

Review of Environmental Factors (REF)

for

**Proposed Carrathool Boat Ramp,
Carrathool, NSW 2711**

Prepared for

Carrathool Shire Council

Version 3

18/11/24

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Acknowledgement

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Abbreviations

BAM	Biodiversity Assessment Method
BAR	Biodiversity Assessment Report
BC Act	Biodiversity Conservation Act 2016 (NSW)
BDAR	Biodiversity Development Assessment Report
BOS	Biodiversity Offset Scheme under the BC Act
BBCC	BioBanking Credit Calculator
BVT	Biometric Vegetation Type
CEMP	Construction Environmental Management Plan
DCCEEW	Department of Climate Change, Energy, the Environment and Water (NSW)
DPI	Department of Primary Industries
EEC	Endangered ecological community
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999 (Federal)
FBA	Framework for Biodiversity Assessment
FM Act	Fisheries Management Act 1994 (NSW)
GDE	Groundwater dependent ecosystems
IBRA	Interim Biogeographically Regionalisation of Australia
MNES	Matters of National Environmental Significance
PCT	Plant Community Type
REF	Review of Environmental Factors
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SSI	State Significant Infrastructure
SIS	Species Impact Statement
TECs	Threatened Ecological Communities
TPZ	Tree Protection Zone
TSPD	Threatened Species Profile Database
TSC Act	Threatened Species Conservation Act 1995 (NSW)
VIS	Vegetation information system

Executive summary

This Review of Environmental Factors (REF) has been prepared by Red-Gum Environmental Consulting to identify possible impacts that may result from the proposal and to assess the significance of these impacts. The REF also provides a brief background review of relevant literature and databases, a habitat assessment to determine the species with potential to occur in the study area and field surveys, including searches for threatened species with potential habitat in the study area.

The environmental assessment and determination of this proposal has been undertaken in accordance with Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). For this proposal, Carrathool Shire Council is both a public authority proponent (EP&A Act s5.3) and the determining authority (EP&A Act s. 5.1). The REF has been prepared in accordance with Clause 171 of the *Environmental Planning and Assessment Act Regulation 2021*.

As part of the planning process, this Review of Environmental Factors (REF) has been conducted for the entirety of the project, to identify the legislative and environmental/ecological constraints associated with the design and intended development. The REF reports about the specific environmental impacts, including threatened species and communities impacts and vegetation losses, and recommends mitigation measures to avoid and minimise environmental impacts as much as possible.

Two sites were originally proposed as potential boat ramp locations: Carrathool Bridge and Pinker's Beach. Both sites were given preliminary assessments. The Carrathool bridge site was ultimately chosen over the Pinker's beach site. The Pinker's beach site was considered an unsuitable site for the following reasons:

1. Access issues from the sealed road.
2. The riverbank and bed profile is unsuitable, i.e. extensive construction across the lower terrace required.
3. This ramp would be unusable when river levels were high, which can sometimes be for an extended period.
4. Aboriginal Cultural Heritage (ACH) risk was higher at this site and more detailed assessment would be required in order to progress. With extensive construction, there is a high likelihood ACH implications could impact this proposal.
5. This is a beach and the riverbed is relatively flat off the bank, and would require extensive excavation work. A ramp profile at preferred 12.5% provides good grade to use a car to launch and retrieve, and suitable depth of water for the motor and propeller and persons to retrieve the boat walking in the water.

For the reasons discussed above this report will progress with the Carrathool bridge site as the chosen preferred location. By way of project works summary, Carrathool Shire Council (Council) is proposing to construct a boat ramp into the Murrumbidgee River five kilometres south of Carrathool, NSW, to provide year-round access to the river for boat launch and retrieval as well as general recreational usage. The boat ramp will be made of a concrete matting surface that is geo-fabric backed to prevent erosion. The subject site for the works was determined by the proposed boat ramp dimensions, allowing for a works/construction buffer either side, plus access from the east, under the old bridge, all provided in consultation with Carrathool Shire Council. The works will greatly improve the usability/access to the river for locals and tourists alike now and into the future. A permanent ramp will also prevent damage/erosion to the riverbank and surrounding environment acquired during informal boat ramp usage.

Database searches (NSW BioNet and Commonwealth PMST) of locally occurring (NSW under the *Biodiversity Conservation Act 2016* (BC Act), and federally under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)) listed threatened and migratory species revealed forty-four (44) species of threatened fauna and flora that have been previously recorded and/or have potential habitat within 10 kilometres of the study area. In summary:

- No (zero) EPBC Act listed Threatened Ecological Community exist within the study area.
- No (zero) EPBC Act or BC Act listed species have been previously recorded in the study area.
- Of the forty-four (44) threatened species recorded within 10 kilometres of the study area, twenty-one (21) are considered possible or likely to be present either on occasion or may be resident in the study area (50m).
- These twenty-one (21) threatened species were addressed in the impact assessment that determined that the species would not be adversely affected by the works and further assessment was not required.
- No (zero) wetlands of importance were identified within the study area, no wetlands are at threat from the development.
- A search of the State Heritage Register and Australian Heritage Register showed that the subject site borders and goes under the *Carrathool Bridge over Murrumbidgee River* according to the NSW state heritage inventory (NSW Government 2024). This site will not be impacted adversely by the proposed development.

Red-Gum ecologists completed field surveys (June 20th & July 15th 2024), with methodologies used for field surveys consistent with NSW DCCEEW guidelines, and taxa specific survey guidelines for species listed under the EPBC Act. No threatened species were observed.

Whilst part of the subject site intersects Biodiverse Riparian land as mapped on the NSW Biodiversity Values Map (BMAT tool), Red-Gum are of the opinion that the site is not any derivation of an Endangered Ecological Community, nor will the development impact any 'Declared Area of Outstanding Biodiversity Value' or cause any significant impact to the areas of 'Biodiversity Value' as mapped by the NSW DCCEEW. It is for this reason that we are of the opinion that a BDAR is not warranted for this minor development. Further as discussed later the development does not exceed the clearing threshold for the lot size.

In its current form, the proposal will impact approximately 0.006 hectares of native vegetation, namely three small patches of Phragmites and an immature River Red-Gum tree. Even if this tree doesn't need to be removed, it will be deemed 'lost' due to TPZ encroachment. The vegetation in the broader study area ranges in quality from low to high, associated with River Red-Gum woodland hugging the riparian corridor. The access track east of the bridge will see no ground disturbing works, hence there will be no impacts to TPZ's of surrounding large trees.

Mitigation measures and safeguards primarily include BOSET established procedures and protocols for mitigating impacts to biodiversity and the environment. Key mitigation measures include minimising impacts to any areas of vegetation outside the designated works areas during the construction period, which will include clear demarcation of clearing zones, establishment of buffer zones (where practicable) and the management of potential weed invasion, sedimentation, and erosion.

It is recommended that all staff are 'tool-boxed' on the location of "Euroley Rd Yanco 1" (Site ID 48-3-0127) and "Carrathool Bridge 1" (Site ID 49-5-0125) as they are within the study area (50m). Furthermore, a cultural heritage induction on 'chance finds' is to be undertaken by all personnel.

The proposal has the potential to impact on a number of environmental factors including soil and water, air quality, traffic, socio-economic, noise, native vegetation and biodiversity. The majority of these impacts are relatively minor and many would be temporary in nature. Some of these environmental factors and impacts may have cumulative impacts, however, and mitigation measures have been recommended to avoid or minimise each of the impacts potentially associated with the proposal.

In conclusion, the proposal adequately meets the project objectives to provide safer access to the river for general usage and more specifically boat launch and retrieval, ultimately lessening disturbance/erosion to the riverbank and natural areas and will likely have positive outcomes for residents, the local economy and community.

The works proposed are likely to have a *very minor* impact on the terrestrial environment and associated habitats hence further assessment is not required. Notwithstanding this fact, the subject site is heavily disturbed by previous use as an informal boat ramp and is predominantly cleared of native vegetation, dominated by exotics. Therefore, *if the impacts to biodiversity can be minimised with the proposal's various impact mitigation measures, then the proposal is justified.*



Mr Damian Wall
BAppSc, MEnvMgt, MAACAI
Managing Director

18/11/2024

1 Introduction

1.1 Project Description and Background

Carrathool Shire Council (Council) is proposing to construct a boat ramp into the Murrumbidgee River at Carrathool, NSW to provide year-round access to the river for boat launch and retrieval as well as general recreational usage. The boat ramp will be made of concrete matting surface that is geo-fabric backed to prevent erosion (**Appendix 1**).

The informal boat ramp/riverbank is currently already at 20% grade. The new ramp will be constructed to the standard 12.5% grade. This will require some excavation/cut and fill activities. Any soil removed will be spread on the access track surrounding the boat ramp, leveling out any low spots improving the approach to the ramp. The proposal will provide a safe, permanent, accessible river access/boat ramp.

The subject site for the works was determined by the proposed boat ramp location west of the old Bridge, allowing for a works/construction buffer either side, plus allowing for access from the east under the old bridge, all provided in consultation with Carrathool Shire Council. The access track east of the bridge will see no ground disturbing works, hence there will be no impacts to TPZ’s of surrounding large trees.

The works will greatly improve the usability/access to the river for locals and. A permanent ramp will also prevent damage/erosion to the riverbank and surrounding environment acquired during informal boat ramp usage. Field assessment for the project was undertaken in June and July 2024. The whole site will be reviewed within this Review of Environmental Factors (REF) report and ACH DDA.

Table 1: Project Details

Project Name	Proposed Carrathool Boat Ramp, Carrathool, NSW 2711
Proponent Name	Carrathool Shire Council
Project Manager	William Barr
Position	Project Engineer
Contact Details	wbarr@carrathool.nsw.gov.au

1.2 Staged works description

The proposed boat ramp works are approximately 10m x 40m + access. The project directly intersects the Murrumbidgee River’s riverbank, starting in a cleared open area/existing access track. Council has completed design work for the ramp construction, with a REF, cultural and environmental reports required prior to finalising the designs and starting construction.

1.3 Project need

The project site location is currently utilised as a Camping/Travelling stock reserve (Crown land) by Griffith Local Land Services. The area is commonly utilised for recreational fishing and boating as well as a free camping and day use area. Located on the outskirts of Carrathool, north of the Sturt Highway the area is well positioned and accessible for both locals and travellers.

¹The village of Carrathool was originally located on the banks of the Murrumbidgee River. During the 1850's, Carrathool was known to be one of the earliest river port towns that was established to serve paddle steamer traffic along the river. With the arrival of the railway in 1882, a new village was established two miles north of the river. This new village of Carrathool was proclaimed on 20 March 1885 and became the railhead for an extensive area where enormous quantities of wool, wheat, timber and livestock were shipped by rail. The Merrylees (Carrathool) Bridge crossing the Murrumbidgee River was opened in 2019, built next to one of the last lifting bridges in Australia. Built to replace the punt, the heritage-listed bascule lift span bridge was completed in 1922 and the lift span was last opened for river traffic in the 1930s.

Agriculture is the main industry in Carrathool mostly oriented towards livestock, grain, cotton, , utilising irrigation from the Murrumbidgee River and groundwater sources. Because of proximity to the Sturt Highway, the area is a popular rest stop. The works will greatly improve the usability/access to the river for locals and tourists alike now and into the future. A permanent ramp will also prevent damage/erosion to the riverbank and surrounding environment acquired during informal boat ramp usage.

1.3.1 Consideration of the principles of Ecologically Sustainable Development (ESD)

In-line with the Council's corporate responsibility to act in a manner that represents the needs of the community, and to do so with minimal environmental impact, the proposal has been assessed considering the five principles of ecologically sustainable development (ESD), as listed in the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). See **Table 2**.

Table 2: Consideration of ESD principles in relation to the project

ESD Principle	How the proposal considers the principle
1. Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations.	The potential environmental impacts of the works project have been considered to ensure serious or irreversible damage to the environment are avoided, and these are assessed in Section 3 of this REF. If the environmental impacts of the works are significant, suggestions will be recommended to reduce the impacts to native vegetation, threatened species and large to very large trees. The environmental impacts of the construction of the project will be localised and short term, with 0.006 ha of native vegetation proposed to be removed. Impact to threatened species and communities, native vegetation are addressed in Section 3 and economic and social considerations are considered in Section 4 . The proposal will help to meet the needs of the community and future generations by providing a safe, permanent, accessible river access/boat ramp.
2. If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.	The project is unlikely to result in serious or irreversible environmental damage and there is no scientific uncertainty relating to the proposal. Impact avoidance and minimisation have been incorporated into the design process, and measures are to be put in place to ensure environmental values are protected before, during and after the works.

¹ Sourced from: Visit Carrathool. Carrathool Shire Council Website. Accessed September 2024.
<https://carrathool.nsw.gov.au/visit/carrathool/>

ESD Principle	How the proposal considers the principle
3. The principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.	The proposal will help to meet the needs of future generations by providing a safe and year-round accessible boat ramp which involves the lowest environmental impact possible, while still meeting the engineering and safety aims of the project. The works will greatly improve the usability/access to the river for locals and tourists alike now and into the future. A permanent ramp will also prevent damage/erosion to the riverbank through informal boat ramp usage.
4. The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making	The proposal includes the removal of approximately 0.006 ha of native vegetation (Section 3.4). The works are predominantly within an existing disturbed riverbank and cleared access track. Any areas of substantial, connected patches of native vegetation exist outside the subject site and hence will not be affected by the development.
5. Improved valuation, pricing and incentive mechanisms should be promoted.	The proposal will provide cost efficient use of Council resources and will provide optimal outcomes for the community, users and the environment (impact minimisation through engineered solutions) and with respect to quality of works and the financial costs involved.

1.4 Purpose of the REF

This Review of Environmental Factors (REF) has been prepared by Red-Gum Environmental Consulting for the Carrathool Shire Council (Council). For the purpose of these works, Council is the proponent and the determining authority under Division 5.1 of the EP&A Act.

The purpose of the REF is to describe the proposal, to document the likely impacts of the proposal on the environment as they relate to environmental and other legislation, and to detail protective measures to be implemented as part of the works and rehabilitation efforts, as well as further studies that may be required. The findings of the REF would be considered when assessing:

- The significance of any impact on threatened species as defined by the NSW BC ACT and/or *Fisheries Management Act 1994* (FM Act) in section 1.7 of the EP&AEP&A Act and therefore the requirement for a Species Impact Statement (SIS) to be prepared in instances where a significant impact on threatened species may occur as a result of development or a Biodiversity Development Assessment Report (BDAR).
- The potential for the proposal to significantly impact a Matter of National Environmental Significance (MNES) or Commonwealth land, and the need to make a referral to the federal DCCEEW on whether assessment and approval is required under the EPBC Act.
- Whether a significant impact on the environment is likely, and therefore whether the activity may be considered State Significant Infrastructure pursuant to the *State Environmental Planning Policy (Planning Systems) 2021*.

This REF has assessed impacts to the environment on a number of spatial scales, which are:

- **Subject site:** Footprint of the works / area directly impacted by the proposal.
- **Study area:** Subject site plus buffer / area within 50 metres (m) of the subject site and/or indirectly impacted by the proposal.
- **Local area:** Subject site plus 10 kilometre radius area.

1.5 Detailed Scope of Works

The proposed boat ramp into the Murrumbidgee River to provide year-round access to the river for boat launch and retrieval as well as general recreational usage. The boat ramp will be made of concrete matting surface that is geo-fabric backed to prevent erosion.

The current informal boat ramp/riverbank is at 20% grade, while the new ramp will be constructed to the standard 12.5% grade. This will require some excavation/cut and fill activities. Any soil removed will be spread on the access track surrounding the boat ramp, leveling out any low spots, improving the approach to the ramp. The proposal will provide a safe, permanent, accessible river access/boat ramp.

The subject site for the works (10m x 40m + access) was determined by the proposed boat ramp dimensions, allowing for a works/construction buffer either side, all provided in consultation with Carrathool Shire Council. All native vegetation losses were calculated for this area, where it was determined that there will be some minor native vegetation losses, namely small patches of Phragmites and an immature River Red-Gum.

1.6 Machinery and Equipment

Plant and equipment needed for the proposal would be determined during the construction planning phase. Indicative plant and equipment that may be used include:

- Grader
- Rubber tyred, smooth drum and padfoot roller
- Tip, water, aggregate spreading and concrete agitator trucks
- Backhoe
- Small utility vehicles
- Prime movers and floats for equipment delivery
- Soil stabiliser
- Scrapers
- Excavators

1.7 Duration and Working Hours

The works are likely to be short term (**Table 3**).

Table 3: Project timeframes

Commencement Date	Work is expected to commence in late 2024 - early 2025.
Work Duration	The works associated with the project may take 4-8 weeks to complete.
Work hours	Monday – Friday: 7:00am to 18:00pm. Saturday and Sunday: No works. Public Holidays: No works.

1.8 Project Location and Context

The study area is located 5km south of the village of Carrathool, NSW, on the banks of the Murrumbidgee River (**Figure 1 & Map 1**). The boundaries of the study area (subject site plus a 50 metre buffer) reflect both direct and indirect impacts of the proposal. The study area is located within the Carrathool Shire Council local government and within the NSW Riverina Bioregion and Murrumbidgee Subregion of the Interim Bio-regionalisation of Australia (IBRA 7). The site is wholly within the Murrumbidgee Channels and Floodplains (Mbc) Mitchell landscape (Mitchell 2002).

1.9 Greater Context

The area is predominately channel and flood plain alluvium and Cenozoic Shepparton Formation (CZSS) that has undergone extensive clearing for agricultural use at the broader scale. Surrounding vegetation consists of River Red-Gum woodland in moderate to good condition hugging the riparian corridor. The greater area surrounding the study area is predominantly heavily cleared farming areas and residential areas associated with the township of Carrathool. The closest water way is the Murrumbidgee River, which the boat ramp will directly intersect. The river forms the Murrumbidgee catchment, part of the Murray–Darling basin.

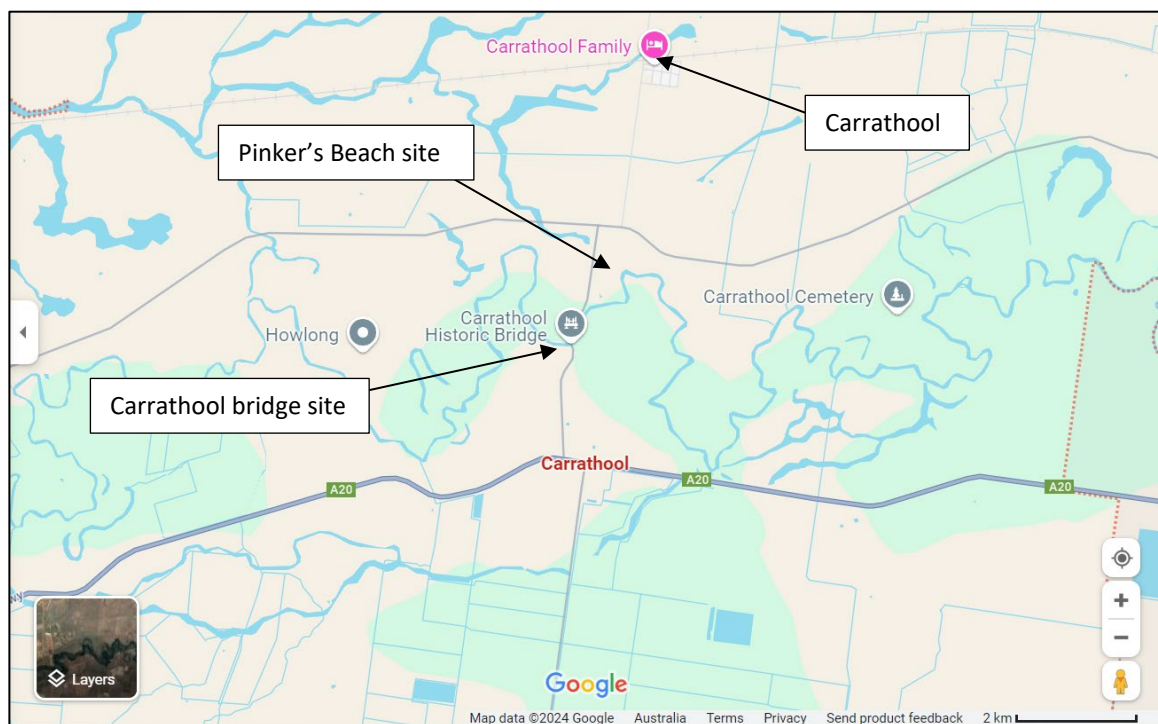


Figure 1: Boat Ramp Location, Murrumbidgee River, Carrathool, NSW



Map 1: Project location showing subject site (work extent) and study area (50m buffer), Carrathool, NSW.

1.10 Red-Gum Environmental Personnel

The site was inspected by Damian Wall (Ecologist & Heritage Advisor), Olivia Hynam (Ecologist) and Maggie Cronin (Archaeologist) on two separate occasions on June 20th and July 25th 2024. **Table 4** is a summary of all employees' relevant experience.

Table 4: Contact details and qualifications of assessors

Assessor name	Contact details	Relevant experience
Damian Wall	E: damian.wall@red-gum.com.au	25 years experience in the field of environmental management and ecological assessment. 20 years experience as a consulting Archaeologist, recognised by full membership in AACAI and the Environment Institute of Australia and New Zealand (EIANZ).
Olivia Hynam	E: olivia.hynam@red-gum.com.au	Ecologist with six years' experience in NSW and VIC. Vegetation Quality Assessment Method (VQAM) accredited in VIC
Maggie Cronin	E: maggie.cronin@red-gum.com.au	Archaeologist with six years' experience across a variety of industries in QLD and NSW.

1.11 Survey effort & timing

Ecological surveys provide a sampling effort for flora and fauna present at a given time and season. There are several reasons why not all species will be detected at a site, including low species abundance, patchy species distribution, species dormancy, the influence of seasonal conditions and migration behaviours for more mobile species. In many cases these factors do not present a significant limitation to assessing the overall biodiversity values of a site or alignment. The survey timing and effort is considered sufficient for a small site that is undergoing relatively small (spatially limited) proposed impacts.

1.12 Survey limitations

The timing of the survey was not the optimal time for survey of flora – June to mid July, which is typically when few annual species are persisting and the perennial vegetation is generally in dormancy and not flowering. However, due to the heavily disturbed nature of the site, it was deemed that a species list was not warranted given the general absence of native species, except for some remnant trees.

1.13 Field Assessment Scope

The field work was conducted to assess whether threatened species, threatened populations or threatened ecological communities are likely to occur on the proposed development area (Subject site) and any areas in close proximity to this development (Study Area).

“Subject site” means the area directly affected by the proposal. “Study Area” means the subject site and any additional areas which are likely to be affected by the proposal, either directly or indirectly (OEH, 2018). To this end – this assessment has considered all site features and the surrounding land (immediately adjoining the proposed works area). In particular, the assessment considers:

1. The extent of ground disturbance works required to construct the proposal; and
2. The extent of likely impact(s) that the works will have on the movements of threatened species and Threatened Ecological Communities (TECs) across the project site including potential foraging (fauna) in close proximity to the site.

2 Statutory and Planning Context

2.1 Commonwealth legislation

2.1.1 Environment Protection & Biodiversity Conservation Act 1999 (EPBC Act)

The EPBC Act protects MNES, such as federally listed threatened species and ecological communities, migratory species (protected under international agreements), significant wetlands, and National Heritage Places (among others). Any actions that will or are likely to have a significant impact on MNES require referral and approval from the Australian Government Environment Minister. Significant impacts are defined by the Commonwealth (see DCCEEW website <http://www.environment.gov.au/epbc/guidelines-policies.html>) for MNES. All relevant MNES have been searched for and identified on and near the site, in instances where they are present.

There are no anticipated impacts for MNES and, as such, an assessment of the proposed construction activity in accordance with Significant Impact Criteria (SIC) in the Significant Impact Guidelines 1.1 (Commonwealth of Australia 2013) was not required.

2.2 State Legislation

2.2.1 Environmental Planning and Assessment Act 1979 (EP&A Act)

The EP&A Act is the principal planning legislation for NSW. It provides a framework for the overall environmental planning and assessment of development proposals. As Council is the proponent, the works are to be assessed as ‘development permissible without consent’ under Part 5 of the EP&A Act. Accordingly, Council must satisfy Sections 5.5, 5.6 and 5.7 of that Act by examining, and considering to the fullest extent possible, all matters which are likely to affect the environment.

This REF is intended to assist, and ensure Council remains compliant, with the EP&A Act including Sections 5.5, 5.6 and 5.7 and the requirements of clause 171 of the Environmental Planning and Assessment Regulation 2021 (EP & A Reg). Environmental planning instruments made under the EP&A Act may also be relevant and are addressed herein.

2.2.2 Local Land Services Act 2013

The objectives of the *Local Land Services Act 2013* (LLS Act) include ‘to ensure the proper management of natural resources in the social, economic and environmental interests of the State, consistently with the principles of ecologically sustainable development’. The Act regulates the clearing of native vegetation, however section 60(O)(b)(ii) excludes the need for consent under the LLS Act where the clearing is an activity carried out by a determining authority within the meaning of Part 5 of the EP&A Act.

2.2.3 Fisheries Management Act 1995 (FM Act)

The FM Act provides for the protection, conservation, and recovery of threatened species, populations and ecological communities of fish and marine vegetation and fish habitats, as well as promoting the development and sharing of fishery resources in NSW. The Murrumbidgee River is mapped as Key Fish Habitat under the FM Act. If the proposal is likely to significantly impact on the threatened species, populations or ecological communities, then a SIS is required.

The proposed works should have minimal impact on the aquatic environs and fish passages, provided works are undertaken when the river is at low flow. This will allow for most, if not all, of the construction to be done on the dry bank out of the main channel/passageway. Further, the works will be of a temporary nature (4-8 weeks). By the time the river then rises again, the riverbank, and construction will be stabilised and should have little to no effect on fish passages. Further, current informal use is doing more damage to the riverbank, hence the need for a permanent ramp.

The works will require a permit issued by the Minister in accordance with Part 2 & 7 of the FM Act. The Permit process has been managed by Carrathool Shire Council.

2.2.4 National Parks and Wildlife Act 1974 (NPW Act)

The *National Parks and Wildlife Act 1974* (NPW Act) regulates the control and management of all national parks, historic sites, nature reserves, and Aboriginal areas (among others) in NSW. The main aim of the NPW Act is to conserve the natural and cultural heritage of NSW. Where works will disturb Aboriginal objects, an Aboriginal Heritage Impact Permit (AHIP) is required.

Based on a Due Diligence Assessment inspection completed by Red-Gum Environmental Consulting and an AHIMS (Aboriginal Heritage Information Management System) search completed in July 2024, it is concluded that the works will not impact directly or indirectly on any areas of cultural heritage. The closest registered site is located 6 metres east of the subject site, recorded as a scarred tree “Euroley Rd Yanco 1” Site ID 48-3-0127. The next closest is 15 metres east of the subject site, recorded as a scarred tree “Carrathool Bridge 1” Site ID 49-5-0125. An Aboriginal Heritage Impact Permit under the NP&W Act is NOT required.

2.2.5 Heritage Act 1977 (Heritage Act)

The *Heritage Act 1977* (Heritage Act) contains mechanisms to protect and conserve the state's (NSW) heritage and provides for the identification and registration of heritage items of state significance.

A search of the State Heritage Register and Australian Heritage Register on 6th September 2024 showed that the subject site borders and goes under the *Carrathool Bridge over Murrumbidgee River* according to the NSW state heritage inventory (NSW Government 2024). This site will not be impacted adversely by the proposed development.

The works will not see any physical impact to the built infrastructure of the bridge site, hence will not be subject to the additional approvals as per Part 4 (Division 2 Controlled activities) of the Heritage Act 1977 (NSW).

2.2.6 Protection of the Environment Operations Act 1997 (POEO ACT)

The *Protection of the Environment Operations Act 1997* (POEO Act) is the key environmental protection and pollution statute. The POEO Act is administered by the NSW EPA and establishes a licensing regime for waste, air, water and pollution. Relevant sections of the Act are:

- Part 5.3 Water Pollution.
- Part 5.4 Air Pollution.
- Part 5.5 Noise Pollution.
- Part 5.6 Land Pollution and Waste.

Any work potentially resulting in pollution must comply with the POEO Act. Relevant licences must be obtained if required. No licences have been identified as being required including an Environmental Protection Licence (EPL). Therefore, no licences under the POEO Act are deemed required. Under section 148 of the POEO Act, the EPA must be notified of any pollution incidents that cause or threaten material harm to the environment.

2.2.7 Water Management Act 2000 (WM Act)

The main objective of the *Water Management Act 2000* (WM Act) is to manage NSW water resources in a sustainable and integrated manner that will benefit today's generations without compromising future generations' ability to meet their needs. The proposal falls into the definition of controlled activity as defined by the WM Act as it involves removal of vegetation from land and the deposition of material on land. The proposal is also located on waterfront land as defined by the WM Act. Section 91E of the WM Act establishes an approval regime for controlled activities within waterfront land. Carrathool Shire Council, as a public authority, is exempt from Section 91E(1) controlled activity approval under Section 41 of the Water Management (General) Regulation 2018. Under Subdivision 4 **Controlled activities—public authorities**, a public authority is exempt from section 91E(1) of the Act in relation to all controlled activities that it carries out in, on or under waterfront land.

The proposed activity is located on waterfront land (Murrumbidgee River). The proposal is classified as a controlled activity under the WM Act. Exemptions to controlled activity approvals are applicable for activities undertaken by or on behalf of a public authority on waterfront land (i.e. Carrathool Shire Council in this instance).

2.2.8 Crown Land Management Act 2016

The Crown Land Management Act 2016 (CLM Act) aims to provide for the ownership, use and management of the Crown Land of New South Wales. A licence is an authority granted by Crown Lands giving permission to occupy and use Crown land for a specified purpose. A licence does not provide exclusive use or possession of the land. The works proposed occur on Crown Land.

It is recommended that early engagement be made with the Crowns Land authority to discuss expectations around Crown Land access and licencing.

2.2.9 Native Title Act 1993 (NT Act)

The Native Title Act 1993 (NT Act) provides a framework for the determination of native title claims within Australia, and for negotiations and decision making regarding the use and management of native title lands and waters. The proposal would not affect land subject to a native title.

2.2.10 Biosecurity Act 2015

The Biosecurity Act 2015 (Biosecurity Act) covers all biosecurity risks, including pest animals, plant diseases and noxious weeds. The Act provides the regulatory controls and powers to manage noxious weeds in NSW and introduces the legally enforceable concept of a General Biosecurity Duty. Under Part 3 of the Act, all landholders or land managers have a duty to prevent, eliminate or minimise the biosecurity risk posed or likely to be posed by Priority Weeds. They are required to follow the regional and non-regional duties allocated to each Priority Weed.

2.2.11 Contaminated Land Management Act 1997

Contaminated land is regulated in NSW by the *Contaminated Land Management Act 1997* and Contaminated Land Management Regulation 2013. Contaminated soils that are removed from a site as spoil may be classified as waste, the regulation and management of which is governed by the POEO Act and EPA Waste Classification Guidelines. The proposal is not located within the vicinity of any registered contaminated sites.

2.2.12 Roads Act 1993

Section 88 of the *Roads Act 1993* states that a roads authority may, despite any other Act or law to the contrary, remove or lop any tree or other vegetation that is on or overhanging a public road if, in its opinion, it is necessary to do so for the purposes of carrying out road work or removing a traffic hazard.

Council in this case is the 'roads authority', therefore they are entitled under the Act to remove or lop any trees, as required by the design.

2.2.13 Rural Fires Act 1997 (RF Act)

Under section 63 of the *Rural Fires Act 1997*, public authorities must take all practicable steps to prevent the occurrence and spread of bush fires on or from land vested in or under its control or The proposal is not located within bushfire prone land.

2.2.14 Waste Avoidance and Resource Recovery Act 2011 (WARR Act)

The *Waste Avoidance and Resource Recovery Act 2011* (WARR Act) aims to encourage the efficient use of resources and minimisation of waste generation through the minimisation of resources use, promotion of resource recovery and avoidance of disposal of wastes. As detailed in **Section 4.9**, the proposal would be constructed and operated in accordance with the principles of the waste hierarchy in order to promote the objectives of the WARR Act.

2.2.15 Biodiversity Conservation Act 2016 (BC Act)

Part 7 of the BC Act provides the environmental assessment requirements for activities being assessed under Part 5 of the EP&A Act. If a significant impact is likely, an Environmental Impact Statement (EIS) is to be accompanied by a Species Impact Statement (SIS), or if the proponent so elects – a Biodiversity Development Assessment Report (BDAR). Section 7.2(1)(a) and 7.3 describe the assessment requirements and thresholds for what is considered a significant impact.

2.2.16 Biodiversity Conservation Regulation 2017 and Biodiversity Values Map and Threshold (BMAT Tool)

The Biodiversity Offsets Scheme Threshold (BOSET tool) is a test used to determine when it is necessary to engage an accredited assessor to apply the Biodiversity Assessment Method (the BAM) to assess the impacts of a proposal. It is most commonly used for local developments (development applications submitted to councils) and clearing that does NOT require development consent in urban areas and areas zoned for environmental conservation. *The Biodiversity Conservation Regulation 2017* sets out threshold levels for when the Biodiversity Offsets Scheme will be triggered. The threshold has two (2) elements:

1. Amount of native vegetation being cleared exceeds a threshold area, or
2. Whether the impacts occur on an area mapped on the *Biodiversity Values Map* published by the DCCEEW (**Figure 2**).

If clearing and other impacts exceeds either trigger, the Biodiversity Offset Scheme (BOS) applies to the proposed development including biodiversity impacts prescribed by clause 6.1 of the Biodiversity Regulation 2017. The area threshold applies to all proposed native vegetation clearing associated with a proposal, regardless of whether this clearing is across multiple lots. If the land on which the proposed development is located has different minimum lot sizes, the smaller or smallest of those minimum lot sizes is used to determine the area clearing threshold. If the BOS is not triggered, the *test of significance* must be used to determine whether a local development is likely to significantly affect threatened species. The area threshold varies depending on the minimum lot size (shown in the Lot Size Maps made under the relevant Local Environmental Plan (LEP)) or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP) according to the **Table 5**.

Table 5: Minimum lot size and clearing thresholds – with relevant category highlighted

Minimum lot size associated with the property	Threshold for clearing, above which the BAM and offsets scheme apply
Less than 1 ha	0.25 ha or more
1 ha to less than 40 ha	0.5 ha or more
40 ha to less than 1000 ha	1 ha or more
1,000 ha or more	2 ha or more

For this proposal, the minimum lot size associated with the site is the '40 ha to less than 1,000 ha' category, meaning that the maximum threshold for clearing in this case is one (1) hectare (**Table 5**). The area clearing threshold has not been exceeded by this proposal, with 0.006 hectares (56.5m²) of vegetation proposed to be lost due to development impacts. However, the BOSET tool states that the proposal has been assessed as triggering the Biodiversity Offsets Scheme (BOS) threshold, due to works intersecting Biodiversity Values mapped areas (Murrumbidgee River). Red-Gum are of the opinion that a BDAR is not warranted for this low impact proposal.

- The proposed subject site **DOES** impact on an area mapped on the Biodiversity Values map, being the riparian zone along the Murrumbidgee River system.
- The total footprint of the subject site is approximately 2188 m², of which there are three small native vegetation patches totalling 56.5 m². The rest of the subject site is dominated by exotics or cleared gravel tracks (bare ground).
- In its current form and at the time of this assessment, the on-ground impacts associated with the proposal will **NOT** exceed the allowable 1 hectare clearing threshold, with **0.006 ha** of native vegetation to be lost.

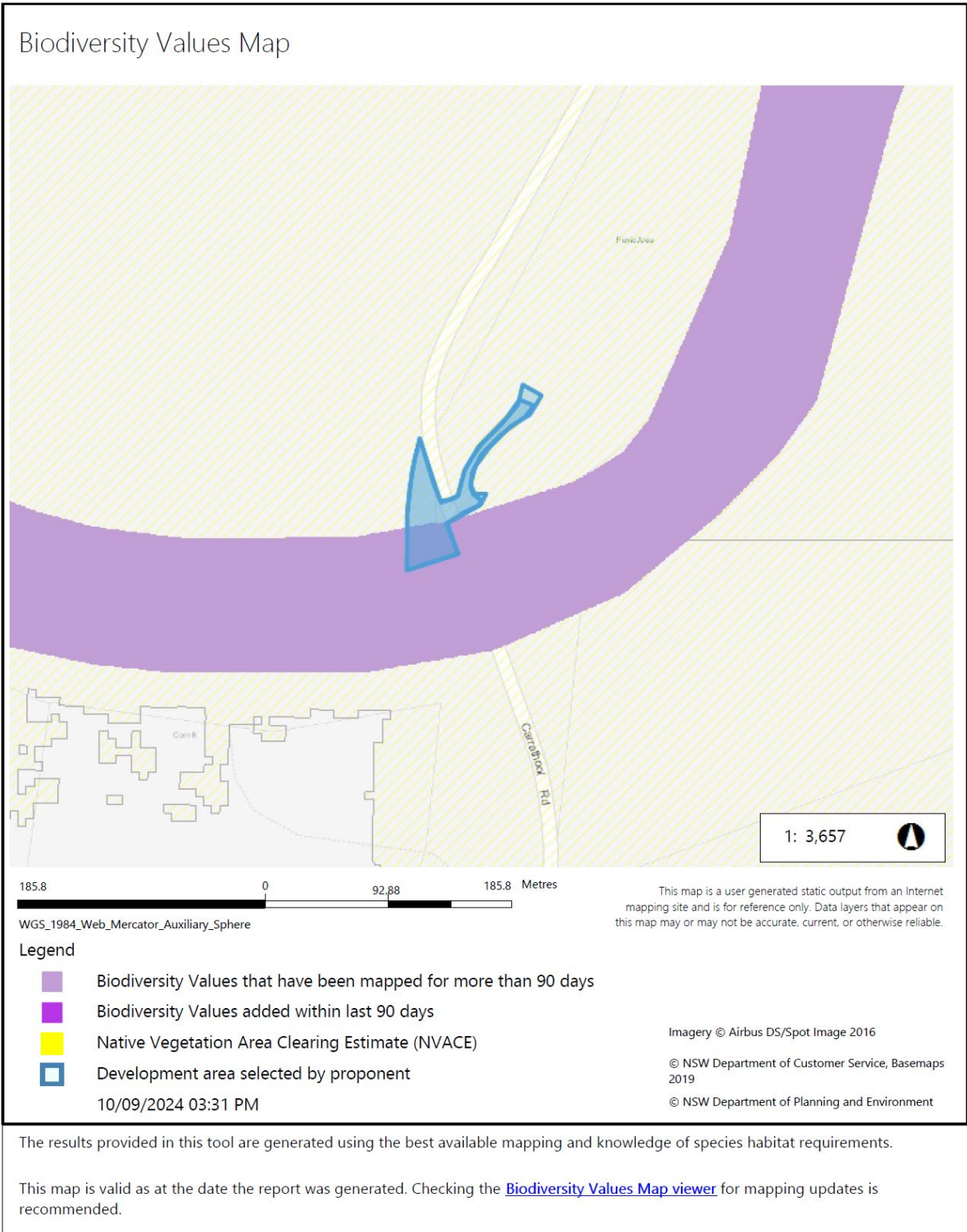


Figure 2: Study Area locations and Biodiversity Values. Source: Biodiversity Value Map, 2024.

2.3 State Environmental Planning Policies under the EP&A Act 1979

2.3.1 State Environmental Planning Policy (Transport and Infrastructure) 2021

The Transport and Infrastructure SEPP ensures infrastructure is delivered with appropriate environmental assessment and consultation. The SEPP outlines the planning rules for delivering most infrastructure works and facilities across NSW. The aim of Chapter 2 (Infrastructure) is to facilitate the effective delivery of infrastructure projects across NSW and describes certain developments that may be carried out without consent in order to facilitate the delivery of infrastructure in NSW. In particular, Chapter 2 facilitates the effective delivery of infrastructure across NSW by:

- a) improving regulatory certainty and efficiency through a consistent planning regime for infrastructure and the provision of services
- b) providing greater flexibility in the location of infrastructure and service facilities
- c) allowing for the efficient development, redevelopment or disposal of surplus government owned land
- d) identifying the environmental assessment category into which different types of infrastructure and services development fall (including identifying certain development of minimal environmental impact as exempt development)
- e) identifying matters to be considered in the assessment of development adjacent to particular types of infrastructure development
- f) providing for consultation with relevant public authorities about certain development during the assessment process or prior to development commencing
- g) providing opportunities for infrastructure to demonstrate good design outcomes.

The proposal falls under the definition of waterway or foreshore management activities as defined in Section 2.164 of the SEPP: “riparian corridor and bank management, including erosion control, bank stabilisation, re-snagging, weed management, revegetation and the creation of foreshore access ways.” Division 25, Section 2.165(1) of the SEPP enables development for the purpose of waterway or foreshore management activities to be carried out by or on behalf of a public authority without consent on any land if it is in connection with construction works (Section 2.165(3)(a)).

As Carrathool Council a public authority and the proposal meets the conditions of Section 2.165 as detailed above, the proposal is considered permissible without consent pursuant to the provisions of the Transport and Infrastructure SEPP and can be assessed under Part 5, Division 5.1 of the EP&A Act. The proposal area is not located on land reserved under the National Parks and Wildlife Act 1974 (NPW Act) and does not affect land or development regulated by the State Environmental Planning Policy (Planning Systems) 2021.

2.3.2 State Environmental Planning Policy (Biodiversity and Conservation) 2021

The State Environmental Planning Policy (Biodiversity and Conservation) 2021 (Biodiversity and Conservation SEPP) incorporates and repeals 11 SEPPs including the State Environmental Planning Policy (Vegetation in Non rural areas) 2017 and the State Environmental Planning Policy (Koala Habitat Protection) 2021. Chapter 3 (Koala habitat protection 2020) and Chapter 4 (Koala habitat protection 2021) aim to encourage conservation and management of areas of natural vegetation that form koala habitats. No core or potential Koala habitat is being cleared as part of this proposal. Chapter 5 of the SEPP deals with River Murray Lands, and Chapter 6 deals with specific water catchments, neither of which are relevant to this proposal.

2.4 Carrathool Shire Council Local Environment Plan

The proposed boat ramp is located on land is zoned RU1 under the Carrathool Shire Council Local Environmental Plan (2012), and as such the development is permitted with consent. The boat ramp development is located on 'Crown Land'.

3 Existing Environment & Impact Assessment

The study area is located on the northern outskirts of the township of Carrathool, NSW. It is within the NSW Riverina Bioregion and Murrumbidgee Subregion of the Interim Bio-regionalisation of Australia (IBRA 7) (Thackway & Creswell 1995). Within the region's boundaries lie the towns of Hay, Coleambally, Deniliquin, Leeton, Mossgiel, Hillston, Booligal and Wentworth.

3.1 Landform, Geology and Soils

3.1.1 Existing Environment

The Riverina bioregion (RIV) covers a total area of 9,576,964 ha, with 7,090,008 ha or 74.03% of it lying in NSW (NPWS 2003). The Riverina covers the alluvial fans of the Lachlan, Murrumbidgee and Murray Rivers west of the Great Dividing Range and extends down the Murray. Much of the geology and geomorphology of the region is similar to that of the Darling Riverine Plains Bioregion. The upper catchment landscape is a series of overlapping, low gradient alluvial fans. The lower tract of the river is a floodplain with overflow lakes. Discharge from past and present streams control patterns of sediment deposition, soils, landscapes and vegetation. This bioregion is dominated by river channels, floodplains, backplains, swamps, lakes and lunettes that are all of Quaternary age. The region comprises three overlapping alluvial fans centred on the eastern half of the Murray Basin.

Modern river channels consist mostly of sandy soils and more saline heavy grey and brown clays towards the outer perimeter of the floodplains on the higher rarely flooded terraces (Eardley 1999). Sandy soils also form levees, old channels, dunes and lunettes. As soil and water salinity increase downstream on the Murrumbidgee, saline clays become evident on lake floors. The red-brown and grey clays in the bioregion support grassland communities that are nationally significant. Calcareous, sandy soils, that tend to be feature of adjacent bioregions are also present in the Riverina and support mallee communities (Semple 1990, Porteners 1993, cited in Eardley 1999). The region is dominated by a persistently dry semi-arid climate and characterised by hot summers and cool winters (Stern et al. 2000) with the highest levels of rainfall in the Bioregion occurring in May and September (Eardley 1999). The geology of the area consists of Cenozoic Shepparton Formation (CZSS) - poorly consolidated clay, silt, sand and gravel of the Shepparton Formation.

3.1.2 Impact Assessment

A search of the NSW eSpade online mapping application shows that the soils across the subject site are not highly erodible soils, ranging 20-50 tonnes per hectare per year (NSW Government 2023b). With the proposal merely formalising existing usage as a boat ramp with erosion and sedimentation control being put in place via the CEMP, the impacts on soils and erodibility of the study area will be low to negligible.

3.2 Contaminated Land and Acid Sulfate Soils

3.2.1 Existing Environment

A search of the EPA contaminated lands register was completed on 10th September 2024 and indicated that the development site nor the broader locality (Carrathool Shire Council) contains any known contaminated sites. A search of the CSIRO's Australian Soil Resource Information System was completed on 10th September 2024, which showed the development site (study area and subject site) is an area with extremely low (zero) probability of acid sulphate soil occurrence.

3.2.2 Impact Assessment

Impact assessment of contaminated land was not required.

3.3 Water Quality and Hydrology

3.3.1 Existing Environment

Most of the proposed site sits on an alluvial floodplain of the Murrumbidgee River. The boat ramp will then go down the banks and terminate in the water of the Murrumbidgee River.

3.3.2 Impact Assessment

The proposed project will have minimal impact on the existing river environs, as the development will only be a formalisation of existing informal boat ramp usage.

3.4 Biodiversity

3.4.1 Existing Environment

Vegetation types

There is native vegetation recorded within the study area which belongs to one PCT in varying condition states, those being:

- **PCT 7** - River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion

The majority of vegetation within the study area is classified as low to moderate quality PCT 7 along the river frontage. The impact zone itself is mostly cleared of native vegetation, with low quality PCT 7 persisting on the verges.

A detailed description of the PCTs including status, habitat quality and distribution in the study area are provided below (**Table 6**) and PCT mapping is shown in **Map 2** (modelled PCTs).

The mapped PCTs, along with the results of the field assessment, overlaid with the proposed impact zones from the current ramp designs, indicate that there will be 0.006 ha of native vegetation losses, consisting of PCT 7.

Table 6: PCTs observed in study area and estimated impacts from proposed works

Works	PCT Code	Mapped Plant community type (PCT)	Threatened ecological community?	Estimated impact (loss) area (ha)
Proposed boat ramp	PCT 7	River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion	No associated TEC	0.00565
Total				0.006 ha



Map 2: Mapped PCTs in the Subject site.

Threatened Species

One (1) threatened flora species has been previously recorded within a 10 kilometre radius of the study area (based on database searches): Slender Darling Pea (*Swainsona murrayana*). No threatened flora were identified during site assessments. Habitat for threatened flora is considered to be generally poor across the majority of the subject site, with historical clearing, track construction, weed invasion, fluctuating river levels and grazing pressure likely to inhibit the ability of threatened flora to persist. Exceptions would be the areas bordering the subject site in the broader study area away from the existing access tracks where good-moderate condition vegetation persists. However, it is likely that threatened flora would have been detected if they were present in these pockets of vegetation.

The development in its current form will not further fragment an already fragmented area. A thorough field assessment was undertaken, but *no specific targeted flora surveys were conducted*.

With regards to fauna species, database searches (BC Act (BioNet), EPBC Act (PMST)) of listed threatened fauna and migratory species revealed forty-four (44) species of threatened fauna that have been previously recorded and/or have potential habitat within 10 kilometres of the study area (**Table 7 and 8**). Of these species, twenty-one (21), are considered to have a possible to likely likelihood of occurring within the study area, either on occasion or may be resident, based on the study area's 50m buffer of the subject site which contains a diversity of habitats, and contains some large hollow-bearing trees.

Table 7: BioNet Atlas of NSW Threatened flora and fauna recorded within 10 km of the study area

Common Name	Key habitat requirements	¹ BC Act	² EPBC Act	Likelihood of occurrence
Spotted Harrier <i>Circus assimilis</i>	Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe.	V		Likely. Species may frequent river corridor on a regular or permanent basis.
Little Eagle <i>Hieraaetus morphnoides</i>	Wooded farmlands and dry woodlands and open forests, nesting in mature trees on hillsides in open woodland and along tree-lined watercourses.	V		Likely. Species may frequent river corridor on a regular or permanent basis.
Black Falcon <i>Falco subniger</i>	Found along tree-lined watercourses and in isolated woodlands, mainly in arid and semi-arid areas. It roosts in trees at night and often on power poles by day.	V		Possible. May be present in the higher quality areas of woodland and in the vegetation of the river corridor.
Brown Treecreeper (eastern subspecies) <i>Climacteris picumnus victoriae</i>	Prefers Eucalyptus woodlands and open forests, dominated by stringybarks for their foraging habitat, with fallen timber, open shrub cover and grassy understorey.	V	V	Possible. May be present in the higher quality areas of woodland and in the vegetation of the river corridor.
Grey-crowned Babbler (eastern subspecies) <i>Pomatostomus</i>	Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Woodlands on fertile soils in coastal regions.	V		Possible. May be present in the higher quality areas of woodland and in the vegetation of the river corridor.

Common Name	Key habitat requirements	¹ BC Act	² EPBC Act	Likelihood of occurrence
Bush stone curlew <i>Burhinus grallarius</i>	Open forests and woodlands with a sparse grassy ground layer and fallen timber.	E		Possible. However, site is disturbed, and heavily trafficked. The areas being intersected lack ground timber.
Freckled duck <i>Stictonetta naevosa</i>	Prefer permanent freshwater wetlands, swamps and creeks with dense vegetation, ideally containing heavy growth of Cumbungi, Lignum or Tea-tree.	V		Possible. May be utilising the river corridor.
Latham's snipe <i>Gallinago hardwickii</i>	Inhabits freshwater wetlands on or near the coast, generally among dense cover.	V	V	Possible. May be utilising the river corridor.
Magpie goose <i>Anseranas semipalmata</i>	Predominantly found in wet grasslands, swamps and other marshlands, sticking to coastal areas.	V		Possible. Suitable habitat in the greater area.
Plains wanderer <i>Pedionomus torquatus</i>	Inhabits sparse, treeless, lowland native grasslands. Increasingly rare species.	E	CE	Unlikely. The site lacks the suitable treeless, grasslands habitat.
Southern bell frog <i>Litoria raniformis</i>	Still or slow-flowing water bodies such as lagoons, amongst emergent vegetation. Prefers swamps and wetlands in and around Black Box/Lignum/Typha/River Red-gum/Nitre goosefoot vegetation on floodplains and in river valleys.	E	V	Possible. Several records in the local area, however the river may be too fast flowing for the species.
Southern whiteface <i>Aphelocephala leucopsis</i>	Arid and semi-arid acacia and eucalypt woodland and shrubland. Prefers relatively undisturbed open woodland and shrubland with grassy and shrubby understorey, including herbaceous species with low tree densities and numerous tree hollows.	V	V	Possible. Several records in the local area, suitable habitat in the greater area.
Superb parrot <i>Polytelis swainsonii</i>	Mainly inhabits River Red-Gum forests and Box-gum woodlands. Occurs (nests) in large River Red-gum forests along the Murray River and its nearby major river tributaries, but main foraging habitat is Mallee woodland within 20 km of riverine nesting habitat.	V	V	Likely. Several records in the local area, suitable habitat in the study area.
White bellied sea eagle <i>Haliaeetus leucogaster</i>	Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum Woodlands. Found in a wide range of habitats but nearly always within proximity to water sources.	V		Possible. Several records in the local area, suitable habitat in the greater area.
Slender Darling Pea <i>Swainsona murrayana</i>	The species has been collected from clay-based soils, ranging from grey, red and brown cracking clays to red-brown earths and loams.	V	V	Unlikely. Lack of preferred habitat in the study area.

¹Biodiversity Conservation Act 2016 (BC Act)²Environment Protection & Biodiversity Conservation Act 1999 (EPBC Act)

Table 8: EPBC Protected Matters Database Threatened flora and fauna recorded within 10 km of the study area

Common Name	Key habitat requirements	¹ EPBC Act	Likelihood of occurrence
Plains-wanderer <i>Pedionomus torquatus</i>	Prefers native grasslands with a sparse and open structure. Increasingly rare species	CE	Unlikely. The sites lack the grass cover and heavy ground timber that this species prefers.
Swift Parrot <i>Lathamus discolor</i>	Occurs in a broad range of forest and woodland habitats, and sometimes urban areas with abundant large trees.	CE	Possible. Suitable habitat in the greater area.
Curlew Sandpiper <i>Calidris ferruginea</i>	Estuaries, mudflats, swamps, lakes and lagoons on the coast but also sometimes occurring inland.	CE	Unlikely. Site lacks deep wetland or marsh habitat, and the species would be an extremely rare visitor to the study area at best.
Australasian Bittern <i>Botaurus poiciloptilus</i>	Permanent freshwater wetlands and marshes with tall fringing vegetation.	E	Unlikely. Site lacks deep wetland or marsh habitat, no recent local areas.
Major Mitchell's Cockatoo (eastern), Pink Cockatoo (eastern) <i>Lophochroa leadbeateri leadbeateri</i>	Inhabits a wide range of treed and treeless inland habitats, always within easy reach of water. Feeds on the seeds of native and exotic melons and on the seeds of species of saltbush, wattles and cypress pines	E	Possible. May be present in the higher quality areas of woodland and in the vegetation of the river corridor.
Australian Painted Snipe <i>Rostratula australis</i>	Fringes of swamps, lakes, dams and marsh areas with a good cover of native grasses, Lignum, shrubs or open timber areas.	E	Unlikely. Site lacks wetland or marsh habitat with good cover.
South-eastern Hooded Robin, Hooded Robin (south-eastern)	Prefers lightly wooded landscapes, usually Eucalypt woodlands, Acacia scrub and mallee formations, often found in or near clearings in these landscapes.	E	Unlikely. The site lacks preferred habitat. Very rare visitor at best.
Grey Falcon <i>Falco hypoleucos</i>	Prefers shrubland, grassland and tree-lined watercourses of arid and semi-arid regions.	V	Possible. Study area has suitable habitat.
Common Greenshank <i>Tringa nebularia</i>	Coastal and inland sheltered wetlands, mudflats, river estuaries, lagoons, saltmarshes and inundated pastures.	E	Unlikely. Site lacks mudflat or marsh/swamp habitat with good cover.
Malleefowl <i>Leipoa ocellata</i>	Prefers Mallee woodlands with high diversity, Spinifex grasslands and occasionally shrublands. Prefers longer fire intervals.	V	Unlikely. Site lacks Spinifex grasses & Mallee species.
Superb Parrot <i>Polytelis swainsonii</i>	Occurs (nests) in large River Red-gum forests along the Murray River and its nearby major river tributaries.	V	Possible. Suitable River Red-gum habitat.
Southern Whiteface <i>Aphelocephala leucopsis</i>	Prefers relatively undisturbed open woodland and shrubland with grassy and shrubby understorey.	V	Possible. Study area has suitable habitat.
Diamond Firetail <i>Stagonopleura guttata</i>	Grasslands and grassy woodlands including box-gum woodlands and Snow Gum (<i>Eucalyptus pauciflora</i>) woodlands.	V	Possible. Study area has suitable habitat.

Common Name	Key habitat requirements	EPBC Act	Likelihood of occurrence
Latham's Snipe, Japanese Snipe <i>Gallinago hardwickii</i>	Inhabits freshwater wetlands on or near the coast, generally among dense cover.	V	Possible. Known records in the region and Suitable habitat in the greater area.
Painted Honeyeater <i>Grantiella picta</i>	Prefers Weeping Myall, Brigalow and Box-Gum woodlands and Ironbark forests. Feeds on Mistletoe species (fruits) that grow on Eucalypts and Acacias.	V	Possible. Suitable habitat in the greater area.
Brown Treecreeper (south-eastern) <i>Climacteris picumnus victoriae</i>	Prefers Eucalyptus woodlands and open forests, particularly those containing box species and stringybarks for their foraging habitat, with fallen timber, and not too thick shrub cover.	V	Possible. Suitable habitat in the greater area.
Blue-winged Parrot <i>Neophema chrysostoma</i>	Prefer grasslands and grassy woodlands with a particular preference for areas near wetlands. The species over-summers in Tasmania.	V	Possible. Suitable habitat in the greater area.
Sharp-tailed Sandpiper <i>Calidris acuminata</i>	Shallow, grassy, vegetated fringes of inland freshwater wetlands and marshes. Also occurs on coasts on mudflats, mangroves, rocky shores and beaches.	V	Unlikely. The site lacks preferred habitat. Very rare visitor at best.
Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow <i>Galaxias rostratus</i>	Flathead Galaxias are found in still or slow moving water bodies such as wetlands and lowland streams.	CE	Unlikely. They have not been recorded and are considered locally extinct in the lower Murray, Murrumbidgee, Macquarie and Lachlan Rivers.
Silver Perch, Bidyan <i>Bidyanus bidyanus</i>	They are generally found in faster-flowing water including rapids and races and more open sections of river.	E	Possible. Anecdotal evidence suggests that the species has been recorded in the Murrumbidgee near the site.
Trout Cod <i>Maccullochella macquariensis</i>	Prefer rapidly flowing waterways with rocky or gravel beds, containing deep pools and abundant in-stream woody debris such as logs and trees.	E	Possible. Anecdotal evidence suggests that the species has been recorded in the Murrumbidgee near the site.
Macquarie Perch <i>Macquaria australasica</i>	Clear, deeper permanent waterbodies with abundant in-stream cover such as aquatic vegetation, logs and trees, boulders and vegetation overhanging stream banks.	E	Possible. Species may frequent the waterway during floods and times of high flows.
Murray Cod <i>Maccullochella peelii</i>	Occurs in a range of aquatic habitats from clear shallow rocky streams to deeper, turbid slow moving rivers and billabongs.	V	Possible. Species requires deep pools that remain in dry times, only recorded in main waterways (rivers) in region.
Murray Hard head <i>Craterocephalus fluviatilis</i>	Prefers open water, shallow, slow flowing or still habitats, with sand or silt substrates.	E	Unlikely. Not known to occur on the Murrumbidgee anymore, closest records on the Murray.

Common Name	Key habitat requirements	¹ EPBC Act	Likelihood of occurrence
Sloane's Froglet <i>Crinia sloanei</i>	A cryptic species, commonly associated with waterways and periodically inundated areas in grasslands.	E	Unlikely. Limited suitable habitat, closest records near the Murray River.
Southern Bell Frog <i>Litoria raniformis</i>	Still or slow-flowing water bodies such as lagoons, amongst emergent vegetation. Prefers swamps and wetlands in and around Black Box/Lignum	V	Possible. Local records, Suitable habitat in the greater area.
Koala <i>Phascolarctos cinereus</i> (combined populations of Qld, NSW and the ACT)	Eucalypt forests and woodlands that contain some of their ~70 preferred Eucalyptus species.	E	Unlikely. No records from the broader vicinity, lacks preferred tree species.
Corben's Long-eared Bat, South-eastern Long-eared Bat <i>Nyctophilus corbeni</i>	Occurs in a range of habitats including Mallee, Buloke and Box-gum dominated woodlands, but seems to prefer Box-Ironbark and Cypress vegetation types.	V	Unlikely. Site lacks preferred Box-ironbark and Cypress vegetation. No local records.
Winged Pepper-cress <i>Lepidium monoplacoides</i>	Occurs on seasonally moist to waterlogged sites, on heavy fertile soils, dominated by Buloke Black Box	E	Unlikely. Too disturbed and lacks suitable soil.
Slender Darling-pea, Slender Swainson, Murray Swainson-pea <i>Swainsona murrayana</i>	The species has been collected from clay-based soils, ranging from grey, red and brown cracking clays to red-brown earths and loams.	V	Unlikely. Lack of preferred habitat in the study area.
Chariot Wheels <i>Maireana cheelii</i>	Very rare plant which prefers seasonally wet, heavy red loam or clay soils. Usually found on heavier, grey clay soils with Atriplex vesicaria (Bladder Saltbush).	V	Unlikely. Very few records from broader vicinity. Species is conspicuous and was not identified during field assessments.
Mossgiel Daisy <i>Brachyscome papillosa</i>	Dry woodland, shrubland and grassland habitats, clay soils with Bladder Saltbush and Bluebush (<i>Maireana</i> spp.), also with Grey Box and Cypress-pine.	V	Unlikely. Lack of preferred habitat in the study area.
Grey Snake <i>Hemiaspis damelii</i>	Prefers residing in heavy cracking clay soils near waterbodies, in areas containing small cracks, gullies and other undulations associated with gilgais.	E	Unlikely. Sites does not contain gilgai soil formations.
Pink-tailed Worm-lizard, Pink-tailed Legless Lizard <i>Aprasia parapulchella</i>	Rocky areas and outcrops are an important habitat requirement, but species has been found from ant Nests in shrubland without rocks (Hay Plains). Prefers sloping open woodland areas with a grassy ground layer and partially buried rocks.	V	No. No suitable rocky or shale habitat

¹Environment Protection & Biodiversity Conservation Act 1999 (EPBC Act)

Threatened Ecological Communities

The field assessment for the project determined that zero (0) Threatened Ecological Communities (TEC), have potential to occur within the study area.

Table 9: Threatened ecological communities EPBC Protected Matters & BioNet Atlas of NSW Database results.

Species / TEC	¹ EPBC Act	² Bio Act	Likelihood
Grey Box (<i>Eucalyptus macrocarpa</i>), Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered		No – Study site does not contain dominant or key indicator species
Weeping Myall Woodlands	Endangered		No – Study site does not contain dominant or key indicator species
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	Endangered		No – Study site does not contain dominant or key indicator species
Acacia loderi shrublands		Endangered	No – Study area does not contain species associated with this TEC.
Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions		Endangered	No – Study area does not contain species associated with this TEC.
Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions		Endangered	Unlikely - No nearby records of this community, vegetation not of the right composition.
Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Penepplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions.		Endangered	Unlikely – No nearby records of this community, vegetation not of the right composition.
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions		Endangered	No – Study area does not contain species associated with this TEC.
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Penepplain, Nandewar and Brigalow Belt South Bioregions		Endangered	No – Study area does not contain species associated with this TEC.
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner		Critically Endangered	No – Study area does not contain species associated with this TEC.

¹Environment Protection & Biodiversity Conservation Act 1999 (EPBC Act)²Biodiversity Conservation Act 2016 (BC Act)

Other Biodiversity Matters of National Environmental Significance

The Australian Wetlands Database was consulted, there were no nationally listed wetlands within close proximity to the study area, with the closest being the Lowbidgee floodplain and mid-Murrumbidgee wetland Swamp which is 180 km downstream and 5 km upstream respectively from the site. The Lowbidgee floodplain is the largest remaining area of intact wetlands in the Murrumbidgee Valley, located northeast of Balranald. The Mid-Murrumbidgee wetland is a network of riverine lagoons and billabong formations that occur along the river between Narrandera and Carrathool. Neither of these wetlands are at threat from the development.

3.4.2 Impact Assessment

Red-Gum ecologists completed field surveys (June 20th, July 25th 2024), with methodologies used for field surveys consistent with NSW DEECW guidelines, and taxa specific survey guidelines for species listed under the EPBC Act. No threatened species were observed. The potential impacts to biodiversity as a result of the proposal include:

- Removal/lopping of native vegetation;
- Removal of threatened fauna species habitat and habitat features;
- Injury and mortality of fauna;
- Wildlife connectivity and habitat fragmentation;
- Edge effects on adjacent native vegetation and habitat;
- Invasion and spread of weeds;
- Invasion and spread of pests and diseases;
- Noise, light and vibration.

The study area exhibits a range of habitat values and vegetation quality conditions. Whilst the subject site is primarily devoid of native vegetation (<15%) with only small patches persisting, the surrounding vegetation consists of River Red-Gum woodland in moderate to good condition hugging the riparian corridor. The greater area surrounding the study area is predominantly heavily cleared farming areas and residential areas associated with the township of Carrathool. The closest water way is the Murrumbidgee River, which the boat ramp will directly intersect. The river forms the Murrumbidgee catchment, part of the Murray–Darling Basin. The Murrumbidgee River riparian corridor links surrounding patches of vegetation through the local agricultural landscape and is where threatened species records are most concentrated.

A terrestrial habitat assessment was undertaken to prepare for the REF and to develop an understanding of the extent and conditions of habitats within the study area. The results of the assessment assisted in our analysis of the likelihood of occurrence of threatened and migratory species as well as documenting habitat condition within the study area. The process also identified important habitat features such as mature or old growth and important microhabitat features in or near the planned impact zones.

Tree impacts will be *minor* for the overall project. There will be one (1) small tree and two (2) patches of native vegetation deemed as 'lost', totalling 0.006ha. No (zero) threatened flora and fauna have been previously recorded within the study area. Based on the high mobility, wide-ranging nature of many of these species and the prevalence of potential habitat within the locality, it is likely that the potential

foraging and roosting habitat within the study area represents potential habitat and twenty-one (21) species are considered 'possible' to 'highly likely' to be present on occasion or resident in the study area.

These twenty-one (21) species, however, were not likely to be physically utilising the subject site, nor be dependent on the resources in the subject site for survival, hence will not be affected by the development. The justifications of such will be discussed below.

- With respect to aquatic species, the proposed works should have minimal impact on the aquatic environs provided works are undertaken when the river is at low flow. This will allow for most, if not all, construction to be done on the dry bank out of the main channel/passageway. By the time the river then rises again, the river bank and construction will be stabilised and should have little to no effect on fish passages. Furthermore, the works will be temporary and current informal use is doing more damage to the river bank, hence the need for a permanent ramp.
- With respect to hollow dependant fauna, in its current form, no hollow bearing trees are to be removed due to the works outlined in the proposal. The works are unlikely to have a significant impact on fauna given, for the most part, the vegetation to be removed (exotic dominated) has little to no habitat value, and the large trees surrounding the subject site will not be removed.
- With respect to woodland birds, it is likely that they will be utilising the study area, however, they are not likely to be using the subject site itself. This is mainly due to the lack of habitat within the subject site, being a cleared river bank, with next to no substantive native vegetation. Further, the large hollow bearing trees will be retained. The species are more likely to be utilising these large trees and better-quality River Red-Gum woodland surrounding the subject site which will remain unaffected by the works.

The Biodiversity Offsets Scheme Threshold (BOSET) has been used to determine if residual impacts from the proposal, after avoidance or mitigation, trigger the need for offsetting. Part of the subject site is mapped as Biodiverse Riparian land on the NSW Biodiversity Values Map. However, the proposal does not trigger the need for offsets, as no Threatened Ecological Communities (TEC) will be impacted and the amount of native vegetation to be cleared is 0.006 hectares, which does not exceed the clearing threshold (1 ha) for the minimum lot size.



Map 3: Anticipated vegetation losses, approximately 56 m² (0.006 ha).

3.5 Aboriginal Heritage

3.5.1 Existing Environment

The site is located wholly within the central part of the Lachlan Fold Belt in the NSW Riverina region and Murrumbidgee subregion. This bioregion is dominated by river channels, floodplains, backplains, swamps, lakes and lunettes that are all of Quaternary age. The region comprises three overlapping alluvial fans centred on the eastern half of the Murray Basin. Features of each fan differ slightly because of differences in the discharge of the streams.

The rivers of the bioregion were central to the local Aboriginal lifestyles, especially as a source of food. It has been suggested that access to the water and its resources was a privilege inherited by generation after generation of certain groups.

The NSW Riverina has an Aboriginal archaeological record derived from Aboriginal occupation and land use that was concentrated on drainage lines but includes dispersed evidence throughout the landscape (Brown & Wall 2018). Regionally occurring sites such as human burials and faunal deposits are essentially confined to areas above the active floodplain on larger rivers and/or their source bordering sandy deposits.

Cultural material is dominated by either scarred trees or flaked stone tools (lithics). Lithic sites in NSW are listed by the features of either 'artefact' or 'PAD' (Potential Archaeological Deposit) in the Aboriginal Heritage Information Management System (AHIMS) register. While not as significant as human burials, stone artefacts have variable distribution that can largely be correlated with different landform types.

Many authors have stressed the importance of proximity to water as well as relatively common-sense amenity factors such as level, well-drained areas with useful views of resource use areas or a watercourse (Brown 2008). Stone artefacts may be found as occasional pieces (background scatter) or in concentrations typically described as 'open camp sites' (even if not interpreted as having been a site where people camped). At these sites, the presence of large numbers of stone tools and the debitage from making and maintaining them provide evidence about the nature of the human use of the location.

Scarred trees are also found relatively commonly along the Murrumbidgee River and its major tributaries. Mature trees may bear evidence of the removal of bark for the making of implements such as coolamons (bowls), shields and sometimes pieces large enough to have potentially provided for a canoe (Brown 2008). Elsewhere, midden deposits and hearth sites can occasionally be found that contain valuable evidence about the types of resources used by Aboriginal people based on the identification of the bones and shells found within them.

The closest sites (Site ID 48-3-0127 Euroley Rd Yanco 1 & Site ID 49-5-0125, Carrathool Bridge 1) were recorded 50 metres east of the proposed boat ramp on the northern side of the Murrumbidgee River. Other sites recorded within 150 metres of the proposed boat ramp included scarred trees on the northern bank, and a shell midden on the southern bank of the Murrumbidgee River, directly opposite the proposed boat ramp site.

3.5.2 Impact Assessment

An Aboriginal Cultural Heritage Due Diligence Assessment (DDA) was carried out by Red-Gum Environmental Consulting during the field work stage (June/July 2024). In summary:

- A search of the AHIMS database showed that there are no (zero) previously recorded Aboriginal sites or places in the proposed site footprint.
- AHIMS reports there are twenty-one (21) records within 10 kilometres of the site, consisting of modified trees (carved or scarred) (n=11), potential archaeological deposits or 'PADs' (n=3), artefact sites (n=4) and shell middens (n=3).
- The closest registered site is located 6 metres east of the subject site, recorded as a scarred tree "Euroley Rd Yanco 1" Site ID 48-3-0127. The next closest is 15 metres east of the subject site, recorded as a scarred tree "Carrathool Bridge 1" Site ID 49-5-0125. *These sites could not be relocated by the survey team. It is Red-Gum's contention that both sites have been recorded in error on AHIMS (likely a coordinate conversion error) and that both places are spatially mis-represented.*
- Red-Gum concluded that the entire study area typically exhibited high visibility and exposure due to seasonal conditions and the fact that large areas of the assessment site were in disturbed contexts, resulting from previous clearing and access tracks.
- No (zero) Aboriginal objects or places were recorded within the survey area.
- All trees in the vicinity of the works (subject site) were inspected for cultural scarring and none were detected.
- No new Aboriginal cultural heritage objects (e.g. flaked stone) were identified within the study area.
- The survey did not identify any undisturbed areas of potential (PADs) within the study area.
- All parts of the subject site have been subject to some form of disturbance.
- It is recommended that all staff should be tool boxed on the location of "Euroley Rd Yanco 1" (Site ID 48-3-0127) and "Carrathool Bridge 1" (Site ID 49-5-0125) as both were recorded within the 50 metre study area. Furthermore, a cultural heritage induction on 'chance finds' is to be undertaken by all personnel.

Red-Gum noted that while it is acknowledged that in the context of the ubiquitous 'background scatter' of artefacts that exists in almost any Australian landscape, undetected Aboriginal objects may be present in the fill and topsoil material that is to be returned to its original location post works.

However, in the absence of any detectable surface representation upon which to base the targeting of subsurface testing (in an obviously disturbed landscape), there is no reasonable trigger by which to seek an Aboriginal Heritage Impact Permit (AHIP) for the work.

3.6 Historic Heritage

3.6.1 Existing Environment

A search of the State Heritage Register and Australian Heritage Register on 6th September 2024 showed that the subject site borders and goes under the *Carrathool Bridge over Murrumbidgee River* according to the NSW state heritage inventory (NSW Government 2024). This site will not be impacted adversely by the proposed development.

The works will not see any physical impact to the built infrastructure of the bridge site hence will not be subject to the additional approvals as per Part 4 (Division 2 Controlled activities) of the Heritage Act 1977 (NSW).

3.6.2 Impact Assessment

No impact assessment is required provided the following legislation below is adhered to, per Part 4, Division 2 Controlled activities, the Heritage Act 1977.

57. Effect of interim heritage orders and listing on State Heritage Register

(1). When an interim heritage order or listing on the State Heritage Register applies to a place, building, work, relic, moveable object, precinct, or land, a person must not do any of the following things except in pursuance of an approval granted by the approval body under Subdivision 1 of Division 3—

- a) demolish the building or work,*
- b) damage or despoil the place, precinct or land, or any part of the place, precinct or land,*
- c) move, damage or destroy the relic or moveable object,*
- d) excavate any land for the purpose of exposing or moving the relic,*
- e) carry out any development in relation to the land on which the building, work or relic is situated, the land that comprises the place, or land within the precinct,*
- f) alter the building, work, relic or moveable object,*
- g) display any notice or advertisement on the place, building, work, relic, moveable object or land, or in the precinct,*
- h) damage or destroy any tree or other vegetation on or remove any tree or other vegetation from the place, precinct or land.*

3.7 Noise, light and vibration

3.7.1 Existing Environment

The study area is located in a rural environment, with the well trafficked Sturt Highway being the dominant sources of noise in the area. The surrounding locality is comprised of agricultural production and rural residential areas with limited numbers of sensitive receivers (residences) in the vicinity of the proposal. The NSW *Interim Construction Noise Guideline (ICNG)* deal with managing construction noise impacts and requires a quantitative assessment of noise impacts when works are likely to impact an individual or sensitive land use for more than three weeks in total.

The guidelines specify noise management levels for residences and other noise sensitive receivers. Works during standard working hours may create a noise impact 10 dB(A) above the rating background level (RBL). Residents are highly noise affected when construction noise is above 75dB(A). For work outside standard working hours, residences are considered noise affected when construction noise is 5 dB(A) above RBL.

3.7.2 Impact Assessment

The predicted construction noise levels would inevitably depend upon the number of plant items and equipment operating at any one time and their precise location relative to the receiver of interest. A receiver would therefore experience a range of values, representing the variation in construction noise depending upon the location of the particular construction activity and the likelihood of equipment operating simultaneously. The staged nature of the works will mean the noise and vibration impacts in specific areas will be limited to a relatively short window of time, before works move on to subsequent development stages and areas.

The impact of noise on human health has been identified as a significant issue by the World Health Organisation and numerous studies, such as (Murphy & King 2022), with potential impacts on members of the community including disruption of tranquillity, annoyance, sleep disturbance, hearing impairment, and potentially adverse mental health effects, depending on the nature, volume and duration of the noise. Wildlife can also be impacted by changing movement or sleep patterns, increasing stress, decreasing foraging efficiency, changes in mate attraction, and decreased reproductive success (Francis and Barber 2013).

It is important that existing natural areas, particularly those in close proximity to residences, are preserved and noise levels kept to a minimum in order to reduce the impact on sensitive receivers and wildlife. The nearest residential building from the works area is 120+ metres from the works area. All other residences associated with the township of Carrathool are approximately 4+ kilometres or more from the works areas.

No sensitive receivers are within 100 metres of the proposed works. Adherence to the standard hours of construction is recommended for the project. No light pollution (night works) should be undertaken in proximity to connected stands of native vegetation (trees and patches) to reduce the impacts of light pollution on local fauna.

3.8 Air quality

3.8.1 Existing Environment

The NSW Riverina bioregion is generally categorised as having fair to very good air quality. The study area is located amongst agricultural land with patches of remnant habitat that are connected in some areas through the Murrumbidgee River riparian corridor. Sources of pollution in the study area are likely to include:

- Emissions from vehicles on local roads and farms.
- Smoke from paddock and crop stubble burn-off.
- Wood smoke emissions during colder months.
- Dust from ploughing and other agricultural activities.
- Vapours and other particulate pollution from agricultural products and chemical application.

3.8.2 Impact Assessment

Construction of the proposal may result in short-term localised dust and exhaust emissions from vehicles and construction equipment, and dust generated from earthworks, stockpiles, transport of materials, and vegetation removal. These would have a minimal and temporary impact on local air quality and no impact on regional air quality or for the local area in the long term.

The CEMP is to include measures to limit these pollutants (i.e. controls during storm events, extended dry periods etc) and rehabilitation techniques to ensure earthworks areas are not left bare and exposed for long periods after works are completed. In drought and high wind conditions, dust roads and construction areas should be watered down regularly to ensure dust pollution from the works site is controlled and not excessive.

3.9 Waste and Chemical management

3.9.1 Existing Environment - Policy

Waste management would be undertaken in accordance with the *Waste Avoidance and Resource Recovery Act 2001*. The objectives of this Act are:

- a) To encourage the most efficient use of resources and to reduce environmental harm in accordance with the principles of ecologically sustainable development,
- b) To ensure that resource management options are considered against a hierarchy of the following order:
 - i. Avoidance of unnecessary resource consumption,
 - ii. Resource recovery (including reuse, reprocessing, recycling, and energy recovery),
 - iii. Appropriate disposal,
- c) To provide for the continual reduction in waste generation,
- d) To minimise the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste,
- e) To ensure that industry shares with the community the responsibility for reducing and dealing with waste,
- f) To ensure the efficient funding of waste and resource management planning, programs, and service delivery,
- g) To achieve integrated waste and resource management planning, programs, and service delivery on a State-wide basis,
- h) To assist in the achievement of the objectives of the *Protection of the Environment Operations Act 1997*.

3.9.2 Impact Assessment

The proposed works would generate waste from the following sources.

- Grass cuttings from exotic vegetation clearing.
- General waste associated with construction.

Waste would be temporarily stored on site prior to disposal at an appropriately licensed waste facility. Where trees are removed, it is encouraged that felled trees be left in situ outside of the works area, if practical, to provide ground habitat for native fauna. If this is not feasible in some areas, hollow trees should be offered to Fisheries NSW for use as in-stream habitat projects in local waterways.

4 Socio-Economic Considerations

The Carrathool Shire Council propose to construct a permanent boat ramp on the Murrumbidgee River within a camping/travelling stock reserve managed by Griffith Local Land Services. The proposed boat ramp will provide safe, accessible year-round access to the river for general usage such as fishing and kayaking, and boat launch and retrieval. The reserve is an increasingly popular recreational area for day use and camping for locals and travellers alike, hence council is keen to ensure the area is protected and useable now and into the future. Current informal use of the riverbank as a boat ramp is causing erosion and disturbance to the riverbank, soil and surrounding native vegetation.

By constructing this formal/permanent boat ramp, users will have a designated safe area to launch and retrieve their boats year-round, regardless of the fluctuating river levels, without putting themselves, equipment or the environment at risk.

5 Cumulative impacts

The proposal has the potential to have cumulative impacts if the proposal and any significant adjacent agricultural activities in the rural environment are concurrent. There is the potential for increased air quality impacts during windy weather or if works are undertaken in drought conditions. Construction will be conducted during periods of low to no flows, and therefore there will be no impact to river flows or fish passages during the works. The safeguards identified in **Section 3.8** and included in the project CEMP would be implemented to reduce impacts from the proposal, and therefore cumulative impacts.

6 Matters of National Environmental Significance (MNES)

6.1 Clause 171 of the EP&A Regulation

Clause 171 of the EP&A Regulations sets out 16 factors that need to be considered when assessing environmental impact under Part 5 of the EP&A Act. These factors are addressed in this report and relevant sections are listed in **Table 10**.

Table 10: Clause 171 Assessment

	Relevant Clause	Is the impact Positive/Negative/Neutral?
1	Any environmental impact on a community?	Neutral.
2	Any transformation of a locality?	Neutral.
3	Any environmental impact on the ecosystems of the locality?	Neutral.
4	Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality?	Positive. The development will improve access to the river, improving aesthetics & recreational usage.
5	Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations?	Neutral.
6	Any impact on the habitat of protected animals (within the meaning of the <i>Biodiversity Conservation Act 2016</i>)?	Neutral.
7	Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?	Neutral.
8	Any long-term effects on the environment?	Neutral if mitigation measures are implemented.
9	Any degradation of the quality of the environment?	Neutral if control measures are put in place.
10	Any risk to the safety of the environment?	Neutral.
11	Any reduction in the range of beneficial uses of the environment?	Neutral.
12	Any pollution of the environment?	Neutral if control measures put in place.
13	Any environmental problems associated with the disposal of waste?	Neutral if control measures put in place.
14	Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply?	Neutral.
15	Any cumulative environmental effect with other existing or likely future activities?	Neutral.
16	Any impact on coastal processes and coastal hazards, including those under projected climate change conditions?	No impact.
17	Any applicable local strategic planning statement, regional strategic plan or district strategic plan made under Division 3.1 of the Act	No impact.
18	Any other relevant environmental factors	No impact.

7 Mitigation Measures

The findings and recommendations from this REF, and the various plans (internal) and policies (internal and external) in place to avoid, reduce and mitigate impacts arising from the project (such as the CEMP, SWMP, and various NSW government policies and guidelines) will all act to help mitigate impacts arising from the works associated with the proposal. **Table 11** outlines the various impacts and how these will be mitigated before, during and after works.

Table 11: Project impacts, mitigation measures, timing, efficacy of mitigation and residual impacts expected.

Impact	Mitigation measures	Timing & duration	Likely efficacy of mitigation	Residual impacts anticipated
Removal of native vegetation	Impact on native vegetation has been assessed to identify strategies to minimise native vegetation losses via detailed design and from iterative feedback provided into designs as a result of the findings. Total impact on native vegetation is low, at a total loss of 0.006 ha. Minor lopping is permissible to ensure access to the work site is safe. Work in tree TPZ areas must be avoided, and no laydowns or fill is to be located in these TPZ areas or in areas of retained native vegetation. It is not expected that any significant trees (greater than sapling size) will be impacted to the extent they are to be deemed lost. Construction vehicles must remain within the mapped subject site.	Detailed design	Effective	Minor impacts, no tree removals required.
	Currently no clearing expected. However, any clearing required must be pre-approved and pre-clearing surveys will be undertaken in accordance with Guide 1: Pre-clearing process of the <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA 2011).	Prior to construction	Effective	None anticipated
	Pre-clearing and clearing supervision should be carried out by a suitably qualified ecologist to minimise harm to wildlife, with a suitable unexpected flora and fauna discovery procedure to be put in place.	During construction	Effective	None anticipated
	Vegetation removal will be undertaken in accordance with Guide 4: Clearing of vegetation and removal of bush rock of the <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA 2011).	During construction	Effective	None anticipated
	Native vegetation will be re-established in accordance with Guide 3: Re-establishment of native vegetation of the <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA 2011).	Post construction	Effective	None anticipated
	The unexpected species find procedure is to be followed under <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA 2011) if threatened ecological communities, not assessed in the biodiversity assessment, are identified in the project site.	During construction	Proven	None anticipated

Impact	Mitigation measures	Timing & duration	Likely efficacy of mitigation	Residual impacts anticipated
	All tree trimming is to be in accordance with the <i>Australian Standard AS4373 Pruning of amenity trees</i> . Efforts need to be made to minimise branch removal to only those that are absolutely necessary.	During construction	Effective	None anticipated
	All construction and development works near retained trees must abide by the <i>Australian Standard AS 4970-2009 Protection of trees on development sites</i> . Strictly no impacts to tree SRZ and minimal impacts to tree TPZ areas.	During construction	Effective	None anticipated
	Clearing limits and exclusion zones (no-go areas) clearly identified prior to work within/adjacent to the study area.	Prior to construction	Effective	None anticipated
	Strict erosion and sediment control measures should be implemented, monitored and maintained to prevent impacts on adjacent areas and grubbing and prior to unfavourable weather events.	Construction	Effective	Minor and temporary impacts to local creeks.
	Works shall be restricted to assessed (impact zone) or previously disturbed areas, and if works are required outside of the assessed area, the assessment may need to be revisited. Areas beyond the impact zone are to be fenced or clearly marked with paint (or other manner) and be considered no-go zones, to ensure no accidental impact occurs during construction.	Construction	Effective	None anticipated
	Implement dust control measures where necessary to protect adjacent retained vegetation.	Construction	Effective	None anticipated
	A Flora and Fauna Management Plan should be considered, and if used developed in accordance with Roads and Maritime's <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA 2011) and implemented as part of the CEMP. It will include, but not be limited to: <ul style="list-style-type: none"> Plans showing areas to be cleared and areas to be protected, including exclusion zones, protected habitat features and revegetation areas. Requirements set out in the <i>Landscape Guideline</i> (RTA 2008). Pre-clearing survey requirements Procedures for unexpected threatened species finds and fauna handling Procedures addressing relevant matters specified in the policy and guidelines for fish habitat conservation and management (DPI 2013) Protocols to manage weeds and pathogens. 	Prior to construction	Effective	None anticipated
Removal of threatened species habitat and	Impacts to threatened species will be further assessed via development of a Test of Significance (ToS) should this REF recommend it necessary.	Detailed design	Effective	None anticipated
	Habitat removal will be undertaken in accordance with Guide 4: Clearing of vegetation and removal of bushrock of the <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA 2011).	During construction	Effective	None anticipated

Impact	Mitigation measures	Timing & duration	Likely efficacy of mitigation	Residual impacts anticipated
habitat features	Habitat will be replaced or re-instated in accordance with Guide 5: Re-use of woody debris and bushrock and Guide 8: Nest boxes contained in the <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA 2011).	During construction	Proven	None anticipated
	The unexpected species find procedure is to be followed under <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA 2011) if threatened fauna, not assessed/identified in the biodiversity assessment, are identified in the project site.	During construction	Proven	None anticipated
	Construction of boat ramp to be undertaken during low flow/low river levels. This will allow for most/if not all the construction to be done on the dry bank out of the main channel/passageway. Further current informal use is doing more damage to the river bank, hence the need for a permanent ramp.	During construction	Effective	None anticipated
Aquatic impacts	Aquatic habitat will be protected in accordance with Guide 10: Aquatic habitats and riparian zones of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA 2011) and Section 3.3.2 Standard precautions and mitigation measures of the policy and guidelines for fish habitat conservation and management; Update 2013 (DPI (Fisheries NSW)	During construction	Effective	None anticipated
	A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of the CEMP. The SWMP will identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks will be addressed during construction.	Prior to and during construction	Effective	Minor impacts.
	A site specific Erosion and Sediment Control Plan/s will be prepared and implemented as part of the Soil and Water Management Plan. The Plan will include arrangements for managing wet weather events, including monitoring of potential high risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather.	Prior to and during construction	Effective	Minor impacts.
	An emergency spill kit is to be kept on site at all times. All staff are to be made aware of the location of the spill kit and trained in its use. If an incident (e.g. spill) occurs, the Roads and Maritime Environmental Incident Classification and Management Procedure is to be followed and the Roads and Maritime Services Contract Manager notified as soon as practicable.	During construction	Effective	None anticipated
	Bunded areas are to be at least 50 m from any waterway or drainage line.	During construction	Effective	None anticipated
	All concrete washout water and solids are to be collected and retained in leak proof containers and disposed of in accordance with the <i>Waste Classification Guideline 2014</i> (NSW EPA, 2014).	During construction	Effective	None anticipated
	All disturbed areas would be restored post construction.	Post construction	Effective	None anticipated
	Refuelling of machinery to be undertaken in a dedicated area within the construction compound appropriately protected as outlined in the spill management plan.	During construction	Effective	None anticipated

Impact	Mitigation measures	Timing & duration	Likely efficacy of mitigation	Residual impacts anticipated
	Fuels, lubricants and chemicals, including drilling fluids, shall be stored and, where practicable, handled within containment facilities such as bunded areas designed to prevent the release of spilled substances to the environment and capable of storing 120% of the volume of material stored there.	During construction	Effective	None anticipated
	All construction vehicles and equipment are to be maintained in designated areas away from vegetation and watercourses.	During construction	Effective	None anticipated
	Do not discharge water or wastewater to stormwater, watercourses, drainage channels.	During construction	Effective	None anticipated
	Any temporary stockpiles should be stabilised using sediment fencing or similar (this must occur off-site) or in areas that do not contain vegetation.	During construction	Effective	None anticipated
	All erosion and sediment control devices shall be properly maintained for the duration of the work. All structures are to be inspected after rain events and sediment to be removed when the capacity has been reduced by 50% or more.	During construction	Effective	None anticipated
	With respect to aquatic species, the proposed works should have minimal impact on the aquatic environs provided works are undertaken when the river is at low flow. This will allow for most/if not all the construction to be done on the dry bank out of the main channel/passageway. By the time the river then rises again, the riverbank, and construction will be stabilised and should have little to no effect on fish passages and flow. Further current informal use is doing more damage to the riverbank, hence the need for a permanent ramp.	During construction	Effective	None anticipated
Groundwater dependent ecosystems	Interruptions to water flows associated with groundwater dependent ecosystems will be minimised through detailed design.	Detailed design	Effective	None anticipated
Changes to hydrology	Changes to existing surface water flows will be minimised through detailed design.	Detailed design	Effective	None anticipated
Fragmentation of identified biodiversity links and habitat corridors	Connectivity measures will be implemented in accordance with the <i>Wildlife Connectivity Guidelines for Road Projects</i> (RMS in prep).	Detailed design, during construction and post construction	Effective	None anticipated
	Any connectivity measures implemented will be designed and installed under the supervision of an experienced ecologist.	Detailed design and during construction	Effective	None anticipated
	There are no expected connectivity issues being produced by the development. Connectivity measures will be implemented in accordance with the <i>Wildlife Connectivity Guidelines for Road Projects</i> (RMS in prep).	Detailed design, during construction and post construction	Effective	None anticipated

Impact	Mitigation measures	Timing & duration	Likely efficacy of mitigation	Residual impacts anticipated
Edge effects on adjacent native vegetation and habitat	Exclusion zones will be set up at the limit of clearing in accordance with Guide 2: Exclusion zones of the <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA 2011)	During construction	Effective	None anticipated
Injury and mortality of fauna	Fauna impacts are not expected. Unforeseen fauna impacts will be managed in accordance with best practice, such as Fauna will be managed in accordance with Guide 9: Fauna handling of the <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA 2011)	During construction	Effective	None anticipated
	If unforeseen tree clearing is required, appropriate approvals must first be sought. Then implementation of two stage clearing process is required to allow fauna to disperse from habitat voluntarily; inspection of hollows by experienced ecologist/fauna spotter/catcher prior to and after clearing of trees/limbs/suckers to safely remove and relocate any injured /displaced fauna.	During construction	Effective	None anticipated
Invasion and spread of weeds	Weed species will be managed in accordance with Guide 6: Weed management of the <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA 2011)	During construction	Effective	None anticipated
	Establishment of clearing limits and exclusion zones within/adjacent to the works sites and in the lay down areas.	During construction	Effective	None anticipated
	To prevent the spread of weed seed, all weed material or soils from a site infested with a high-risk weed species that is removed will be disposed of in a suitable waste facility and not mulched on site. This is to avoid the reintroduction and further spread of weeds in the area.	During construction	Effective	None anticipated
	Machinery will be washed following best practice hygiene protocols prior to being brought onto site to prevent the spread of weed seed, pathogens and fungi. Hygiene protocols will be undertaken in accordance with the requirements of the Roads and Maritime <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA 2011).	During construction	Effective	None anticipated
Invasion and spread of pests	Pest species will be managed as required within the project site.	During construction	Effective	None anticipated
Invasion and spread of pathogens and disease	Pathogens will be managed in accordance with Guide 2: Exclusion zones of the <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA 2011).	During construction	Effective	None anticipated

Impact	Mitigation measures	Timing & duration	Likely efficacy of mitigation	Residual impacts anticipated
Topography, geology & soils	A detailed Erosion and Sediment Control Plan should be prepared as part of the Construction Environmental Management Plan in accordance with the 'Blue Book' Managing Urban Stormwater: Soils and Construction Guidelines (Landcom, 2004).	Prior to and during construction	Effective	None anticipated
	Erosion and sediment control measures should be established prior to works and would be maintained and regularly inspected (particularly following rainfall events) to ensure their ongoing functionality until the works are complete and areas are stabilised.	Prior to and during construction	Effective	None anticipated
	The contractor should use dust suppression techniques as required to minimise dust during construction.	During construction	Effective	None anticipated
	Trucks should be covered during the transport of soil material to or from the site.	During construction	Effective	None anticipated
	Vehicles and machinery should be properly maintained and routinely inspected to minimise the risk of fuel/oil leaks.	During construction	Effective	None anticipated
	All fuels, chemicals and hazardous liquids should be stored, and re-fuelling of plant and equipment shall be undertaken in a suitably bunded/contained area away from drainage lines.	During construction	Effective	None anticipated
	A spill kit will be kept on site and staff trained in its use.	During construction	Effective	None anticipated
	All concrete pouring and casting activities shall be undertaken in a suitably constructed (contained) area of the site and shall be supervised by competent staff at all times. Dedicated facilities for storage of waste concrete (in liquid, slurry or solid form) shall be maintained on site and wash out of concrete delivery vehicles at the site shall not be permitted.	During construction	Effective	None anticipated
	In the event any material is imported to the site, it shall be clean and free of contaminants.	During construction	Effective	None anticipated
	Testing as per the Waste Classification Guidelines (NSW EPA, 2014) or a relevant resource recovery exemption as prescribed by NSW EPA would be required where bulk waste material is proposed to be removed from site.	During construction	Effective	None anticipated
	In the event of a pollution incident, works would cease in the immediate vicinity and the Contractor would immediately notify the Project Manager.	During construction	Effective	None anticipated

Impact	Mitigation measures	Timing & duration	Likely efficacy of mitigation	Residual impacts anticipated
Aboriginal Heritage	All on-site personnel are to be made aware of their obligations under the National Parks and Wildlife Act 1974, this includes protection of Aboriginal sites and the reporting of any new Aboriginal, or suspected Aboriginal, heritage sites. This may be done through an onsite induction or other suitable format.	Prior to and during construction	Effective	None anticipated
	In the unlikely event that Aboriginal or suspected Aboriginal archaeological material is uncovered during the development, then works in that area are to stop and the area cordoned off. The project manager is to contact the heritage consultant to make an assessment as to whether the material is classed as Aboriginal object/s under the National Parks and Wildlife Act and advise on the required management and mitigation measures. Works are not to re-commence in the cordoned off area until heritage clearance has been given and/or the required management and mitigation measures have been implemented.	During construction	Effective	None anticipated
	In the unlikely event that human remains, or suspected human remains are uncovered during the development, then works in that area are to stop and the area cordoned off. The project manager is to contact the NSW Police to establish whether the area is a crime scene. If it is not a crime scene, then Heritage NSW is to be notified via the Environment Line on 131555 and management measures are to be devised in consultation with Aboriginal stakeholders. Works are not to recommence in the area until the management measures have been implemented.	During construction	Effective	None anticipated
Non – Aboriginal Heritage	All relevant staff and contractors should be made aware of their statutory obligations for heritage under the <i>NPW Act</i> and the <i>Heritage Act 1977</i> , during site induction.	Prior to and during construction	Effective	None anticipated
	In the event that any unanticipated archaeological deposits are identified within the Proposal site during construction, works within the vicinity of the find should cease immediately. An archaeologist must be contacted to assess the find. If it is determined to be a relic under the Heritage Act, further investigation may be required.	During construction	Effective	None anticipated
Noise and vibration	Works are to be undertaken during standard construction hours: <ul style="list-style-type: none"> Monday – Friday: 7:00am to 18:00pm. Saturday and Sunday: No works. Public Holidays: No works. 	Detailed design and during construction	Effective	None anticipated

Impact	Mitigation measures	Timing & duration	Likely efficacy of mitigation	Residual impacts anticipated
	Where this is not possible additional mitigation and management may be required. See below:			
	> Undertake notification to potentially affected receivers (within 140m) of potential works in advance of works providing contact details and Project information including timing of works.	Prior to and during construction	Effective	None anticipated
	> Toolbox and induction of personnel prior to shift to inform relevant receivers and mitigation measures.	Prior to and during construction	Effective	None anticipated
	> All plant should be shut down when not in use. Plant to be parked/started at farthest point from relevant assessment locations.	During construction	Effective	None anticipated
	> Minimisation of UHF radio use.	During construction	Effective	None anticipated
	> Avoidance of yelling.	During construction	Effective	None anticipated
	> Operating plant in a conservative manner (no over-revving).	During construction	Effective	None anticipated
	> Selection of the quietest suitable machinery available for each activity.	During construction	Effective	None anticipated
	> Avoidance of metallic impact noise.	During construction	Effective	None anticipated
	> All plant are to utilise the broadband reverse alarm in lieu of the traditional 'tonal' type reverse alarm.	During construction	Effective	None anticipated
	> Maximise the offset distance between noisy items of plant/machinery and nearby receivers.	During construction	Effective	None anticipated
	> Where practicable, ensure those noisy plant/machinery are not working simultaneously in close proximity to sensitive receivers.	During construction	Effective	None anticipated
	> Queuing of vehicle is not to occur adjacent to any residential receptor.	During construction	Effective	None anticipated
	> Where queuing is required, for example due to safety reasons, engines are to be switched off to reduce their overall noise impacts on receivers	During construction	Effective	None anticipated

Impact	Mitigation measures	Timing & duration	Likely efficacy of mitigation	Residual impacts anticipated
Air quality	All construction machinery should be maintained in good working order and turned off when not in use so as to minimise emissions.	During construction	Effective	None anticipated
	Minimising the area of exposed soils and (where possible) sequentially stabilising cleared areas to minimise dust becoming airborne.	During construction	Effective	None anticipated
	Effective management of stockpiles, including stabilisation, covering and watering as required. (must occur off-site) or in areas with no vegetation	During construction	Effective	None anticipated
	Trucks transporting construction materials should be covered.	During construction	Effective	None anticipated
	Minimising vehicle movements over exposed areas or unsealed surfaces.	During construction	Effective	None anticipated
	Cessation of construction activities which may result in dust generation during high wind conditions.	During construction	Effective	None anticipated
Traffic and access	Work vehicles will not obstruct vehicular or pedestrian traffic on roadways, or access to private driveways or public facilities, unless absolutely necessary and only if appropriate notification has been provided to potentially affected property owners and local residents.	During construction	Effective	None anticipated
	The Contractor will comply with any Carrathool Shire Council requirements regarding traffic control and access.	During construction	Effective	None anticipated
	Appropriate signs will be erected to inform users of the disruption to pedestrian and vehicle movements on local roads and any temporary area closures if required.	During construction	Effective	None anticipated
	All directly affected stakeholders shall be informed about the works, their timing, and expected impacts prior to the commencement of the works.	During construction	Effective	None anticipated
	Parking of vehicles and storage of plant/equipment is to occur away from vegetated areas and only within the impact zone. Vehicles and plant/equipment are to be kept away from environmentally sensitive areas and outside the dripline of trees.	During construction	Effective	None anticipated
	All vehicles transporting spoil should be covered and filled to maximum capacity to minimise vehicle movements.	During construction	Effective	None anticipated
	All roads, kerbs, gutters and footpaths damaged as a result of construction are to be restored to their pre-construction condition.	During and post construction	Effective	None anticipated

Impact	Mitigation measures	Timing & duration	Likely efficacy of mitigation	Residual impacts anticipated
	All sealed roads would be kept clean and free of dust and mud at all times. Where material is tracked onto sealed roads at any time, it would be removed immediately so that road pavements are kept safe and trafficable.	During construction	Effective	None anticipated
	All roads should be rehabilitated post construction to a standard equivalent to or better than the preconstruction condition.	Post construction	Effective	None anticipated
Waste management	The CEMP should include a waste management strategy. This would include details of the type of waste material likely to be generated, and how it would be managed (including sorting, storage and disposal), materials to be recycled, as well as measures to reduce or avoid waste generation.	During construction	Effective	None anticipated
	All waste, including excess spoil be recycled if practicable or alternatively taken to a licensed waste disposal facility.	During construction	Effective	None anticipated
	All material proposed to be removed from the work site, for recycling or disposal or otherwise, must be waste classified in accordance with the relevant regulatory requirements.	During construction	Effective	None anticipated
	Trucks transporting waste off site should be covered.	During construction	Effective	None anticipated
	Waste receptacles for recyclable and non-recyclable waste are to be provided at the construction site for personnel waste.	During construction	Effective	None anticipated
	Routinely inspect waste locations to ensure they are maintained, in good condition and continue to be effective.	During construction	Effective	None anticipated
	Waste material will not to be left on site once the works have been completed.	Post construction	Effective	None anticipated
	EPA is to be notified immediately of any pollution incidents or harm to the environment (as defined under Part 5.7 of the POEO Act).	During construction	Effective	None anticipated
Visual amenity	Works will be completed within the shortest possible timeframe.	During construction	Effective	None anticipated
	The site should be kept clean of general litter and tidy for the duration of works.	During construction	Effective	None anticipated
	All waste generated during the course of the works will be removed from the work areas as soon as practicable and disposed of in reasonable manner.	During construction	Effective	None anticipated

Impact	Mitigation measures	Timing & duration	Likely efficacy of mitigation	Residual impacts anticipated
	All work equipment and materials will be contained within the designated boundaries of the work site or works compound. The creation of stockpiles must occur off-site, or in areas with no vegetation. Vehicle parking and waste storage will be minimised.	During construction	Effective	None anticipated
	Disturbed areas should be re-instated and stabilised progressively, minimising the footprint of the works at any one time.	During construction	Effective	None anticipated
	On completion of the works, all vehicles, materials, and refuse relating to the works will be removed from the work areas.	During and after construction	Effective	None anticipated
	Ongoing consultation and communication with the community regarding timing duration and likely impacts of construction works should be undertaken to manage impacts to local residents and the community.	During construction	Effective	None anticipated
Socio - economic	All excavations or steep slopes to be adequately fenced or barriers provided to prevent entry to unauthorised persons.	During construction	Effective	None anticipated
	A Communication Plan (CP) appropriate for the scale of the project, e.g. signage and notification of neighbours, should be implemented to help provide timely and accurate information to the community during construction.	During construction	Effective	None anticipated
	Any traffic closure and delays would be designed to minimise impacts on the local community, freight, businesses and commercial operators using the roads.	During construction	Effective	None anticipated

8 Consultation

Part 2.2, Division 1 of the T&ISEPP prescribes consultation to be undertaken by a public authority prior to the commencement of certain activities. A review of the T&ISEPP consultation requirements for the proposal is provided in **Table 12**. Where consultation has been undertaken, the details of this have been provided.

Table 12: Consultation requirements

Is consultation with other agencies required under the Transport and Infrastructure SEPP	Yes	No
<p>Clause 2.10 Impacts on council-related infrastructure or services</p> <p>Consultation is required if the public authority is of the opinion that the development:</p> <ul style="list-style-type: none"> (a) will have a substantial impact on stormwater management services provided by a council, or (b) is likely to generate traffic to an extent that will strain the capacity of the road system in a local government area, or (c) involves connection to, and a substantial impact on the capacity of, any part of a sewerage system owned by a council, or (d) involves connection to, and use of a substantial volume of water from, any part of a water supply system owned by a council, or (e) involves the installation of a temporary structure on, or the enclosing of, a public place that is under a council's management or control that is likely to cause a disruption to pedestrian or vehicular traffic that is not minor or inconsequential, or (f) involves excavation that is not minor or inconsequential of the surface of, or a footpath adjacent to, a road for which a council is the roads authority under the Roads Act 1993 (if the public authority that is carrying out the development, or on whose behalf it is being carried out, is not responsible for the maintenance of the road or footpath). 		Nil – Council is the approving authority.
<p>Clause 2.11 Impacts on local heritage</p> <p>Consultation is required if the development:</p> <ul style="list-style-type: none"> (a) is likely to have an impact that is not minor or inconsequential on a local heritage item (other than a local heritage item that is also a State heritage item) or a heritage conservation area, and (b) is development that this Policy provides may be carried out without consent. 		The Proposal is not likely to have an impact on any heritage items.
<p>Clause 2.12 Impacts on flood liable land</p> <p>(1) (Repealed)</p> <p>(2) A public authority, or a person acting on behalf of a public authority, must not carry out, on flood liable land, development that this Chapter provides may be carried out without consent and that will change flood patterns other than to a minor extent unless the authority or person has—</p> <ul style="list-style-type: none"> (a) given written notice of the intention to carry out the development (together with a scope of works) to the council for the area in which the land is located, and (b) taken into consideration any response to the notice that is received from the council within 21 days after the notice is given. 		The proposal will not change flood patterns
<p>Clause 2.13 Impacts on flood liable land</p> <p>(1) A public authority, or a person acting on behalf of a public authority, must not carry out development on flood liable land that may be carried out without development consent under a relevant provision unless the authority or person has—</p> <ul style="list-style-type: none"> (a) given written notice of the intention to carry out the development (together with a scope of works) to the State Emergency Service, and (b) taken into consideration any response to the notice that is received from the State Emergency Service within 21 days after the notice is given. <p>(2) Any of the following provisions in Part 2.3 is a relevant provision—</p>		No – the proposal traverses flood liable land but the activity does not fall under Part

Is consultation with other agencies required under the Transport and Infrastructure SEPP	Yes	No
(a) Division 1 (Air transport facilities), (b) Division 2 (Correctional centres and correctional complexes), (c) Division 6 (Emergency services facilities and bush fire hazard reduction), (d) Division 10 (Health services facilities), (e) Division 14 (Public administration buildings and buildings of the Crown), (f) Division 15 (Railways), (g) Division 16 (Research and monitoring stations), (h) Division 17 (Roads and traffic), (i) Division 20 (Stormwater management systems).		2.3 of the T&ISEPP
Clause 2.14 Impacts on coastal zone land This section applies to development on land that is within a coastal vulnerability area and is inconsistent with a certified coastal management program that applies to that land		Nil – The proposed works are not within the coastal zone.
Clause 2.15 Consultation with public authorities other than councils		
a) Is the proposal adjacent to a national park or nature reserve, or other area reserved under the <i>National Parks and Wildlife Act 1974</i> , or on land acquired under that Act?		No
b) Is the proposal on land in Zone C1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?		No
c) Does the proposal consist of a fixed or floating structure in or over navigable waters – Transport for NSW	Yes. Consultation with TfNSW is required	
d) Will the proposal increase the amount of artificial light in the night sky and that is on land within the dark sky region map?		No
e) Will the proposal be located on defence communications facility buffer land within the meaning of clause 5.15 of the Standard Instrument?		No
f) Is the proposal on land in a mine subsidence district within the meaning of the <i>Coal Mine Subsidence Compensation Act 2017</i> ?		No
g) Development on, or reasonably likely to have an impact on, a part of the Willandra Lakes Region World Heritage Property—the World Heritage Advisory Committee and Heritage NSW,		No
h) Development within a Western City operational area specified in the Western Parkland City Authority Act 2018 , Schedule 2 with an estimated development cost of \$30 million or more—the Western Parkland City Authority constituted under that Act.		No
a. Consideration of Planning for Bush Fire Protection Is the proposal located on bush fire prone land and for the purpose of health services facilities, correctional centres, or residential accommodation?		No

Consultation with other public authorities is required in accordance with the provisions of T&ISEPP as detailed in the above table, including Crown Land, Fisheries and Transport Departments.

9 Conclusion

The proposal will impact approximately 2188 m² of cleared riverbank and access track on the banks of the Murrumbidgee River south of Carrathool, NSW. The land being impacted consists of cleared track/parking area bordered by scattered trees and patches of remnant vegetation. The subject site itself contains 3 small patches of native vegetation (0.006ha) with the remaining areas either dominated by exotics or cleared gravel tracks. The study area (50 metre buffer) does contain some moderate quality PCT 7, however it will be unaffected by the works. No Threatened Ecological Communities (TEC) will be impacted.

The subject site intersects Biodiverse Riparian land as mapped on the NSW Biodiversity Values Map (BMAT tool), however does not exceed the clearing threshold for the lot size. Database searches (BioNet and PMST) of locally occurring NSW (BC Act, EPBC Act) listed threatened and migratory species revealed forty-four (44) species of threatened fauna & flora that have been previously recorded and/or have potential habitat within 10 kilometres of the study area. In summary:

- No EPBC Act listed Threatened Ecological Community exist within the study area.
- No EPBC Act or BC Act listed species have been previously recorded in the study area.
- Of the forty-four (44) threatened species recorded within 5 kilometres of the study area, twenty-one (21) are considered possible or likely to be present either on occasion or may be resident in the study area (50 metre buffer).
- These twenty-one (21) threatened species were addressed in the impact assessment that determined that the species would not be adversely affected by the works and further assessment was not required.
- No (zero) wetlands of importance were identified within the study area, no wetlands are at threat from the development.
- A search of the State Heritage Register and Australian Heritage Register showed that the subject site borders and goes under the *Carrathool Bridge over Murrumbidgee River* according to the NSW state heritage inventory (NSW Government 2024). This site will not be impacted adversely by the proposed development.

Red-Gum ecologists completed field surveys (June 20th & July 15th 2024), with methodologies used for field surveys consistent with DEECW guidelines, and taxa specific survey guidelines for species listed under the EPBC Act. No threatened species were observed.

In its current form, the proposal will impact approximately 0.006 hectares of native vegetation, namely three small patches of Phragmites and an immature River Red-Gum tree. Even if this tree doesn't need to be removed, it will be deemed 'lost' due to TPZ encroachment. The vegetation in the broader study area ranges in quality from low to high, associated with River Red-Gum woodland hugging the riparian corridor. The access track east of the bridge will see no ground disturbing works, hence there will be no impacts to TPZ's of surrounding large trees.

The Biodiversity Offsets Scheme Entry Test (BOSET) has been used to determine if residual impacts from the proposal, after avoidance or mitigation, trigger the need for offsetting. The proposal as it stands does not trigger the need for offsets as, whilst the subject site falls within mapped areas on the *NSW Biodiversity Values Map*, no Threatened Ecological Community (TEC) will be impacted by the works and the amount of native vegetation to be cleared (0.006 ha) does not exceed the clearing threshold (1 ha) for the minimum lot size.

Mitigation measures and safeguards primarily include BOSET established procedures and protocols for mitigating impacts to biodiversity and the environment. Key mitigation measures include minimising impacts to any areas of vegetation outside the designated works areas during the construction period, including clear demarcation of clearing zones, establishment of buffer zones (where practicable) and the management of potential weed invasion, sedimentation and erosion.

It is recommended that all staff should be tool boxed on the location of “Euroley Rd Yanco 1” (Site ID 48-3-0127) and “Carrathool Bridge 1” (Site ID 49-5-0125) as both are recorded within the 50 metre study area. Furthermore, a cultural heritage induction on ‘chance finds’ is to be undertaken by all personnel.

The proposal has the potential to impact on a number of environmental factors including soil and water, air quality, traffic, socio-economic, noise, native vegetation and biodiversity. The majority of these impacts are relatively minor and many would be temporary in nature. Some of these environmental factors and impacts may have cumulative impacts, however, and mitigation measures have been recommended to avoid or minimise each of the impacts potentially associated with the proposal. The native vegetation and biodiversity impacts are of *a minor* nature and no large tree will need to be removed. It is recommended that impacts to large and very large trees be minimised wherever possible.

In conclusion, the proposal adequately meets the project objectives to improve the public's usability/access to the Murrumbidgee River for boat launch and retrieval as well as general recreational usage, preventing damage/erosion to the riverbank and surrounding environment acquired during informal boat ramp usage. The development will likely have positive outcomes for residents, tourists, the local economy and community.

The works proposed are likely to have *a minor* impact on the aquatic and terrestrial environment and associated habitats, provided recommendations in the report are implemented, in particular that works are conducted in low to no flow periods, therefore there are no significant impacts expected on biota or threatened entities, and further assessment is not warranted.


Notwithstanding this fact, the subject site is predominantly cleared bare ground with scattered exotics persisting under a River Red-Gum canopy therefore, if the impacts to biodiversity can be minimised with the proposal's various impact mitigation measures, then the proposal would be justified.

10 REF Determination Page

10.1 Assessor declaration

This REF provides a true and fair review of the activity in relation to its likely effects on the environment. It addresses to the fullest extent possible for the current stage of the proposed development, all matters affecting or likely to affect the environment as a result of the project and provides sufficient information to determine whether there is likely to be a significant impact on the environment as a result of the Project.

I have considered all environmental impacts and safeguards to the best of my knowledge and have sought advice where required.

Project Name:	Proposed Carrathool Boat Ramp, Carrathool, NSW 2711
Project Director:	Signature:  Date: 18/11/24

10.2 Determiner declaration & approval

I have reviewed the document and consider that the project will not have a significant impact and can proceed subject to the controls outlined in this REF.

Name: JASON
NICHOLSON

Signature: 

Designation:

Manager Building &
Regulatory Services

Date: 13/1/25

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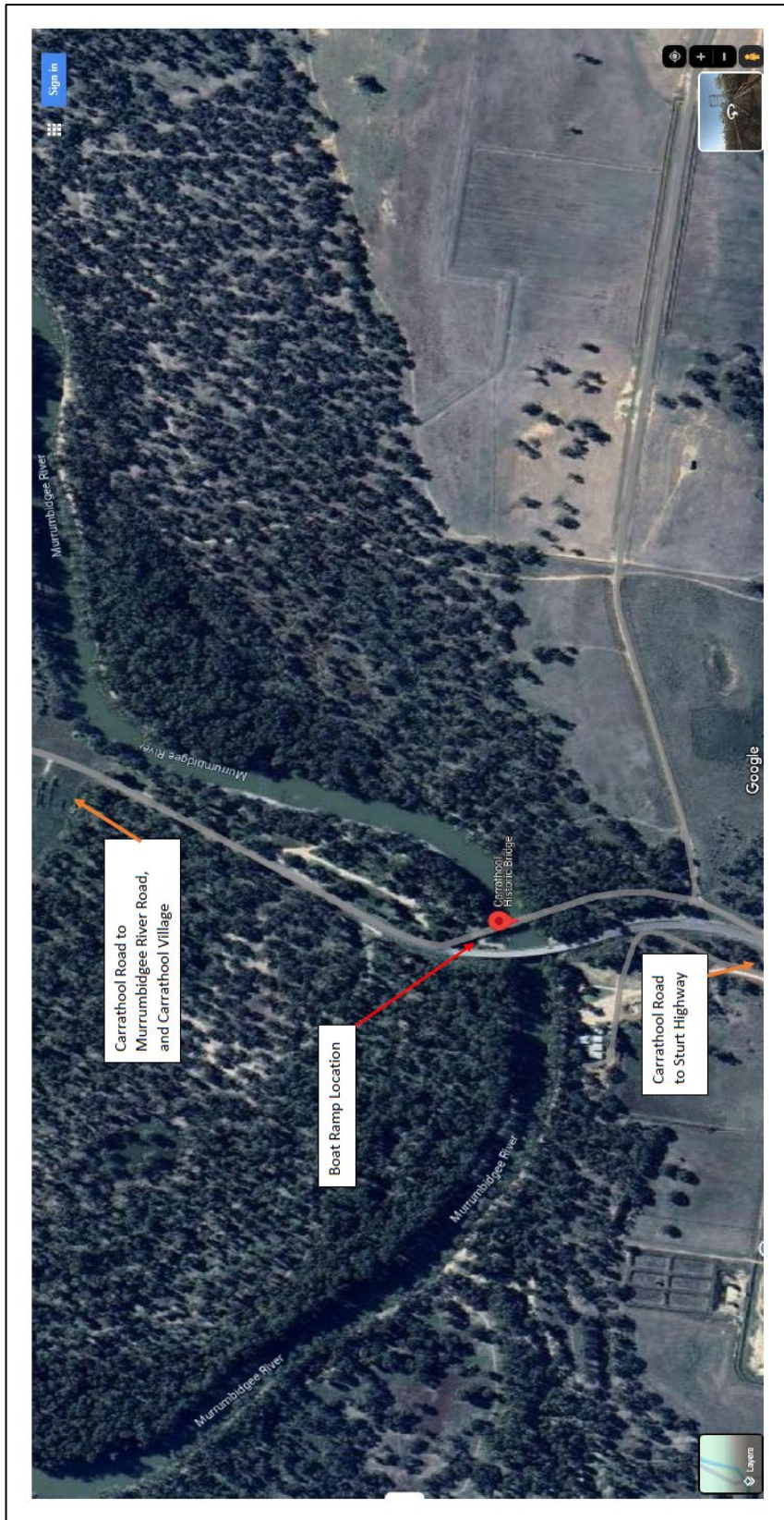
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12 Appendices

Appendix 1: Preliminary development plans, examples sourced from both Carrathool and Hillston Boat ramp examples. Source: Carrathool Shire Council.



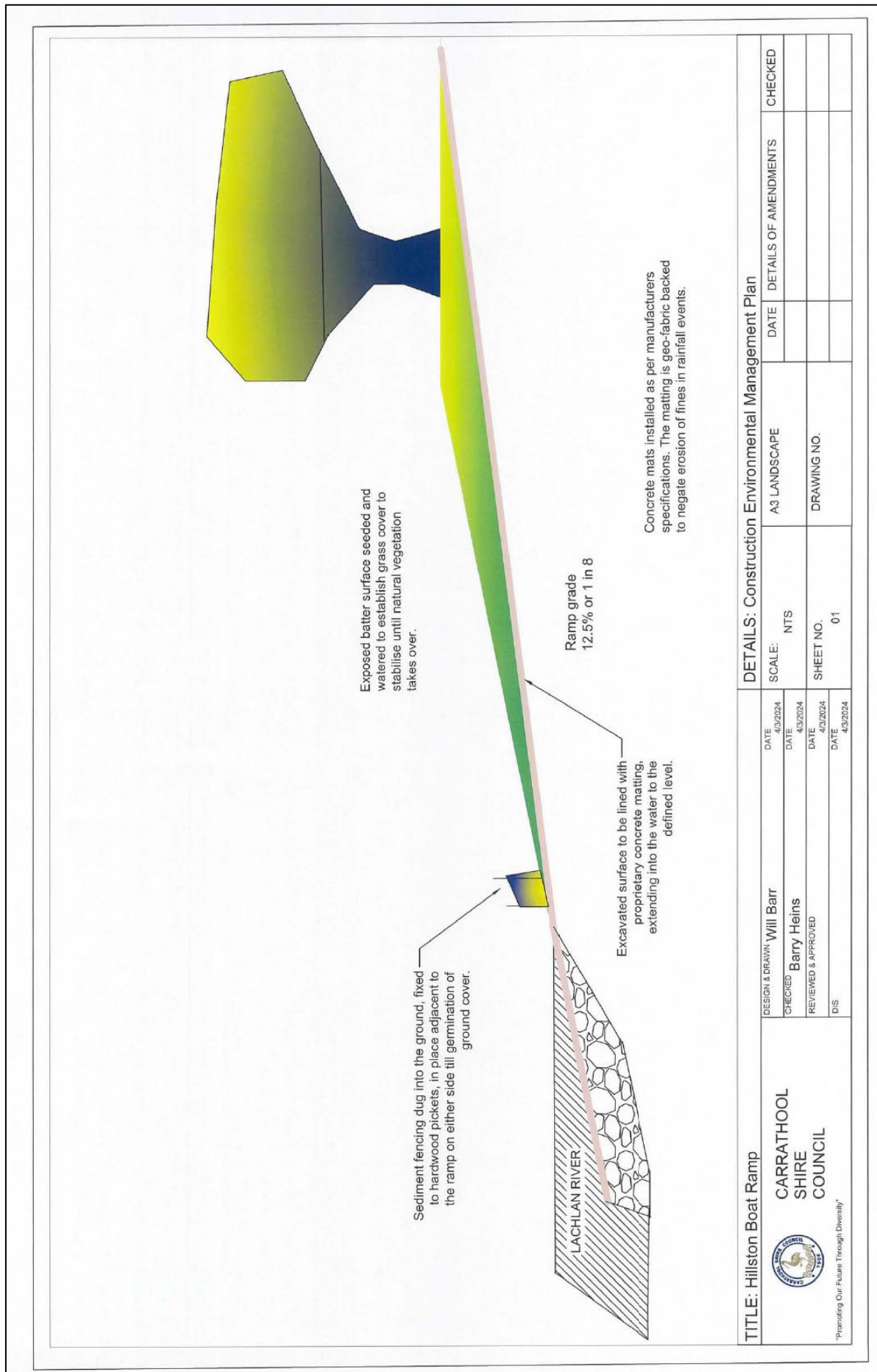




CARRATHOOL SHIRE COUNCIL – HILLSTON BOAT RAMP INSTALLATION

– SIMILAR CONCEPT PHOTOGRAPHS –

- Planned installation north of Hillston on the Lachlan River
- Photographs from Lower Portland, NSW installation.



Appendix 2: Site Photos



Photo 1: Existing informal boat ramp, small patch of Phragmites (native). Photo: O,Hynam 2024.



Photo 2: Access to informal ramp under the historic bridge, east orientation. Photo: O,Hynam 2024.



Photo 3: Informal boat ramp, south orientation. Photo: O,Hynam 2024.



Photo 4: Lower end of informal ramp, north orientation. Photo: O,Hynam 2024.



Photo 5: Lower end of informal ramp, south orientation. Photo: O,Hynam 2024.



Photo 6: Small patch of native vegetation dominated by Phragmites. Photo: O,Hynam 2024.



Photo 7: Immature River red-gum regen deemed 'lost' as will likely require removal. Photo: D,Wall 2024.



Photo 8: Existing car park east of the historic bridge to be formalised. Photo: D,Wall 2024.



Photo 9: Existing access, no ground disturbance anticipated. No quantifiable losses. Photo: M,Cronin 2024.