, and the quality of the natural flow of water in a riparian corridor.

Objectives	Proposal compliance
Avoid or minimise any adverse impacts on MNES referred to in Chapter 2, Part 3, Division 1 of the EPBC Act (if not already considered under Part 2 of these guidelines)	N/A – No MNES are present within the Study Area, and it is considered unlikely that a significant impact on a MNES would result from the Proposal (Biosis, 2021).
Install temporary koala-exclusion fencing before construction in areas identified as koala habitat protected by the CPCP and maintain the integrity of any existing koala-exclusion fencing	No existing koala-exclusion fencing exists surrounding the Impact Area. The installation of koala-exclusion fencing during construction is specified in the mitigation measures in Section 5.1.
Design linear infrastructure to include appropriate access treatments such as gates or koala bridges to ensure the integrity and connectivity of koala corridors and habitat protected under the CPCP is maintained.	N/A – The proposed action is not linear infrastructure.

4.4 Summary of impacts and offset multiplier requirements

Impacts from the Proposal include 168 m^2 of BC Act Endangered River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (moderate impact) and 87 m^2 of BC Act Endangered Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (minor impact).

As per the Guide, removal of threatened native vegetation with a moderate impact requires a 3:1 offset strategy, while removal of threatened native vegetation with a minor impact requires a 2:1 offset strategy (Table 4-5).

Table 4-5. Non-statutory biodiversity impacts and offsets.

Impact	Proposal Level of Impact	Offset requirements			
		Biodiversity Value Impacted	Total Impact	Offset Multiplier	Offset required
Moderate Impact	Yes	168 m^2 of native vegetation BC Act Endangered River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions.	Clearing up to 168 m^2 of native vegetation.	3	504 m^2
Minor Impact	Yes	87 m^2 of native vegetation BC Act Endangered Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions.	Clearing up to 87 m^2 of native vegetation.	2	174 m^2
Tree Hollow	Yes	One hollow-bearing tree containing two hollows.	Clearing one hollow-bearing tree.	2 nest boxes or salvaged hollows (for each hollow removed).	4

5 Conclusion and recommendations

The Proposal would involve removal of 168 m^2 of BC Act Endangered River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions, 87 m^2 of BC Act Endangered Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions, and one hollow-bearing tree containing two hollows.

This will not have a significantly adverse impact on threatened ecological communities or species such that local occurrence is likely to be placed at risk of extinction, on any threatened species or ecological community, or on any AOBV.

In consideration of this, and as SW are a self-determining authority under Part 5, Division 5.1 of the EP&A Act, a BDAR is not compulsory or recommended.

Given the Proposal involves impact to vegetation within Avoided Land under the CPCP, SWC is required to notify the Planning Secretary of the decision to carry out the Proposal (essential infrastructure) on Avoided Land, including a consistency statement.

5.1 Safeguards and mitigation measures

A number of key threatening processes have been identified potentially arising from the Proposal, however recommendations are made to safeguard against any impacts to biodiversity arising from those key threatening processes (refer to Table 5-1).

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Table 5-1 Safeguards and mitigation measures

Impact	Safeguard	Responsibility	Timing
Project-specific safeguards and mitigation measures			
Degradation of surrounding ecological communities	Annual weed control of WoNS and Priority Weeds in remaining vegetation surrounding the Impact Area within Sydney Water's property is to occur.	SWC / Contractor	Prior, during, and post works
Loss of native vegetation extent or trees	All direct impacts are to be offset as per SWC Biodiversity Offset Guide (Sydney Water, 2024). Revegetated areas and trees planted must be monitored so that their survival until establishment is achieved. This will secure long-term offset.	SWC / Contractor	Prior and during works
	If clearing of native vegetation is required outside the Study Area, these areas will require additional assessment by an ecologist for potential impacts to TECs, threatened species and their habitats.	SWC / Contractor	Prior and during works
Minimise risk of over clearing	The native vegetation to be cleared within the Impact Area will be clearly identified and marked. Native vegetation to remain will be clearly delineated as No-Go-Zones to avoid risk of clearing. Clearing and No-Go-Zone maps to be prepared and approved by SWC prior to works commencing. Signing stating No-Go-Zone to be placed in fences. All staff will be made aware of No-Go-Zones during induction and be provided with a map of No-Go-Zones.	SWC / Contractor	Prior and during works
	Tree removal is to be confirmed by an arborist due to potential to retain these trees if impact to the Tree Root Zone is minimal. Tree Protection Zone details are provided within the *Australian Standard 4970-2009 Protection of trees on development sites.*	SWC / Contractor	Prior and during works
Introduction, establishment and/or spread of weeds	Weed management plan is to be developed and implemented by the contractor and approved by SWC prior to works commencing. The plan will be established and implemented to avoid spread and establishment of weeds during construction. Measures will include: ■ All equipment and plant machinery to be appropriately cleaned before the start of works. ■ All priority weeds within the Impact Area are to be cleared and disposed of at a registered waste management facility.	SWC / Contractor	Prior and during works

Impact	Safeguard	Responsibility	Timing
	■ If herbicide is to be used, this must be applied by a person trained to do so and that has a certificate of competency, or a statement of attainment issued by a registered training organisation. Herbicide will only be used in accordance with the label/permit. ■ Conduct toolbox talks to identify high risk priority weeds and weeds of national significance to on-site staff. ■ Weed vegetation requiring clearing and removal should be disposed of at a registered waste management facility.		
Unexpected finds: Threatened flora, or injury or risk to native fauna, including threatened species	An unexpected finds protocol to be prepared by SWC and implemented by the contractor if unexpected threatened flora, or native fauna are found or discovered during works. Works must stop immediately upon an unexpected find occurrence, and the environment/site manager informed. An ecologist should be engaged to determine management action(s).	SWC / Contractor	Prior and during works
Indirect impacts to adjacent vegetation and waterways	A sedimentation and controls plan is to be prepared by the contractor and approved by SWC prior to works starting to avoid indirect impacts due to runoff of building materials and/or water into adjacent vegetation and waterways, including Kemps Creek.	SWC / Contractor	Prior, during, and post works
Introduction of pathogens into riparian areas and/or native vegetation	Introduction of pathogens in native vegetation can cause diseases. A hygiene protocol must be prepared by SWC prior to works starting and implemented by the contractor during works to avoid introduction of pathogens in machinery, tools, PPE or imported soils.	SWC / Contractor	Prior and during works
South Sydney koala population	Koala-exclusion fencing is to be installed surrounding the proposed works, and it to be maintained the duration of the works.	SWC / Contractor	Prior and during works
SWC standard mitigation measures for flora and fauna			
4.1	Provided it is essential for delivering the Project, Sydney Water's Project Manager can approve the following vegetation removal and tree trimming, without additional environmental assessment (but only after consultation with the Environmental and Community Representatives and affected landowners). Sydney Water considers vegetation removal in these circumstances has minimal environmental impact. ■ Any minor:	SWC	During works

Impact	Safeguard	Responsibility	Timing
	– vegetation trimming or – removal of exotic vegetation or – removal of planted native vegetation – where the vegetation is not a threatened species (including a characteristic species of a threatened community or population), heritage listed, in declared critical habitat or in a declared area of outstanding biodiversity value. ■ Any removal of remnant vegetation where there is no net change to environmental impact (e.g., a different area of vegetation is removed but the total area is the same or less than assessed in the EIA). Written explanation of the application of this clause (including justification of the need for trimming or removal and any proposed revegetation) should be provided when seeking Project Manager approval. Any impacts to native vegetation and trees must be offset in accordance with the Biodiversity Offset Guideline (SWEMS0019.13).		
4.3	If vegetation is highly sensitive, trimming or clearance cannot proceed without written authorisation from the Sydney Water Project Manager (in consultation with Environmental Representative). In sensitive areas where further assessment is required for any further trimming or removal of vegetation.	SWC / Contractor	Prior and during works
4.4	Map and report native vegetation clearing greater than 0.01 ha in extent (and any associated rehabilitation) to the Sydney Water Environmental Representative. Track vegetation clearing as per SWEMS0015.26 Contractor Native Vegetation Clearing and Rehabilitation template. Refer to Native Vegetation Clearing and Rehabilitation Report template (SWEMS0015.26). Supporting documentation/evidence must be provided in the report including photos, marked up maps and GIS layers. If an ecologist is doing a preclearance survey they can provide GIS layers of the areas to be cleared.	SWC / Contractor	Prior and during works
4.5	Minimise vegetation clearance and disturbance, including impacts to standing dead trees and riparian zones. Where possible, limit clearing to trimming rather than the removal of whole	SWC / Contractor	Prior and during works

Impact	Safeguard	Responsibility	Timing
	plants e.g., can be used to give the DC option to under bore, tie-back and trim rather than removal		
4.6	Physically delineate vegetation to be cleared and/or protected on site and install appropriate signage prior to works commencing.	SWC / Contractor	Prior and during works
4.7	Adjust methodology (e.g., avoid area, hand excavate, implement exclusion fencing) to protect sensitive areas where possible (such as mature trees, known threatened species, populations or ecological communities).	SWC / Contractor	Prior and during works
4.8	Protect trees in accordance with the requirements of *Australian Standard 4970-2009 for the Protection of Trees on Development Sites*. Do not damage tree roots unless absolutely necessary and engage a qualified arborist where roots >50mm are impacted within the Tree Protection Zone. Protect trees in accordance with the Program Delivery Guidance Standard 9.3 Biodiversity Management (EV-GS-003). Standard available in SWIM. The TPZ = trunk diameter (measured 1.4m above ground) x 12. PD Guidance standards on PMSP *drive Env\01 Program Management\02 Plans & Procedures\DM Guidance Standards*	SWC / Contractor	Prior and during works
4.11	Retain dead tree trunks, bush rock or logs in-situ unless they are in the disturbance corridor and moving is unavoidable. Reposition material elsewhere on the site or approved adjacent sites. If native fauna is likely to be present, a licenced ecologist should conduct a pre-clearance inspection and undertake fauna relocation. See Fauna Encounters on Construction Sites Factsheet if you need further guidance. CEMP to include contact details of appropriately licenced handler.	SWC / Contractor	Prior and during works
4.12	Inspect vegetation for potential fauna prior to clearing or trimming. If fauna is present, or ecological assessment has determined high likelihood of native fauna presence (including hollow bearing trees), engage WIRES or a licenced ecologist to inspect and relocate fauna before works. See Fauna Encounters on Construction Sites Factsheet if you need further guidance.	SWC / Contractor	Prior and during works

Impact	Safeguard	Responsibility	Timing
4.13	If native fauna is encountered on site, stop work and allow the fauna to move away un-harassed. Engage WIRES or a licenced ecologist if assistance is required to move fauna. See Fauna Encounters on Construction Sites Factsheet if you need further guidance.	SWC / Contractor	Prior and during works
4.14	Avoid impeding/blocking fish passage. Retain snags and natural obstructions in waterways where possible.	SWC / Contractor	N/A
4.15	E&TS/Program Delivery/The Delivery Contractor will obtain a permit for harming marine vegetation/blocking fish passage. If impacts weren't established and no permit sought when the REF was being written.	SWC / Contractor	N/A
4.17	If any threatened species (flora or fauna) is discovered during the works, stop work immediately and notify the Sydney Water Project Manager. Work will only recommence once the impact on the species has been assessed and appropriate control measures implemented.	SWC / Contractor	During works
4.18	If any damage occurs to vegetation outside of the disturbance corridor (as shown in the CEMP), notify the Sydney Water Project Manager and Environmental Representative so that appropriate remediation strategies can be developed.	SWC / Contractor	During works
4.19	Manage biosecurity in accordance with: ■ *Biosecurity Act 2015* (see NSW WeedWise), including reporting new weed infestations or invasive pests ■ contemporary bush regeneration practices, including disposal of sealed bagged weeds to a licenced waste disposal facility. Record Pesticides and Herbicides use in accordance with **SWEMS0017**. If green waste is likely to contain herbicides or other chemical or physical contaminants (including man-made and other foreign materials), do not send for offsite recycling.	SWC / Contractor	During works
4.20	For works in council owned bushland and National Parks the Delivery Contractor will consult with Councils/NPWS to identify known plant pathogens or pests and management requirements. Prepare a Hygiene Management Plan if there is a risk of infestation and spread. Phytophthora and Myrtle Rust factsheets contain hygiene management measures.	SWC / Contractor	N/A
4.22	Bag all plant parts and excavated topsoil that may be infested with weed propagules and dispose at a licensed waste disposal facility.	SWC / Contractor	During works

Impact	Safeguard	Responsibility	Timing
	Weed species that need to be bagged should be identified specifically. This would be through ecologist specialist study, or consultation with Council/ NPWS.		
4.24	In TOBAN period: ■ check specific TOBAN notice to confirm whether the work can be carried out under standard exemptions (Govt Gazette No18 Feb 2018) if the work is not covered by a standard exemption, apply to RFS for specific exemption. Note: Exemptions may be updated periodically. Search to check to confirm if Gazette 18 2018 is current. Standard exemptions only apply if specifically referred to in the gazetted TOBAN order.	SWC / Contractor	During works
4.26	Consult Taronga Zoo's Ben Zerbes (Mobile: 0417 201 180, Email: **bzerbes@zoo.nsw.gov.au**) prior to the removal of vegetation to determine the usefulness of vegetation waste as koala feed. Use when clearing/trimming koala feed trees.	SWC / Contractor	Prior to and during works

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Attachment 1 – Flora species recorded in the Study Area

Origin	Common Name	Scientific Name
N	Blackthorn	*Bursaria spinosa*
N	Swamp Oak	*Casuarina glauca*
N	Cabbage Gum	*Eucalyptus amplifolia*
N	Forest Red Gum	*Eucalyptus tereticornis*
N	Forest Nightshade	*Solanum sisymbrifolium*
E	Prairie Nymph	*Herbertia lahue*
E	Rye grass	*Lolium perenne*
E	Scotch Thistle	*Onopordum acanthium*
E	Lamb's Tongues	*Plantago lanceolata*
E	Paddy's Lucerne	*Sida rhombifolia*
E	Trad	*Tradescantia fluminensis*
E	Purpletop vervain	*Verbenum bonariensis*
WoNS, PW	Fireweed	*Senecio madagascariensis*

Note: N = Native locally, E = Exotic weed, WoNS = Weed of National Significance, PW = Priority Weed.

Attachment 2 – Fauna species recorded in the Study Area

Origin	Common Name	Scientific Name
N	Pacific Black Duck	*Anas superciliosa*
N	Sulphur Crested Cockatoo	*Cacatua galerita*
N	White-faced Heron	*Egretta novaehollandiae*
N	Galah	*Eolophus roseicapilla*
N	Magpie Lark	*Grallina cyanoleuca*
N	Noisy Miner	*Manorina melanocephala*
N	Little Pied Cormorant	*Microcarbo melanoleucos*
N	Wallaby sp	*Notamacropus sp*
N	Purple Swamphen	*Porphyrio porphyrio*
N	Rainbow Lorikeet	*Trichoglossus moluccanus*
E	Common Myna	*Acridotheres tristis*

Note: N = Native locally, E = Exotic.

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