CWHA
C W HENSTOCK AND ASSOCIATES
Consulting Engineers in Civil, Structural and Maritime Engineering

JHK and Associates Pty Ltd
trading as
C W Henstock and Associates

Aspire to Inspire

DOC: #24-024_SHRCC_SEE_RevB_250507

STATEMENT OF ENVIRONMENTAL EFFECTS

PROPOSED BOAT MOORING PLATFORM, MILLOO STREET BOAT RAMP, SWAN HILL

PROPONENT
SWAN HILL RURAL CITY COUNCIL

REPORT PREPARED BY:
C W HENSTOCK & ASSOCIATES

DOCUMENT STATUS:

Rev #	Authors	Description	Reviewer	Approved for Issue		
				Name	Signature	Date
A	SLM	Initial Release for LOC	SKW	P. Myooran	om.au" C= C W Henstock & Associates OU=Manager - Project Control CN=Sharon Molloy Location: Toowoomba	20.02.2025
B	SLM	Updated – with additional details & Crown Land's references. LOC consents.	SKW	P Myooran		07.05.2025

CONSULT AUSTRALIA
Member Firm

Address:
F10, 101 Rookwood Road, YAGOONA NSW 2199
Tel.: (61)2 9158 5411
Email: general@jhka.com.au

Web:
jhka.com.au
cwhenstock.com.au

EXECUTIVE SUMMARY

Swan Hill Rural City Council (SHRCC) is proposing to upgrade recreational boating facilities through the installation of a floating boat mooring system adjacent to the existing Milloo Street Boat Ramp to improve public access to the Murray River at Swan Hill. The subject site is Crown Reserve – Crown Waterway. The project is located on the Victorian side of the Murray River, approximately 500m-600m downstream of the existing Swan Hill Road bridge. Although the project is to be undertaken by SHRCC, Victoria, the works are primarily located within the bank and the waterway, below High-Water level of the Murray River and, therefore, require development approval under NSW planning regulations. A Development Application (DA) is therefore to be submitted to Murray River Council for relevant planning approval.

This Statement of Environmental Effects (SEE) has been prepared to accompany the DA submission to Murray River Council (MRC) and to accompany additional permit and approval applications to relevant authorities in NSW and Victoria. This SEE has been prepared in accordance with 'matters for consideration' under Section 79C of the Environmental Planning & Assessment Act 1979 (EP&A Act), on behalf of Swan Hill Rural City Council (SHRCC).

C W Henstock & Associates (CWHA) has been engaged by SHRCC to design the proposed boat mooring platform and associated structures including the floating pontoon system, five (5) pontoon support piles, debris deflector and concrete access pathway, abutment and concrete pad. The works also include proposed 300mm thick armour stone slope protection through the placement of armour stone along the slope alongside the proposed concrete walkway and access pontoons and armour stone scour protection around the embankment corner parallel to the mooring pontoon return upstream. Armour stone placement has been reconsidered from original concepts and reduced in scope to minimise potential impacts on existing native trees along the top of the embankment in the vicinity of the works.

To support the planning process, CWHA was also engaged by SHRCC to coordinate and engage relevant specialist consultants to undertake environmental impact assessments for the proposed works. As such, aquatic ecology assessment, removal of native vegetation assessment and Aboriginal cultural heritage due diligence assessments have all been completed to assess the potential impacts of the proposed works and to recommend, where relevant, any mitigation measures or offsets that may be required under current legislation and regulations as at January 2025. These assessment reports are appended in full to this SEE Report for reference.

In summary, the proposed works are permissible for the site given current land use zonings and permitted development and the works can be undertaken with no adverse impacts on Aboriginal cultural heritage or items of heritage significance. An Aboriginal Due Diligence Assessment has found that, in general, the location of the proposed works associated with upgrading the facilities for the boat ramp, is in an area that has already been heavily disturbed by the existing boat ramp and by works on associated park infrastructure, as well as natural erosion and inundation of the site. The desktop assessment concluded that there are no Aboriginal Cultural Heritage Places located within 200m of the works (the closest is 8km away) and field inspection confirmed the previous disturbances. No further assessment is required and a Cultural Heritage Management Plan is not required for the site or proposed works.

In relation to biodiversity, the works have been assessed as having minimal adverse impacts on aquatic ecology in the river and riparian zone with suitable mitigation measures available for identifying, capturing and relocation of any Murray Crays potentially located at the subject site prior to commencement of construction activities. The assessment undertaken by Marine Pollution Research Pty Ltd (MPR) found that the proposed works will have minimal adverse impacts on threated ecological communities or species within the waterway and riparian zone where the works are located. The floating pontoon system will provide some shelter and habitat for aquatic species within the waterway. Armour stone slope protection with irregular stone placement and sizes will provide embankment habitat in the riparian zone.

Any short-term impacts associated with construction activities can be mitigated through use of best practise and established construction methods including, but not limited to, the use of floating sediment containment booms, and if required, temporary coffer dam. Appropriate site controls for storage of materials above high water and within an appropriate area with sediment controls and bunding where required to control stormwater run-off and impacts on water quality.

Any existing large woody debris (LWD) within the waterway, on the riverbed or embankment, in the vicinity of the proposed works that is subsequently identified for removal, is proposed to be relocated within the waterway, immediately downstream or across the river in the vicinity of the works, in compliance with any nominated Fisheries requirements and with navigational and boating safety considerations.

In relation to existing native vegetation, the proposed works seek to minimise the removal of existing vegetation where possible. The impact of the proposed works was assessed to determine if the threshold is exceeded for biodiversity offsets and to establish that suitable biodiversity offsets are available for the site and proposed activities if required. The assessment of the revised layout with smaller embankment protection area, assessed impacts on the existing native vegetation at the site, and determined no loss of significant vegetation and therefore no requirement for biodiversity offsets. In summary, the location of the works does not have significant ground cover, with minimum impact on one (1) area of tree protection zone identified. The one tree protection zone (TPRZ) has been assessed as being impacted to 2.7% of the root zone. As per DEECA guidelines once the impact covers more than 10% of the root zone the tree is assessed as lost. Therefore, the final works do not impact on the tree enough for it to be assumed to be lost and no other trees are required to be removed to facilitate this so there is no trigger for Clause 52.17.

LOCATION OF PROPOSED BOAT MOORING PLATFORM & ARMOUR STONE PROTECTION

There are no adverse impacts for terrestrial or aquatic biodiversity and therefore, the proponent submits, no further biodiversity assessment or offsets are required. The works have been designed for compliance with relevant regulations.

The Applicant for the proposed works is Swan Hill Rural City Council.

Contents

List of Tables

List of Figures

1. INTRODUCTION

1.1. PROJECT BACKGROUND

Swan Hill Rural City Council is seeking planning approval for the installation of a boat mooring platform at Milloo Street, Swan Hill in association with the existing public boat ramp at the site. The purpose of the project is to provide an accessible floating boat mooring platform for all users to launch and retrieve boats from the Murray River, with a design that is compliant with relevant boating facility guidelines and Australian Standards, and planning requirements for the location. The Applicant for the proposed works is Swan Hill Rural City Council (SHRCC).

The majority of the works are located below the High-Water Mark and lie within the NSW border, requiring Development Approval from Murray River Council and permissions/ permits from relevant NSW authorities, under the NSW Planning system. Any additional approvals and permits for works located above the High-Water level will be applied for under the Victorian Planning systems under Swan Hill Rural City Council and relevant authorities.

1.2. PROJECT PURPOSE

The purpose of the project is for provision of a public '*water recreation structure*' connected to the existing '*boat launching ramp*' located adjacent to Milloo Street, Swan Hill in the Rotary Park *'recreation area'*. The objective is to provide an accessible (DDA compliant) floating boat mooring platform for recreational users to launch and retrieve vessels from the Murray River, with a design that is compliant with relevant boating facility guidelines and Australian Standards, and planning requirements for the location.

- The boat mooring platform works are proposed to consist of a concrete footpath leading to a floating pontoon walkway system immediately adjacent to the existing boat ramp and accessible from the existing trailer carpark area. The walkway leads down the boat ramp, connecting to a return floating pontoon system, extending beyond the toe of the boat ramp and returning upstream along the existing embankment, with the minimum capacity to accommodate two (2) vessels at low water levels, and up to five (5) vessels at high water levels, for vessels up to 9m LOA.
- The proposed boat mooring platform is intended to provide DDA compliant public access at 80% of water levels for the purpose of recreational boating activities in the Murray River.
- The boat ramp is a public facility currently maintained by SHRCC. It is intended that the proposed boat mooring platform would be the responsibility of SHRCC for construction, maintenance and upkeep.
- The proposed works also include placement of armour stone along the existing embankment in the immediate vicinity of the proposed pontoon mooring facility to mitigate scour and erosion effects on the eroded riverbank in this location.
- Existing use of the site is for public recreation. There is no proposed change in use.

The extent and form of the proposed works are shown on the accompanying engineering drawings prepared by C W Henstock & Associates (CWHA).

1.3. PURPOSE OF REPORT

This report has been prepared in accordance with the current Environmental Planning & Assessment Act (EP&A Act) 1979. The purpose of the Report is to identify potential impacts to the environment including significant adverse impacts to threatened species or ecological communities, items of

heritage and cultural value, community access and accessibility, and other significant adverse impacts that may trigger requirements for further investigation and assessment, in relation to the proposed development works as described within this report.

1.4. SCOPE, ASSUMPTIONS & LIMITATIONS

This Statement of Environmental Effects (SEE) Report has been prepared by CWHA for Swan Hill Rural City Council (SHRCC) to accompany relevant planning approval applications and documentation and may only be used and relied on for the purposes for which it is intended and as agreed under the scope of works for this project.

CWHA otherwise disclaims responsibility to any person other than SHRCC arising in connection with this report. CWHA also excludes implied warranties and conditions, to the extent legally permissible.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. CWHA has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by CWHA as described in this report. CWHA disclaims liability arising from any of the assumptions being incorrect.

2. PROPERTY DETAILS

The existing Swan Hill public boat ramp is located within the bank of the Murray River, on the Victorian side, approximately 600m downstream of the Swan Hill Bridge, in Rotary Park, approximately 35m east of adjacent Milloo Street, Swan Hill. The existing boat ramp, and site of proposed works, lies predominantly within the state boundary of New South Wales. Therefore, the riverbank and river bed are owned by NSW Crown Land ad classified as Crown Reserve & Crown Waterway. A portion of the works, associated with the construction of the concrete access walkway is located within the Victorian state boundary and within the Swan Hill LGA.

The waterway is Crown Waterway – Murray River and is identified as:

Crown Waterway – 179539721, Gaz 3 May 1918

The adjacent reserve is identified as:

Crown Description: Allotment 1C Section 21 A, Township of Swan Hill
SPI: 1C-21A\PP5747

3. PROPONENT

Swan Hill Rural City Council
45 Splatt Street
SWAN HILL VIC 2585

Project Name: Boat Mooring Platform – Milloo Street
Contact Name: Ms Michelle Grainger – Director Development & Planning
Contact Details: 03 5036 2333

4. DESCRIPTION OF PROPOSED DEVELOPMENT

4.1. OPTIONS CONSIDERED

In consultation with SHRCC, it is understood that the design approach for the proposed facility should adhere to the following requirements;

- Accommodation of min. two (2) vessels, each up to 9 meters long, at the proposed facility.
- Consideration of both low-water and high-water levels, including flood conditions.
- The purpose of the facility is to provide access for all users, to launch and retrieve boats including disabled individuals, from the Murray River.
- Ensuring compliance with disabled access standards, including DDA requirements such as ramps with a 1 in 14 slope accessible for 80% of the time.
- Design of suitable systems to mitigate scouring and erosion effects of the embankments adjacent to the existing boat ramp and the new pontoon system.
- Review of the extent of any proposed embankment protections to assess impact on native vegetation and aquatic habitats.
- Design of a debris deflector frame to provide adequate protection to the pontoon facility for any debris loading which may impact the pontoon during severe flood conditions.

Council has considered the option to 'do nothing' as well as two (2) basic accessibility options with two (2) types of pontoon systems with different configuration options to suit conditions at the subject site. The two (2) basic accessibility options and two (2) types of pontoon systems that have been considered, are summarised as follows:

1. **Accessibility Options:**
   i. Works are sited along the existing boat ramp with a compliant path (1 in 14 slope) leading to a pontoon system with an upstream return.
   ii. A separate pontoon system accessible from the trailer parking area with a footpath leading to a suspended walkway and platform, complying with AS1428.1 and AS3962 slope requirements.

2. **Pontoon System Types:**
   i. FRP decking on an aluminium-framed pontoon system with Rota moulded flotation modules (hollow or foam-filled). The approximate draft for this option is 200mm, whereas the vessel draft is 900mm, thus the location of the pontoon system for this option will be based on the keel clearance of the vessel.
   ii. Concrete decked pontoon system with reinforced concrete beams and HDPE wrapped ethylene flotation modules (filled). The approximate draft for this option is 900mm, whereas the vessel draft is 900mm, thus the location of the pontoon system for this option will be based on the keel clearance of the vessel or pontoon depending on which of the two are located towards the embankment.

Based on the design consideration and accessibility and pontoon options summarised above, the following concept design options were reviewed:

a) Do Nothing

The "do nothing' option must be considered for public infrastructure projects. In this case, Council has assessed that doing nothing would not meet Council's intent to provide compliant, convenient and safe boating access for recreational users of the waterway.

Not doing the works would not significantly impact current users but the proposed works will improve access for other users and reduce undesired use of the embankment for casual berthing and access during launch and retrieval activities.

b) Option 1A & 1B

Option 1 – Type A: Concrete pathway leading to an FRP decked, aluminium-framed pontoon system with an upstream return, supported laterally by Structural Steel CHS stability piles. The pontoon system accommodates a double mooring arrangement. Armour stone embankment protection along upstream embankment, and slope protection along existing boat ramp and proposed concrete and pontoon accessway adjacent southern (upstream) side of boat ramp, and northern (downstream) embankment.

Option 1 – Type B: Concrete pathway leading to an FRP decked, aluminium-framed pontoon system extending along the existing boat ramp with an upstream return, supported laterally by Structural Steel CHS stability piles. The pontoon system accommodates a single mooring arrangement on the riverside. Armour stone embankment protection along upstream embankment, embankment along existing boat ramp and proposed concrete and pontoon accessway, immediately adjacent southern (upstream) side of boat ramp.

c) Option 2

Option 2 – Type A: Concrete pathway to a suspended aluminium-framed FRP decked walkway and gangway, leading to an FRP decked aluminium framed pontoon system close to the embankment, supported laterally by Structural Steel CHS stability piles. The pontoon system accommodates a single mooring arrangement on the riverside. Armour stone protection along southern (upstream) and northern (downstream) embankments.

Option 2 – Type B: Concrete pathway to a suspended aluminium-framed FRP decked walkway and gangway, leading to an FRP decked aluminium framed pontoon system within the waterway, supported laterally by Structural Steel CHS stability piles. The pontoon system accommodates a double mooring arrangement. Armour stone protection along southern (upstream) and northern (downstream) embankments.

d) Option 3

Concrete pathway leading to a concrete decked pontoon system with HDPE wrapped ethylene floats, with an upstream return, supported laterally by Structural Steel CHS stability piles. The pontoon system accommodates a double mooring arrangement.

e) Option 4:

Concrete pathway to a suspended aluminium-framed FRP decked walkway and *gangway***,** leading to a concrete decked pontoon system with HDPE wrapped ethylene floats, located within the waterway, supported laterally by Structural Steel CHS stability piles. The pontoon system accommodates a double mooring arrangement.

f) Preferred Option

Having regard to options considered, Council has determined that ***Option 1 Type B (1B)***, provides the best value for money and greatest longer-term benefit for the community. Option 1B was then assessed to determine impacts of potential embankment protection works and initial concepts were revised to reduce the extent and layout of armour stone placement to mitigate impacts and potential loss of native vegetation in the form of large trees along the embankment.

Advantages	Disadvantages
• Provides suitable and stable DDA compliant access for 80% of water levels. • Quick construction and installation of pontoons • Cheaper cost of production of pontoon and piling • Cheaper construction costs for pontoon piling as could be undertaken from existing boat ramp • Smaller debris deflector • Closer to the shore, therefore, minimises occupation of navigable waterway in the main river channel and provides ease of access during launch and retrieval of vessels.	• Works would require closure of the existing boat ramp closure during construction of pontoon and armour rock seawall • Earthworks are required for construction of the concrete pathway & concrete pad and for shaping the bank and founding the armour rock embankment protection works. • Pontoon returns upstream and is susceptible to damage by debris hitting the frame laterally

4.2. DESCRIPTION OF WORKS

4.2.1. Summary

The proposed works are shown in the accompanying engineering drawings prepared by C W Henstock & Associates as follows (***Refer to Appendix 2***):

Drawing #	Rev	Drawing Name	Date
24/024-S00	1	Top view of proposed layout	15.04.2025
24/024-S01	3	Proposed Layout Plan	15.04.2025
24/024-S01A	1	Proposed cast in-situ concrete slab & precast concrete panels layout plan	15.04.2025
24/024-S01B	1	Proposed cast in-situ concrete slab & precast concrete panels Sections	15.04.2025
24/024-S01C	1	Proposed Pontoon System Layout Plan	15.04.2025
24/024-S02	3	Section Sheet 1 (*Elevations at Low Water level*)	15.04.2025
24/024-S02A	2	Section Sheet 2 *(Elevation at High Water Level & 66.000 AHD)*	15.04.2025
24/024-S02B	2	Section Sheet 3 *(Elevation at Water Level 68.000 AHD)*	15.04.2025
24/024-S02C	2	End Elevations – view from river end	15.04.2025
24/024-S02D	2	End Elevations – view from river end *(68.000 & 66.000 AHD)*	15.04.2025
24/024-S03	1	Section Sheet 1 (0+010.000-0+020.000)	15.04.2025
24/024-S03A	1	Section Sheet 2 (0+030.000-0+040.000)	15.04.2025
24/024-S03B	1	Section Sheet 3 (0+050.000)	15.04.2025
24/024-S03C	1	Section Sheet 4 (0+055.000)	15.04.2025
24/024-S05	1	CONCRETE PATHWAY PLAN & SECTION	15.04.2025
24/024-S50	1	PONTOON SYSTEM GENERAL ARRANGEMENT	15.04.2025
24/024-S100	1	Embankment Protection & Vegetation Layout Plan	15.04.2025
24/024-S101	1	Embankment Protection Section Sheet 1 (E0+010.000-E0+020.000)	15.04.2025
24/024-S105	1	Embankment Protection Typical Details (*Armour Stone Scouring Protection*)	15.04.2025
24/024-S106	1	Embankment Protection Typical Details (*Armour Stone Slope Protection*)	15.04.2025
24/024-SK01	0	Proposed Sediment Control Plan	17.12.2024

4.2.2. Detailed Description

Concrete Walkway & Pontoon System

- Construction of a new boat mooring platform consisting of a floating aluminium framed FRP deck pontoon system, with foam-filled flotation modules, which will be laterally supported by a total of five (5) structural steel CHS restraining piles. The pontoon system will commence from the abutment at RL67.2m, and lie parallel to the existing boat ramp and will be approximately 40.187m long, 1.95m wide, overlying the proposed concrete pad to the low water level of approx. RL 64.0 and extending into the waterway, with the pontoon units returning upstream, generally in alignment with the existing riverbank at approximately 35°, off the main alignment, for a distance of approximately 20.00m, with a width of 1.95m.
- The pontoon system accommodates a single side mooring arrangement, providing mooring space for two (2) no. recreational vessels at low river levels and up to five (5) vessels at high water levels. The approximate draft of the proposed pontoon system is 130mm, on its own weight, in the river. Design vessel draft is approximately 900mm.
- The pontoon system will feature a debris deflector at the upstream head.
- New concrete walkway with landings at 9m intervals, will consist of cast in-situ concrete with 1:14 slope alongside the existing boat ramp. The proposed concrete walkway, abutment and concrete pad will require excavation alongside the existing boat ramp to achieve the required DDA compliant slope of 1:14 and required width of 2.8m, and include a low retaining structure along the slope side adjacent to armour stone slope protection.
- It is proposed to have precast concrete panels below the nominated abutment to support the pontoon system at low water levels to a length of 28.9 metres. Part of these precast panels will act as vertical retaining wall against the sloping ground on south-eastern end.
- The original boat ramp in this location was widened and extended under approved construction works in 2018. Excavation and ground works in the vicinity at that time included works to the boat ramp site and adjacent car park. There are no new works proposed for the actual boat ramp with this proposal. There are no other works proposed for the adjacent carpark or parklands at this site.

Armour Stone Slope & Scour Protection Works – Embankment area

- The proposed armour stone slope protection and scour protection works include:
  - A proposed 300mm thick armour stone slope protection be placed along the side of the proposed cast-in-situ and precast concrete slab, as indicated in the Proposed Layout Plan, (***Dwg 24/024-S01, Rev 3, and Dwg 24/024-S106, Rev 1).***
  - The armour stone embankment scour protection is proposed to roughly 900mm thick with constant stone batter slope of 1 to 1.5 (vertical to horizontal) and is to be founded a minimum 500mm below RL 63.0, with underlying geotextile fabric. It is noted that RL 63.99 is presumed to be the toe level of the boat ramp as shown on the Proposed Layout Plan (refer ***Dwg 24/024-S01, Rev 3, and 24/024-S105, Rev 1)***
- The embankment works will require minor excavations and shaping of some areas of the embankment to achieve 1:1.5 slope. The Works will then involve placement of geotextile fabric along and across the embankment with placement of armour stone on top.
- Minor excavation of the riverbed will be required for placement of the founding armour stone for the toe of the embankment, nominally at Low Water Level and in line with the design level of the toe of the boat ramp.
- It has been considered that the reduced scope of embankment works, from the extent initially considered, will not require the loss or removal of large native trees within the embankment

zone as either direct or consequential loss associated with the proposed works. Native vegetation assessment was undertaken to assess any potential adverse impacts, and any biodiversity impacts from potential loss of native vegetation. (***Refer Appendix 6)***

- Relocation of existing LWD immediately upstream of the proposed location of the pontoon mooring system may be required. It is proposed to relocate the existing woody debris within the waterway in the immediate vicinity of the proposed works. This complies with mitigation measure nominated under the Aquatic Ecology Assessment undertaken by MPR for the proposed works. ***(Refer Appendix 3***)

Design Considerations

The design of the proposed floating facility has considered:

- DDA compliance requirements in slope and width permanently on the fixed structures.
- DDA compliance requirements in slope and width for 80% of the time, based on nominated high and low water levels for the river in this location.
- Consideration of both low-water and high-water levels for access.
- Pontoon stability piles are designed to keep the pontoon in position for flood conditions at RL68.00.
- Design of a debris deflector frame to provide adequate protection to the floating facility for any debris loading which may occur during severe flood conditions.
- The design life of the proposed facility was considered to be 25 years, in accordance to AS4997, for a small craft facility.
- Design to accommodate to moor 2 vessels at low water and up to 5 vessels at high water. The maximum length of vessels is considered to be 9m.
- Ensuring that adequate keel clearance of 0.6m is allowed for based on Clause 3.2.1.2 of AS3962 for a 300mm keel clearance plus an allowance for future silt deposition.

4.3. CONSTRUCTION DETAILS

4.3.1. Proposed Construction Approach

CWHA considered the following approach, however this will need to be confirmed and updated by the nominated Contractor, prior to commencement of works on site.

- Concrete walkway and abutment – alongside the top of boat ramp.
  - Concrete walkway will be 2.3m wide and approximately 13.2m long, with the slope 1:14
  - Cast in-situ concrete, with excavation of ground level of up to approximately 200mm immediately adjacent southern (upstream) edge of existing boat ramp, to achieve required clear width and depth for formwork and concrete casting.
  - Walkway will feature aluminium ball tube handrail system – fixed, along both sides of the walkway.
  - Abutment is to be cast in-situ with the top level at 67.3 m AHD. The bottom level of the abutment will be 66.384m AHD

- Concrete pad, under pontoon system – alongside southern (upstream) edge of existing boat ramp
  - Placement of precast concrete panels which will require excavation of the ground immediately adjacent the existing boat ramp (upstream side) from abutment along the length of the ramp to the toe of the ramp (approx. 30m in length), some subgrade work and compaction will be involved.
  - Precast panels are to be used below the water level of 66.6m AHD.

  - Excavation is likely to be undertaken by small excavator with excavated material to be disposed of in compliance with appropriate waste disposal guidelines. Some of the excavated material will be used as backfill behind the top of armour stone embankment protection walls.

- Piling
  - Five (5) no. open ended Structural steel Circular Hollow Piles will be driven into the riverbed. Piles adjacent to the boat ramp can be driven from a pile driver positioned on the existing boat ramp. Other piles can be driven from a barge mounted pile driver located in the waterway. The barge can be launched from the boat ramp.

- Pontoons
  - Aluminium framed Pontoon units, connections, etc will be pre-fabricated and transported to site and lifted into place. Pile brackets will be lowered over the installed piles and connected to the pontoon units by bolts.
  - Pontoon walkway alongside the boat ramp will feature a fixed ball tube handrail system along both sides with the ramp side for a length of 11.2 m from the top of the pontoon system. This will change to a removable handrail system for a length of 23m to allow for use of pontoon for berthing at higher water levels.

- Armour Stone Slope Protection:
  - To be placed along side of the concrete walkway and concrete pad and pontoon access system
  - Placement of 300mm thick armour stone for slope protection as indicated on the accompanying drawings

- Embankment scour protection as indicated immediately adjacent boat ramp and pontoon mooring system.
  - Geotextile material to be placed over embankment prior to placement of armour stone. Armour stone delivered to site by small trucks and loaded onto barge via existing boat ramp. Armour stones are then lifted from barge, placed and stacked from toe up.
  - Shaping of the embankment will be required to achieve required slope which will involve excavations in some areas and placement of excavated fill in others.

- Stockpile and work compound site
  - Works compounds are used to store construction materials, plant and equipment and such, that are typically used during the proposed construction works.
  - A suitable stockpile/ compound area can be provided within the existing carpark and reserve area, suitable secured above high water and adequate erosion and sediment controls.

4.3.2. Construction Period & Hours

It is proposed that the works will be undertaken by a contractor on behalf of Swan Hill Rural City Council (SHRCC). The tender has not yet been advertised or awarded. The works will be undertaken as shown on the accompanying plans.

It is expected that the works on site will typically occur over a 2-3 month period and with that period to be confirmed once relevant approvals and tendering processes have been completed.

Work hours will be in compliance with Council requirements and restrictions. Generally proposed to occur:

- Monday to Friday 0700 to 1800
- Saturdays 0800 to 1300
- No work on Sundays or Public Holidays, unless otherwise stipulated.

4.4. OPERATIONAL & MANAGEMENT DETAILS

The existing boat ramp and proposed floating boat mooring pontoon system are design and intended for public use. The boat ramp is available for public use all year through, 7 days a week. The ramp and pontoon mooring system may be closed to public access during times of flood, as per Swan Hill Rural City Council's operation and management procedures in relation to public assets.

There are no changes to adjoining public car parking arrangements for private vehicles and boat trailers.

Public operation of the boat ramp facilities does not require the ongoing presence of Council staff for day-to-day operation or use of the boat ramp facility and the facilities will be maintained in line with Council's standard practices in maintenance of public recreational assets. Swan Hill Rural City Council will be responsible for maintenance of the boat ramp and ensuring maintenance is undertaken as recommended for the floating boat mooring pontoon system.

The volume of vehicle and vessel movements may increase as a result of the installation of DDA compliant access associated with the boat ramp. However, it is not anticipated to increase significantly in volume as a result of the proposed works and timing and movements of vehicles and vessels can be reasonably expected to follow typical patterns of use.

It is anticipated, as is the case with current usage, the boat ramp and pontoon are used by private recreational, trailer-able vessels up to 9m in length. There is no change to the current or proposed usage of the public facilities.

5. PROPERTY & SITE DETAILS

5.1. SITE LOCATION

The existing Swan Hill public boat ramp is located within the bank of the Murray River, on the Victorian side, approximately 600m downstream of the Swan Hill Bridge, in Rotary Park, approximately 35m east of adjacent Milloo Street, Swan Hill. The existing boat ramp, and site of proposed works, lies predominantly within the state boundary of New South Wales. Therefore, the riverbank and river bed are Crown Reserve & Crown Waterway, referenced as 179539721. A minor portion of the works, associated with the construction of the concrete access walkway is located within the Victorian state boundary and within the Swan Hill LGA.

The location of the existing boat ramp and positioning (layout and general arrangements) of the proposed pontoon and embankment works are shown on the following plans as appended to this report:

- Detail & Contour Survey Plan, as prepared by TSS Total Surveying Solutions, Dwg #240364.9001, Rev 00, dated 13/06/2024 (***Refer to Appendix 1***)
- Drawing prepared by CWHA, issued on 15 April 2025 'For Approval' (***Appendix 2***) as follows;

Drawing #	Rev	Drawing Name	Date
24/024-S00	1	Top view of proposed layout	15.04.2025
24/024-S01	3	Proposed Layout Plan	15.04.2025
24/024-S01A	1	Proposed cast in-situ concrete slab & precast concrete panels layout plan	15.04.2025
24/024-S01B	1	Proposed cast in-situ concrete slab & precast concrete panels Sections	15.04.2025
24/024-S01C	1	Proposed Pontoon System Layout Plan	15.04.2025
24/024-S100	1	Embankment Protection & Vegetation Layout Plan	15.04.2025
24/024-SK01	0	Proposed Sediment Control Plan	17.12.2024

- *Figures 1 & 2* show the site location in context, as follows:

Figure 1 - Location Map - Subject Site – Milloo Street Boat Ramp
*(**Source**: Six Maps, NSW, as accessed July 2024)*

Figure 2 - Location Map - Subject Site – Existing Milloo Street Boat Ramp
*(**Source:** Google Earth, as accessed 25/07/2024)*

5.2. SITE DESCRIPTION

The Murray River at Swan Hill is a relatively straight section of river with a width of approximately 100m and depths ranging from 1m to 3m with a few deeper holes within the channel.

The existing boat ramp is located in riverfront park land area, crown reserve, on the riverbank of the Murray River (Victorian side). The river bank and riparian zone in this location are highly modified through previous development within the riverside corridor with the development of parklands, walkways, local road and parking infrastructure. The original boat ramp was built in the 1970's with ongoing use for recreational purposes, and the extension of the original boat ramp occurred around 2018 along with construction formalising the adjoining car park. The whole site is public recreation area with existing infrastructure and amenities.

5.2.1. Existing Use

The subject site and existing boat ramp are located in public reserve, zoned Public Park & Recreation Zone (PPRZ) under Swan Hill Planning Scheme – Local Provision, and Natural Waterways (W1) under Wakool LEP 2013. Public recreational structures including maritime structures are permitted in these zones.

The site is used for public recreation activities both on land and on the waterway. The surrounding area consists of public reserve area. Private residences are located in the adjacent street network and are not impacted by the siting of the proposed works. Access to and from the location of works is through local public roads and public reserve.

The existing boat ramp provides access to the Murray River for the boating public for activities including fishing and water-based activities. Existing structures in the subject area include:

- the existing concrete boat ramp, which was widened and extended in 2018/ 2019 with consent,
- public sealed car park area which accommodates private vehicles with boat trailers
- sealed public access roadway
- sealed public walkway through the reserve along the embankment, and public amenities.

There is no demolition of existing structures planned as part of the proposed works.

As noted, previous development activity in 2018 and 2019, resulted in the extension and widening of the existing boat ramp to improve the amenity, and construction of the adjoining sealed carpark. Refer to ***Figure 3*** below.

Figure 3 – Existing Boat Ramp & Parking Facilities, Milloo Street Boat Ramp
*(**Source:** Google Earth, as accessed 25/07/2024)*

There are no changes to the current use of the reserve and boat ramp and no adverse changes to access. The proposed works seek to enhance accessibility for all recreational vessel and waterway users through provision of accessibility compliant access for loading and unloading of passengers and for launching and retrieval of recreational vessels. The existing boat ramp is shown in ***Figures 4 & 5*** as follows:

Figure 4 – Toe of Existing Boat Ramp Looking downstream (northerly)

Figure 5 – Existing Boat Ramp looking north-east

5.2.2. Natural features & topography:

- The site is located in relatively flat alluvial topography, on the western bank of the Murray River. The existing Swan Hill Boat Ramp is located approximately 35m to the east of Milloo Street.
- Ecological vegetation class is '*Riverine grassy woodland*' with immature and mature trees. The subject site has previously been described as highly modified and degraded Riverine Grassy Woodland where the over-storey consists of River Red Gum and the understorey consists of mown introduced grass species. Any native understorey appears limited to a narrow strip along the top edge of the river bank.
- The terrestrial riparian edge is dominated by river red gums providing habitat and contributing the riverbank stabilisation.
- Embankment consists of bare alluvial silty clay with quartz sandstone, pebbles and ironstone fragments, with bare ground being largely due to pedestrian traffic, erosion and steeper embankment sections – Refer to ***Appendix 10 for Site Photos*** *(indicative images below*).

- In the vicinity of the boat ramp, the current riverbank levels are generally less than 3.5m high and roughly sloped at 50^{O} grade
- Medium and large trees are located along and behind the crest of the riverbank and flanking the existing boat ramp. Root structures are exposed along the embankment and surfaces are relatively bare of ground of cover.
- DEECA (VIC) – NatureKit - Ecological Vegetation Class (2005) shows area as Riverine Chenopod Woodland 103 – which is riverine grassy woodlands
- Refer to ***Figures 6 & 7*** as follows with mapping images from DEECA (VIC) *(No NSW Mapping for top of embankment*)

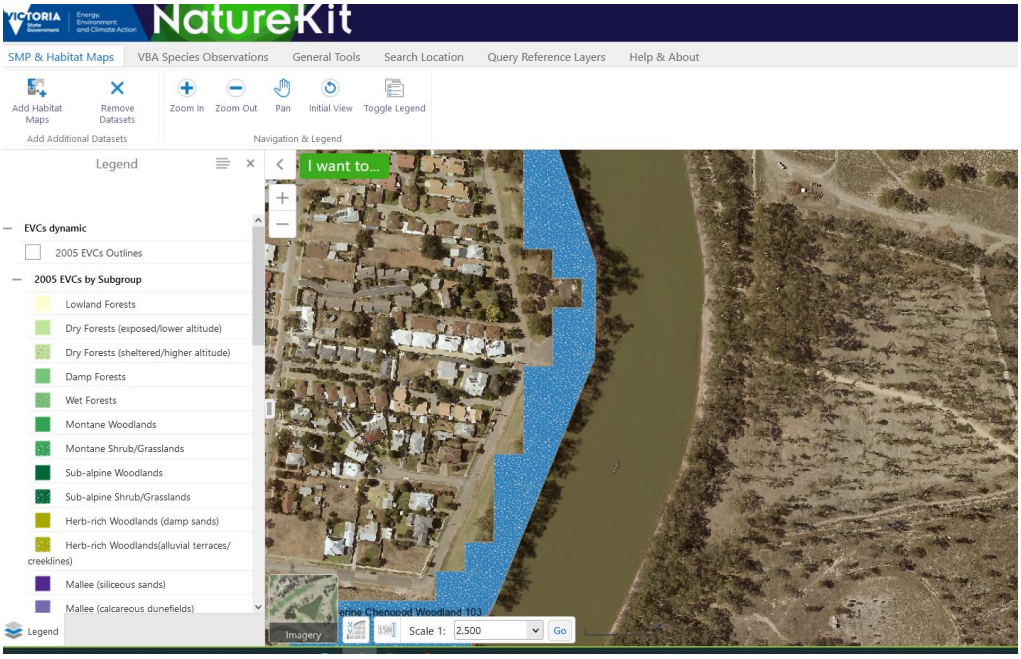

Figure 6 – EVC - Riverine Grassy Woodlands/Forests
(Source: https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit, viewed 16/12/2024)

Threatened sensitive and non-sensitive fauna – NONE are currently nominated for the site. The Site is located outside of nominated area and suitable mitigation during construction to minimise impacts on upstream and further downstream parties. No threatened Flora is indicated on mapping.

Figure 7 – VBA Threatened Fauna
(Source: https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit, viewed 16/12/2024)

5.2.3. Site Conditions

The proposed works will be installed alongside the existing boat ramp and on the western bank on the upstream direction of the Murray River.

The proposed mooring system will be predominantly subjected to the water flow of the river at different levels of the river. At higher levels of water, especially during heavy rainfall, the water current will carry debris.

Apart from the water current and debris, the pontoon will be subjected to wind acting on the vessels moored against the pontoon and on pontoons when there are no vessels moored.

The comprehensive analysis of water levels recorded by SHRCC from 1974 to 2023 were provided to CWHA. Following the analysis of the measurements made on site and the data provided, CWHA

determined that the design should account for a low water level of 64.4m AHD. Based on the discussion CWHA had with SHRCC, CWHA used the high-water level of 67m AHD.

The river's flow velocity was determined to be 1m/s using data on river levels and the cross-sectional area of the riverbed. The design of the pontoon options and the armour rock seawall took into account of this flow velocity

Based on the Geotechnical report, referring to the 1:250,000 series geological map of Swan Hill (Victoria Department of Natural Resources and Environment, SI 54-16, Edition 2, May 1997), the site is underlain by quaternary then tertiary alluvium. The online GeoVic platform by resources Victoria indicates that the alluvium is underlain by Loxton Sand (sedimentary bedrock), which comprises "quartz sandstone: well sorted, fine to medium grained, well bedded, abundant lag horizons containing shelly fossils, pebble beds, rounded ironstone fragments, some heavy mineral concentrations, dissected or remobilised strand lines". The river bed consists of the alluvial silty clay which is of very soft to soft strength up to 2m, based on the DCP test results. The alluvial silty clay was underlain by silty sand of medium dense relative density for approximately 7m depth. Sandstone and conglomerate bedrock were encountered approximately at 9 m depth.

5.3. SITE INVESTIGATIONS

5.3.1. Ecological Survey – Aquatic/ Riparian

The aquatic riverine habitats are the main river channel and the sloping riparian edge flood zone. The terrestrial riparian edge is dominated by river red gums providing habitat and contributing the riverbank stabilisation. An aquatic ecological assessment was undertaken by Marine Pollution Research Pty Ltd (MPR) in August -September 2024. MPR's report, finalised in December 2024, is appended to this document as ***Appendix 3***

MPR's report notes that NSW DPI classifies the fish community of this section of the river as "*very poor*", with "*low habitat variation and lack of complex habitat through this section of river. Macrophytes are not common for this part of the river. The sloping mud bank riverbanks do provide some fallen trees and exposed roots with washed up debris providing some valuable shelter and habitat and some burrow shelter habitat for Murray Crayfish. It is noted that there are long river edge sections through this portion of the river that have an overall low Large Woody Debris (LWD) presence."*

It is noted that the Murray River is listed as an Endangered Ecological Community area (EEC) which is based on provision of suitable habitat for a variety of aquatic fauna and threatened species including Tandanus – eel tailed cafish and Ambassis agassizii Olive Perchlet. However, the BioNet Atlas Database lists no aquatic species within a 10km x 10km area around Swan Hill. It is also additionally noted that there is a possibility of Murray Crayfish habitat at the site, and that crayfish have been reintroduced upstream of the subject site. A review of the presence of threatened and endangered species is provided in the accompanying ***Aquatic Ecology Assessment Report***, appended in full as ***Appendix 3***

In summary, the ecology assessment report concludes that:

"whilst the Murray River in this section of the river adjacent the township of Swan Hill does not provide suitable permanent habitat for listed threatened species, it does provide crucial connectivity habitat for species transiting between suitable shallow river, floodplain and wetland habitats up and down stream of this section of river,…"

"As such the river section provides valuable food and larval dispersal connectivity habitat and

provides valuable temporary shelter habitat during prolonged drought periods. To this end the most useful actual, or potential habitat features of this portion of the river are the combination of deep holes plus river snags and other LWD along the banks to provide resting and shelter habitat for species transiting the river between more suitable feeding and breeding river meander shallows and wetland habitats up- and down-stream of this section of river. However, as noted in ***Figures 4,8 & 9****, there are some long river edge sections through this portion of river that have an overall low LWB presence, undoubtably contributing to the very poor" fish community habitat rating for this section of river."*

In assessing the impacts of the proposed works, the Aquatic Ecology Assessment finds that:

- The proposed pontoon will essentially lie in water depths of approximately 1.5m and that

  "Given the varying river depths and flow rates and the generally turbid nature of the river waters, it is unlikely that there will be established inshore submerged or emergent macrophyte beds that could be lost to placement of the shore connection ramp and it is also expected that there would be no macrophytes in the deeper offshore waters under the proposed pontoon jetty. The pontoon structure could in fact add some shading habitat complexity for fish that prefer overhanging snags and fallen tree habitat - such as the Murray Cod."

And

- The proposed rock armouring will provide *"instream and riparian bank stabilisation from further erosion (due to river flows and present boat traffic) it will have a beneficial impact in lowering overall river water turbidity and smothering from mobilised eroded banks and the placement of the rock boulder armouring would also add habitat complexity for riparian and edge aquatic fauna."*
- However, placement of the armour stone protection could also result in minimal loss of clay bank potential burrow habitat for Murray Crayfish which has recently been reintroduced further upstream.
- Suitable mitigation options are available to offset the potential habitat loss, with placement of any river bank debris that are required to be removed from the embankment to facilitate the works, *"to be re-purposed as Large Woody Debris downstream of the boat ramp and pontoon facility as suitable offset for the loss of clay bank habitat to rock armouring."*
- Suitable mitigation measures are also proposed within the Aquatic Ecology Assessment to mitigate any impacts during construction activities for the proposed works. Refer to *Section 3.2 of the Aquatic Ecology Report* in ***Appendix 3***

5.3.2. Native Vegetation

NR Links was engaged by C W Henstock & Associates (CWHA) on behalf of Swan Hill Rural City Council (SHRCC) in August 2024 to provide an assessment of the impact of the proposed works on native vegetation in the area and the proposed removal of native vegetation. Field works was undertaken on 9th October 2024.

The assessment undertaken by NR Links identified that the site is mapped to be a mix of EVC 103 Riverine Chenopod Woodland in the Murray Fans Bioregion, which is listed as having Endangered Conservation Status. The initial assessment undertaken was based a wider preliminary concept looking at the largest scope of works which included potential embankment protections extending both upstream and downstream of the boat ramp. At the time of the field work, there were many large trees along the waterway which were identified as being impacted by the extent of this proposed works. Therefore, a review of the preliminary concept was undertaken and a revised

concept with a reduced embankment protection zone to reduce the extent of the impact on native vegetation was adopted for design development.

The impact assessment undertaken by NR Links identified the following:

- The concrete access path and concrete pad proposed to be constructed adjacent to the existing concrete boat ramp will result in the removal of a few planted native garden cultivars including:
  - Planted prostrate Eremophila sp.
  - Chrsocephalum apiculatum
  - Poa labillardierei
  - Acacia cognata prostrate hybrid
- Trees #1 & #2, Eucalyptus camaldulensis, located at the southern end of the boat ramp are unlikely to be impacted or lost due to placement of the pontoon access and concrete pad and as a result of excavations associated with placement of the armour stone embankment protection, based on the reduced extent of proposed armour stone placement.
- An additional dead tree lies on the embankment within the riparian zone and into the waterway (and identified by the Aquatic Ecology Survey as Large Woody Debris (LWD)) which may require relocation to accommodate the proposed pontoon mooring system. (It is proposed to relocate this LWD downstream of the boat to retain it as habitat).
- Final assessment of the proposed works identified that the tree protection zone (TPRZ) impacted to 2.7% of the root zone. "*As per DEECA guidelines once the impact covers more than 10% of the root zone or as advised by an arborist the tree must be lost because of the works. The final works now do not impact on the tree enough for it to be assumed to be lost and no other trees are required to be removed to facilitate this so there is now no trigger for Clause 52.17*."
- The full native vegetation assessment report will be appended, once finalised, as ***Appendix 6*** and demonstrates that any native vegetation loss has been avoided.
- It has already been established that, if required based on the final assessment, Biodiversity Offsets would available for this site and proposed works but are not currently required based on the extent of the proposed works.

5.3.3. Aboriginal Cultural Heritage

Austral Archaeology was engaged by C W Henstock and Associates (CWHA) on behalf of Swan Hill City Council (SHRCC) in July 2024 to provide Aboriginal Cultural Heritage Due Diligence (ACHDDA) for the proposed upgrades to the Milloo Street boat ramp associated with Parcel 1C~21A\PP5747 at Milloo Street, Swan Hill, Victoria (Vic) [Activity area]. The full report is attached as ***Appendix 4*** and the AHIMS report is attached as ***Appendix 7*** for reference.

NSW and Victorian Acts and Regulations prohibit the destruction or disturbance of any Aboriginal cultural heritage with Victoria or NSW without appropriate management plans and / or permits. Due diligence assessment was undertaken by Austral Archaeology to determine if further assessment and/ or Cultural Heritage Management Plans were required, with particular focus on the proposed embankment protection works and concrete walkway which require some excavation and shaping of the existing embankment.

The desktop assessment undertaken identified that there were no Aboriginal Cultural Heritage Places (ACHPs) located within 200 meters of the study area, with the closest one being located 8 kilometres away from the activity area. The desktop assessment identified that there was a levee constructed on a portion of the activity area in the late 1800s, and that the original boat ramp was constructed in the 1970s.

To ground-truth the desktop assessment, a site visit was undertaken on 22 August 2024 by Madelaine Firth (Archaeologist & Heritage Advisor, Austral). The site inspection was undertaken to determine the landform on which the activity area was formed and to determine whether there had been significant prior ground disturbance.

In general, the site inspection confirmed the desktop assessment that the location of the proposed upgrades to the boat ramp was in an area that had already been heavily disturbed by the existing boat ramp and associated park infrastructure as well as natural processes, such as severe erosion.

The activity area assessed by Austral Archaeology in relation to Aboriginal Cultural Heritage Due Diligence is shown on the supplied map below:

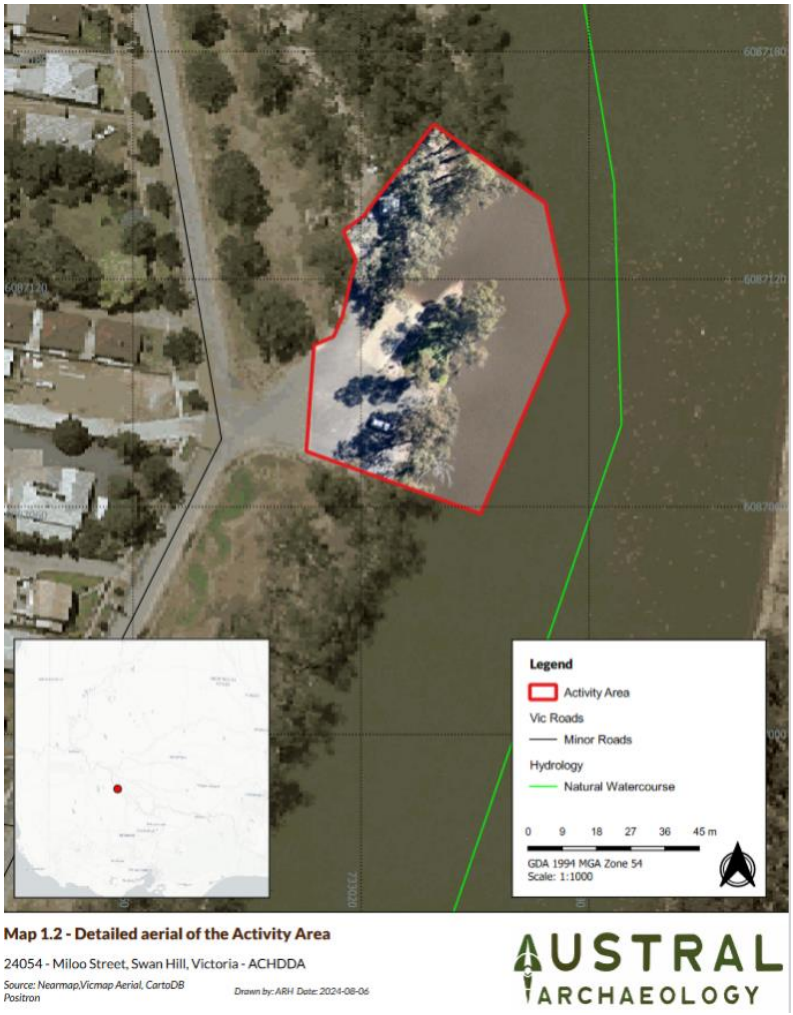

Figure 8 – ACHDDA assessment area – proposed site of works

The following tasks (methodology) were undertaken by Austral Archaeology as part of this Aboriginal Cultural Heritage Due Diligence Assessment (ACHDDA):

- Identification of the Environmental factors within the activity area which includes but is not limited to geomorphology, geology, and hydrology.
- A search of the Victorian Aboriginal Heritage Register (VAHR) database. This confirms the nature of any Aboriginal cultural values which have been recorded in the study area. This search also highlights objects and places of significance in the immediate vicinity and provides previously produced reports and studies of relevance.
- A search for items or places of Aboriginal significance on non-statutory heritage databases. These include the Register of the National Estate and the National Trust.

- Summary of the relevant reports and studies identified in the VAHHR database and summary of the ethnohistory of the local Aboriginal Community.
- Site inspection to confirm the landforms and identify the extent of the past disturbance to the activity area.

Based upon the outcome of this ACHDDA, further assessment is not necessary. As such the project may proceed with caution. The following recommendations apply:

1. The proposed works being conducted as part of the upgrades to the Milloo Street boat ramp are considered to be a high-impact activity under the Act and the Regulations; however, due to the significant ground disturbance described above means that the Activity Area is no longer with in an area of sensitivity. Therefore, a Cultural Heritage and Management Plan (CHMP) is not required for the proposed works.
2. Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist or heritage advisor. If the find is determined to be an Aboriginal object, the archaeologist will provide further recommendations. These recommendations may include notifying First Peoples - State Relations and Aboriginal stakeholders.
3. Aboriginal ancestral remains may be found in a variety of landscapes in Victoria, including middens and sandy or soft sedimentary soils. If any suspected human remains are discovered during any activity, you must:
    a. immediately cease all work at that location and within 30 metres and do not further move or disturb the remains.
    b. notify the Victorian Police and State Coroner's office immediately. If there are reasonable grounds to believe the remains are Aboriginal, the Coronial Admissions and Enquiries hotline must be contacted immediately on 1300 309 519. If the remains are confirmed to be Aboriginal Ancestral Remains, the person responsible for the activity must report the existence of them to the Victorian Aboriginal Heritage Council in accordance with section 17 of the Aboriginal Heritage Act 2006.
    c. not recommence work at that location unless authorised in writing by the Victorian Aboriginal Heritage Council

5.3.4. Geotechnical

Geotechnical investigation was undertaken by JK Geotechnics, with field work carried out on 28th May 2024, to assess the subsurface conditions at the site of the proposed works. The detailed geotechnical report was received July 2024. The purpose of the geotechnical investigation was in relation to the proposed earthworks associates with the concrete walkway and embankment scour protections.

The purpose of the investigation was to assess the subsurface conditions at one borehole (BH101) located towards the toe of the existing boat ramp, and to assess the subsurface conditions at two (over-water) shallow boreholes (BH102 & BH103) located a short distance into the river. An additional land-based borehole (BH104) was also completed for a previously proposed boat mooring platform option. Refer to ***Figure 9*** below, and appended report for locations of boreholes and investigation report.

The site is located in relatively flat alluvial topography, on the western bank of the Murray River. The existing Swan Hill Boat Ramp is located approximately 35m to the east of Milloo Street.

The existing boat ramp was previously excavated to a maximum depth of about 3.5m, and the cuts sides were generally graded at less than 30°. The boat ramp concrete pavement appeared to be in

good condition. In the vicinity of the boat ramp, the riverbank was generally less than 3.5m high and graded to a maximum of 50°; refer to Plates 2 & 3 in the accompanying Geotechnical Investigation Report (***Appendix 5***). Medium and large trees were located along and behind the crest of the riverbank, and flanked the boat ramp. (Refer also to NR Links Native Vegetation assessment., ***Appendix 6)***

The land-based borehole testing locations generally found that the subsurface conditions encountered were pavement or fill, then alluvial soils over weathered sandstone and conglomerate bedrock at depth. Over water boreholes found soft sediments to a maximum depth of 2.3m.

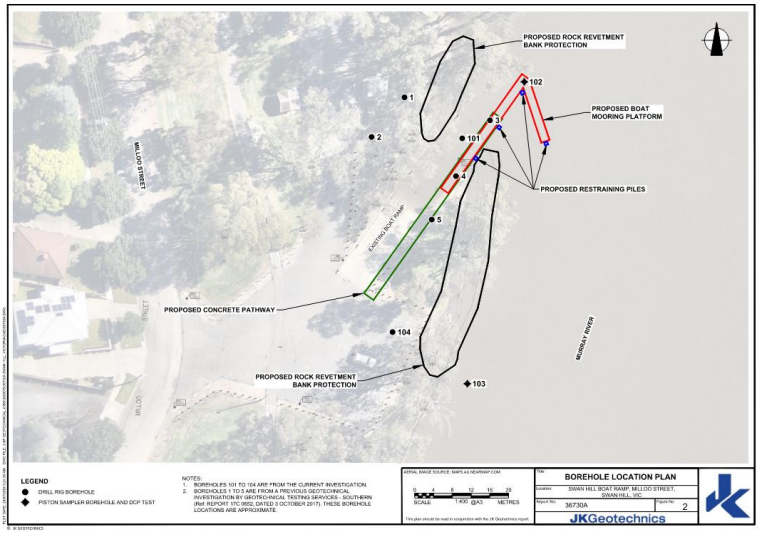

Figure 9: Borehole Locations - Geotechnical Investigations

The following recommendations have been incorporated into the design:

- Pile design and construction considerations as per *Section 4.1* of JK Geotechnical report. (see ***Appendix 5***)
- Earthworks:
  - *Reprofiling the south-eastern side of the boat ramp to accommodate the concrete pathway, and the riverbank to accommodate the rock revetment, can be completed using a hydraulic excavator.*
  - *The proposed cut batter on the south-eastern side of the boat ramp should be graded at no steeper than 1V on 2H and protected in the long-term from erosion with topsoil and turf, or alternative approved proprietary systems.*
  - *The riverbank should be excavated at 1V on 1.5H in order to accommodate the nominated 900mm thick rock revetment.*
  - Refer to *JK Geotechincal Investigation Report, Section 4.2 Earthworks, pg 10* – as attached in ***Appendix 5***
- Concrete walkway:
  - *"Once the footprint of the proposed concrete pathway has been excavated down to design subgrade levels, it is recommended that a minimum 100mm thick sub-base layer of crushed durable rock (e.g. basalt), of nominal 40-70mm sizing, be placed.*
  - *The crushed rock sub-base will be placed on a dense grade, non-woven geotextile filter. Above water level, the crushed rock sub-base will be nominally compacted using a static roller, of at least 6 tonnes deadweight. Below water, the crushed rock sub-base could be nominally compacted by tamping with the excavator bucket". (Refer to JK Geotechincal Investigation Report, Section 4.2 Earthworks, pg 10 – as attached in **Appendix 5**)*

In relation to waste materials generated by the above earthwork activities, JKG recommends that:

"A waste classification (i.e. assigning a priority waste category) is required for any soil and/or bedrock excavated from the site prior to offsite disposal. Analysis can take up to seven to ten working days to complete, therefore, an adequate allowance should be included in the construction program unless testing is completed prior to construction. If contamination is encountered, then substantial further testing (and associated delays) could be expected. We strongly recommend that this requirement is addressed prior to the commencement of excavation on site."

5.3.5. Engineering

A visual assessment of the site for the proposed works has been carried out by C W Henstock & Associates (CWHA) in June 2024, to assist in determining condition of the existing structures, embankment and surfaces at points of connection and finished levels, to understand siting of the proposed works, and to take measurements relevant to the development of engineering drawings for the proposed works. An analysis of available aerial images of the site was also conducted to assist in evaluating site conditions and orientation.

5.3.6. Terrestrial & Bathymetric Survey

Survey fieldwork was undertaken in June 2024, by Total Surveying Solutions (TSS), with detailed survey plans issued in July 2024, identifying spot levels, contours, key features and boundaries and riverbed levels.

Survey and locating data have been incorporated into design plans and the full set of survey plans can be reviewed in ***Appendix 1***

5.3.7. Subsurface Utilities

A preliminary Dial Before You Dig enquiry has been undertaken prior to commencement of design work for the proposed works to identify the likelihood of subterranean cables in vicinity of the proposed works. No assets have been identified in the vicinity of the proposed works.

It is to be recommended that the preferred contractor, prior to commencement of physical works on site, is to undertake their own up to date assessment and enquiries regarding buried services.

5.4. SITE SUITABILITY

The proposed development works are permissible within the zoning of the site and are directly associated with the existing boat ramp facility. The site has existing car park and public amenities suitable to continued public use of the site for public water recreation facilities. The proposed works are intended to enhance accessibility and the slope and existing topography support DDA compliant access with minimal excavation and shaping of the landscape.

There are no RAMSAR wetlands in the vicinity to be impacted by the proposed works and the existing river width supports the proposed mooring platform.

6. PLANNING CONSIDERATIONS

6.1. *SUMMARY – Planning Controls*

Whilst a portion of the proposed work (being the upper section of the concrete walkway) straddles the border between NSW and Victoria, within the LGAs for Murray River Council (MRC) and Swan Hill River City Council (SHRCC), the proposed works predominantly lie below High-Water level and therefore lie within the boundary of Murray River Council and are therefore primarily subject to NSW and MRC planning consent assessments. These works, below High-Water level, include the proposed access way, pontoon system and associated pontoon piling, and armour stone embankment protection.

Works above High-Water Mark are limited to the commencement of the concrete access walkway. These works and permits will be subject to approval under relevant Victorian planning requirements and authorities and planning approval from SHRCC.

This submission is for relevant NSW planning approvals. In summary, the proposed development works are located within the river and riverbank and are therefore on Crown Land, being '*land associated with non-tidal waterways*.' Landowner's consent has been obtained from Crown Lands. The proposed development is for the purpose of provision of community and recreation facilities, in W1 zone waterway and is development permissible with consent. All proposed works are adjoining existing and approved public recreational maritime facilities, improvements and immediate surrounds.

Murray River Council (MRC) is the determining authority for the Proposed Activity where the activity consists of the proposed concrete walkway and concrete pad, pontoon access ramp and pontoon mooring system and associated pontoon piling, and proposed armour stone embankment protection. This Statement of Environmental Effects (SEE) has been prepared which examines and considers matters affecting or likely to affect the environment as a result of the Proposed Activity.

In addressing compliance with relevant planning controls, the proposed works are designed to meet the development guidelines set out in applicable SEPPs and the MRC Wakool LEP 2013, relevant Australian Standards and the Building Code of Australia. The MRC Wakool DCP 2013 is applicable to the works, and the works seek to generally comply with relevant controls.

Figure 10 - Crown Land, Council and relevant boundaries

The site is suitable for the proposed works and will assist in improving access to and interaction with the Murray River for recreational use. The proposed works are in compliance with relevant planning instruments.

As a boat ramp already exists at the site, the provision of a boat mooring system (floating pontoon system) is compatible for the provision of compliant access to facilitate launching and retrieval activities as well as the loading and unloading of passengers and therefore the site is suitable for the works. The facility is in the public interest with the public being the intended end-users for the proposed boat landing facilities.

Site conditions have been assessed from ecological and biodiversity perspective, and from geotechnical capacity, and determined that the site is suitable for the proposed works. No significant adverse impacts have been identified for the proposed works in relation to this site and immediate vicinity. There is no significant loss of aquatic or terrestrial habitat, and no significant loss of native vegetation.

In relation to Planning Consent Requirements, the following summary is provided:

- Murray River Council is the Consent Authority and a Development Application is to be lodged for Integrated Development.
- Crown Lands is the Landowner and Landowners Consent has been received in conjunction with preliminary consent from NSW Fisheries and TfNSW in relation to the Landowner's consent application. (refer to ***Appendices 8 & 9)***
- NSW Fisheries consent is sought as the Murray River is identified as key fish habitat and the works will likely involve placement of armour stone over a small section of riverine embankment.
- Transport for NSW (TfNSW) consent is sought in relation to safety, access, and navigation with reference to use of the waterway for construction and ongoing use of the mooring platform on completion of the construction program.
- Additional permits and permissions, if required, will be sought for controlled activity approval for works within the waterway which include minor excavations of the embankment area.

The relevant planning controls that apply to this site include the following:

COMMONWEALTH
Environment Protection & Biodiversity Conservation Act 1999 (EPBC)

STATE (NSW):
Environmental Planning and Assessment Act 1979 (EP&A Act)
Crown Land Management Act 2016 (CLMA)
State Environmental Planning Policy (Transport & Infrastructure) 2021
State Environmental Planning Policy (Biodiversity & Conservation) 2021
NSW Heritage Act 1977
Biodiversity Conservation Act 2016
Fisheries Management Act 2016 (NSW FMA)

STATE (VIC):
Planning & Environment Act 1987 (Vic) (PE Act)
Planning & Environment Regulations 2015 (Vic)
Aboriginal Heritage Act 2006 (AH Act)
Aboriginal Heritage Regulations 2018 (AH Regulations)

LOCAL:
Murray River Council Wakool Shire Local Environmental Plan 2013 (Wakool LEP2013)
Murray River Council Wakool Shire Development Control Plan 2013 (Wakool DCP2013)
Swan Hill Planning Scheme, as last updated GC202, 05/12/2024

6.2. Planning Acts

6.2.1. Environmental Protection & Biodiversity Conservation Act 1999 (Commonwealth)

Under the EPBC Act 1999, actions that are likely to have a significant impact on a matter of national environmental significance require approval from the Australian Government Minister for the

Environment (the Minister). The EPBC Act refers to the living things (including plants and animals), habitats and places that need protecting as 'matters of national environmental significance'. There are 9 of these:

- World Heritage areas
- Commonwealth Heritage places
- wetlands of international importance (listed under the Ramsar Convention)
- listed threatened species and listed ecological communities
- listed migratory species (protected under international agreements)
- Commonwealth marine areas
- Great Barrier Reef Marine Park
- nuclear actions (including uranium mines)
- water resources (relating to coal seam gas development and large coal mining development).

Significant impact means an impact which is notable, important or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends on sensitivity, value and/ or quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts. These factors are to be considered in determining whether an action is likely to have a significant impact on the environment.

The following 'matters of national environmental significance' are of relevance to this project and this location, and the project is assessed against them as follows:

Matter of NES	Project Specifics	Assessment against significant impact guidelines
• Wetlands of international importance (RAMSAR)	• No RAMSAR wetlands are located in the vicinity of the works or downstream of the Swan Hill location	• The nearest RAMSAR wetland is located several hundred kilometres downstream. • No adverse impacts on RAMSAR wetlands. Works are relatively minor in nature and not located in the vicinity of any RAMSAR wetlands.
• Listed Threatened species & listed ecological communities	• A number of listed threatened aquatic species could occur in the mid Murray River which have been assessed under the accompany Aquatic Ecology Assessment undertaken by MPR for this project.	• MPR concludes that this section of the Murray River and downstream of Swan Hill and the activity area, *"functions primarily as a flood flow conduit to more open floodplain and meandering river habitats downstream"*, and identifies that this section of the river provides vital connectivity for the listed threatened species for transit between more suitable habitats. The assessment concludes that the works activity will not impact this connectivity or transit function. • Embankment works may impact likely habitat for Murray Crayfish but owing to current erosion and lack of LWD cover, the embankment area is "*unlikely to support Murray Crays"*. Suitable mitigation measures can be employed to mitigate adverse impacts through search

		and relocation activities prior to commencement of construction works. Therefore, the proposed activity *"can be undertaken with a low risk of impact on threatened species that may be in the vicinity of the site, and low risk of impact on the aquatic habitats at the site."*
• Listed migratory species	• Migratory species (birds) may occur in the nominated site area.	• The works are small in scale and located primarily in the waterway and riparian zone. There is no anticipated loss of any native large trees, in the immediate vicinity of the embankment protection works, and additional native vegetation is available immediately adjacent to the subject site both upstream and downstream as well as on the opposite side of the river. Therefore, the scale of the works and relatively short duration of construction activities can be reasonably be expected to have minimal impacts on migratory species.

Based on the assessment above, the Proponent submits that the proposed works can be considered unlikely to have significant impact on a 'matter of national environmental significance' as a result of the proposed works associated with the boat mooring platform and embankment scour protection works.

6.2.2. Environmental Planning & Assessment Act (EP&A) 1979

The EP&A Act 1979 was enacted to encourage the proper consideration and management of impacts of proposed development or land-use changes on the environment (both natural and built) and the community. Part 4 of the EP&A Act of primary relevance to the proposal are considered further below.

(i) Part 4 – Development assessment & control

- Murray River Council is the consent authority under Part 4, Div 4, Section 4.5 (d).
- Under Part 4, Div 4.3, Section 4.15, Item (1) ***Matters for Consideration – general***, the EP&A notes that in determining a development application, a consent authority is to take into consideration relevant matters including the provisions of any relevant environmental planning instruments, development control plan, and

(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality,

The likely impacts of the proposed works on the natural and built environments will be minimal. There are no proposed changes to or impacts on the existing structures and built amenities associated with the existing boat ramp and public reserve. Impacts on the natural environment have been assessed and are detailed in this report. These potential impacts, as well as recommended mitigation measures are described in *Sections 7 & 8* below.

Section 5A of the EP&A Act requires proponents and consent authorities to consider if a development will have a significant effect on threatened species, populations or communities listed under the *Threatened Species Conservation Act 1995* (TSC Act) and *Fisheries Management Act 1994* (FM Act). Section 5A (and Section 9A of the TSC Act) outlines seven factors that must be taken into account in an Assessment of Significance (formally known as the "7-part test"). In relation to likely or potential environmental impacts of the development activities, *Section 5.3.1* above provides assessment of the potential impacts of a proposed development/ activity including potential impacts on threatened species, populations and ecological communities listed in the Threatened Species Conservation Act 1995 (TSC Act).

An ecological assessment of the site of the proposed works, undertaken by Marine Pollution Research Pty Ltd (MPR), concludes that the works
"can be undertaken with a low risk of impact on threatened species that may be in the vicinity of the site, and low risk of impact on the aquatic habitats at the site." (ref: MPR Aquatic Ecology Assessment, Section 4 – Conclusions, see ***Appendix 3***)

Based on the MPR aquatic assessment, threatened species, populations or ecological communities are not anticipated to be adversely affected by the proposed works. Therefore, a Species Impact Statement is not required.

(c) the suitability of the site for the development,

As noted in this report, the site is suitable for the proposed works and will assist in improving access to and interaction with the Murray River for recreational use. The proposed works are in compliance with relevant planning instruments.

As a boat ramp already exists at the site, the provision of a boat mooring system (floating pontoon system) is compatible for the provision of compliant access to facilitate launching and retrieval activities as well as the loading and unloading of passengers and therefore the site is suitable for the works. The facility is in the public interest with the public being the intended end-users for the proposed boat landing facilities.

Site conditions have been assessed from ecological and biodiversity perspective, and from geotechnical capacity, and determined that the site is suitable for the proposed works without having adverse impacts on biodiversity and environmental features of the site.

(d) any submissions made in accordance with this Act or the regulations,

The proposed works will be subject to planning approval under an Integrated Development Application and with relevant Land Owner's Consent and as relevant consent from additional authorities, including NSW Department of Primary Industries (Fisheries) & Transport for NSW (TfNSW) consent.

(e) the public interest.

The proposed works are for public infrastructure administered under Swan Hill Rural City Council for public recreational use of the waterway.

6.2.3. Biodiversity Conservation (BC) Act 2016 (NSW)

The purpose of the BC Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development. The BC Act applies to terrestrial environment and does not

apply in relation to aquatic habitat (fish and marine vegetation). The BC Act requires that proponents and consent authorities consider if a development will have a significant impact (adverse or beneficial) on threatened species, populations or communities listed under the relevant Acts.

Under the B&C Act, the riverine foreshore areas are mapped under 'Biodiversity Values (non-EPI), as follows:

Figure 11: Biodiversity Values Map (non-EPI)
(Source: as viewed 26/07/2024, 17:17, NSW Planning Portal Spatial Viewer, Mapservice 14)

It is noted that, for the purposes of the Act, the following applies:

"biodiversity values are the following biodiversity values—
(a) vegetation integrity—being the degree to which the composition, structure and function of vegetation at a particular site and the surrounding landscape has been altered from a near natural state,
(b) habitat suitability—being the degree to which the habitat needs of threatened species are present at a particular site,
(c) biodiversity values, or biodiversity-related values, prescribed by the regulations."
(Source: Part 1, Section 1.5, Item (2))

The assessment of biodiversity values, in relation to the application of the biodiversity offsets scheme, includes assessment of impacts of clearing native vegetation and loss of habitat (***Source: Part 6, Div 1, Sect 6.3)***

In summary, the works are not in a declared, or proposed, Area of Outstanding Biodiversity Value. The works are located in an area on the Biodiversity Values Map. Aquatic Ecology Assessment has indicated that the proposed works do not have significant impact on aquatic ecology or ecological communities. A Native Vegetation Assessment has concluded that the proposed works do not impact existing tree(s) or Tree Protection Zones for them to be assumed "lost" and therefore the works do not trigger the removal of native vegetation permits or Clause 52.17 (VIC legislation), and do not potentially impact biodiversity. Under current BC Act, and Biodiversity Conservation Regulation (2017), the works do not result in the clearing of any significant vegetation.

Table 1: Biodiversity Conservation Act - Considerations & Compliance

Consideration	***Comment/ Compliance***
1.3 Purpose of Act, Clauses (a) to (o) reviewed. *Clauses of particular relevance to proposed works:* *(a) to conserve biodiversity at bioregional and State scales, and* *(b) to maintain the diversity and quality of ecosystems and enhance their capacity to adapt to change and provide for the needs of future generations, and* *(h to support conservation and threat abatement action to slow the rate of biodiversity loss and conserve threatened species and ecological communities in nature,*	The Act applies to terrestrial biodiversity (not fish or marine vegetation). The site of the works has a minor terrestrial footprint immediately adjacent to the existing boat ramp and embankment point at the toe of the ramp. The majority of the footprint is over water. Minimal native vegetation is present within the footprint of the works. Previous assessments and literature review associated with the boat ramp supports that works will not result in significant impacts on diversity or quality of ecosystems and/ or biodiversity. Current assessments of the aquatic ecology and native vegetation impacts conclude there are no adverse impacts on ecosystems or loss of habitat or vegetation, and no unmitigated threat to threatened species. Works do not require removal of existing tress located adjacent to the embankment protection area. The proposed works consolidate access via formed walkway to floating mooring platform rather than informal use of embankment areas for launch and retrieval, loading and unloading activities for recreational boating.
1.5 Biodiversity and biodiversity values for purposes of Act *(relevant items as follows:)* *(2) For the purposes of this Act, biodiversity values are the following biodiversity values—* *(a) vegetation integrity—being the degree to which the composition, structure and function of vegetation at a particular site and the surrounding landscape has been altered from a near natural state,* *(b)habitat suitability—being the degree to which the habitat needs of threatened species are present at a particular site,* *(c)biodiversity values, or biodiversity-related values, prescribed by the regulations.*	Works have been assessed as unlikely to significantly impact vegetation integrity - no significant impact on composition, structure, or function of vegetation at the site. No loss of significant native vegetation – no loss of large trees. Minor loss of small portion of planted ground cover. Replacement planting can occur. The natural state of the landscape at the specific subject site has been previously modified and the bank is eroded and predominantly bare in the location of the proposed walkway & pontoon system and armour stone protections. There is minimal unique habitat at the site and the site is not generally consistent with presence of threatened species. Murray Crays, if present, can be relocated but are not likely to be present in bare sediment at the site of the pontoon and concrete pad.
Part 7, Div 2 Section 7.7., Cls 2 " *If the proposed development is likely to significantly affect threatened species, the application for development consent is to be accompanied by a biodiversity development assessment report.*	The Biodiversity Values Map & Threshold Report, dated 8th May 2025, indicates that the BV Threshold is exceeded as the area of proposed works intersects with BV mapping. However, the works do not exceed the 'Area clearing threshold'. There is NO loss of native vegetation associated with the proposed works as determined by the Native Vegetation Assessment undertaken by N R Links, and the Aquatic Ecology Assessment concludes that there are no adverse impacts that are likely to significantly affect threatened species. It is therefore submitted, that additional biodiversity assessment reporting is not required. Therefore, a BDAR should not be required for this proposal.
7.3 Test for determining whether proposed development or activity likely to	The Proponent submits that there is: - No significant impact on threatened species 'lifecycle' as continuity of habitat access is not impacted on land or in

significantly affect threatened species or ecological communities, or their habitats *(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats*	the waterway. No unmitigated loss of habitat. Potential improvement in provision of aquatic shelter and habitat complexity through provision of shelter and armour stone and retention of LWD. - No significant impact on endangered species as a result of reducing occurrence or modifying ecological community composition - No significant impact on habitat of threatened or endangered ecological community as habitat already fragmented at the site and works will not significantly further fragmentation or modify composition in the long term. The site is not a declared area of '*outstanding biodiversity value*' and will not have impacts on other areas as they are significantly distanced from the site both upstream and downstream. The proposed works are of a minor nature in a small specific site, predominantly located over water with suitable established control measures available for implementation during construction activities. This is supported by the Native Vegetation assessment, which determines that the proposed works do not trigger thresholds for loss of native vegetation. (cls 7.3, 7.4) Construction mitigation measures are nominated by the Aquatic Ecologist to mitigate risks to water quality from spills or sediment and turbidity.
Division 2 Biodiversity assessment requirements *7.7 Biodiversity assessment for Part 4 development (other than State significant development or complying development)* *(1) This section applies to an application for development consent under Part 4 of the Environmental Planning and Assessment Act 1979,* *(2) If the proposed development is likely to significantly affect threatened species, the application for development consent is to be accompanied by a biodiversity development assessment report.*	The Native Vegetation assessment determines that the proposed works do not trigger thresholds for loss of native vegetation. (cls 7.3, 7.4) No loss of native vegetation. The Area Clearing Threshold is not exceeded. There is no fragmentation or destruction of habitat and no threatened species determined to be present or impacted by the proposed works. If present, mitigation measures can be undertaken to protect any Murray Crayfish , if they are found to be present at the time of construction. A Biodiversity Assessment Report (BDAR) is not required.

Summary Biodiversity Assessment:

In summary, due to the already disturbed nature of the area, it is unlikely there will be significant impacts to the potential presence of threatened species, populations and ecological communities listed under the BC Act as a result of the proposed works.

To assess compliance with *Part 7 – Biodiversity assessment and approvals under Planning Act,* a Native Vegetation assessment was undertaken by NR Links in August 2024 to assess potential impacts of the proposed works on biodiversity values and determine whether the works exceeded the Biodiversity Offsets Threshold in relation to the potential consequential loss of any native trees under removal of Native Vegetation. The following summarises the key findings/ outcomes of those assessments:

- *Native Vegetation Assessment (refer Appendix 6)*

  "On review of the final draft there was one tree protection zone (TPRZ) impacted to 2.7% of the root zone. As per DEECA guidelines once the impact covers more than 10% of the root zone or as advised by an arborist the tree must be lost because of the works. The final works now do not impact on the tree enough for it to be assumed to be lost and no other trees are required to be removed to facilitate this so there is now no trigger for Clause 52.17.

  The draft and final plans along with the draft native vegetation removal and plans are in the appendix to this letter to demonstrate that any native vegetation loss has been avoided."

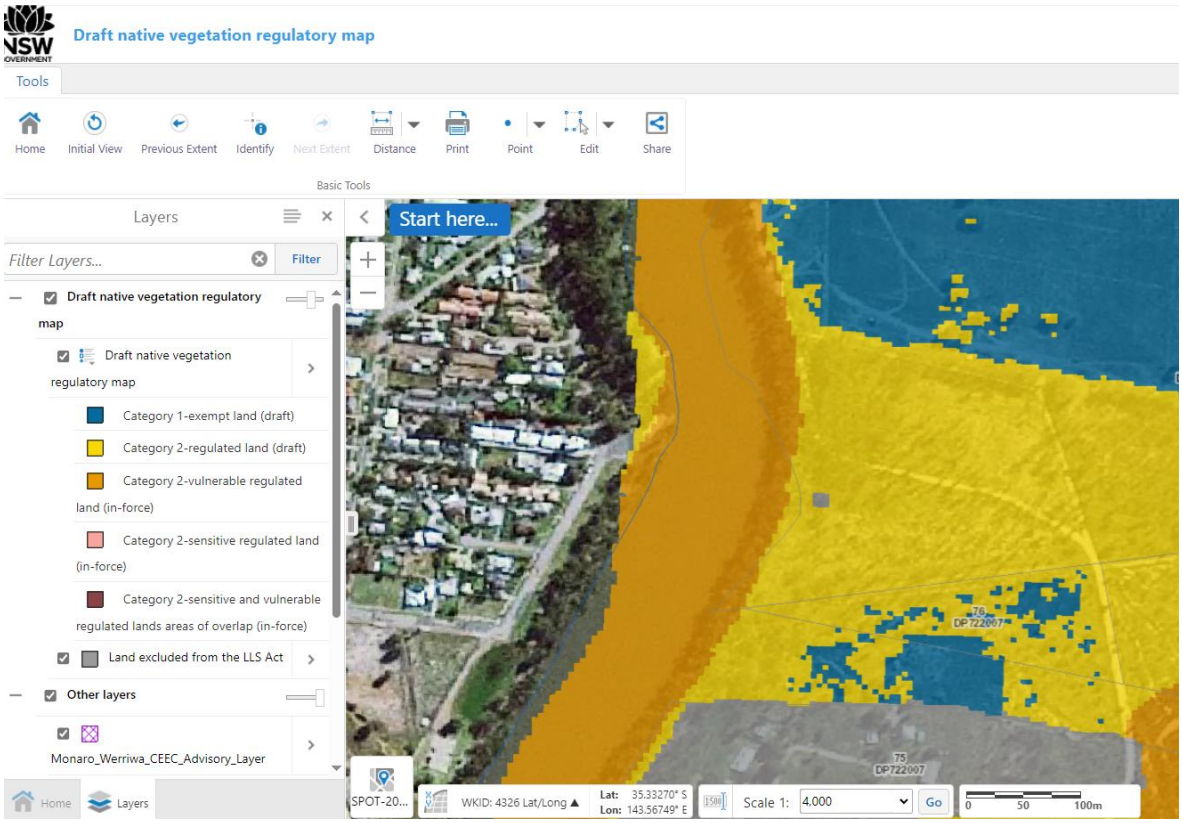

Figure 12: Native Vegetation Regulatory Map- subject site
(Source: www.lmbc.nsw.gov.au, as viewed 16:44, 08/08/2024)

- *Literature Review – Ecological Assessment*

  Studies have previously been undertaken, in and around 2018, by others in association with the previously approved extension of the boat ramp at the subject site. These reports provide the following key comments as outlined below. Current assessment of aquatic ecology in the waterway and riparian zone, and the assessment of native vegetation, support the conclusions and findings of the earlier reports.

  In summary, it is generally noted that predicted or identified flora and fauna species have a low likelihood of occurrence or regular occupancy at the subject site and will therefore not be adversely impacted by the proposed works. Refer to following extracts:

  - *"Background searches identified six threatened flora species, five threatened vegetation communities, and 20 threatened fauna species recorded (OEH 2016a) or predicted to occur (Commonwealth of Australia 2016) within 5 kilometres of the study area. Due to the degraded nature of the habitat, it is considered that there is a low likelihood of occurrence for the threatened flora species and vegetation communities in the study area and none were detected during the field survey."*

(Source: R. Clancy, 'Swan Hill Boat Ramp: Statement of Environmental Effects, Report for Swan Hill Rural City Council, Biosys Pty Ltd, dated 19 February 2018, pg 14)

- *The nine threatened bird species are either wetland dependent, Woodland dependent, grassland dependent or dependent on mallee shrublands. The study area does not provide the required wetland or mallee shrubland habitat types to support these species. There is some potential for the three woodland dependent bird species to make occasional use of River Red-gum woodlands along the Murray River, but habitat quality within the study area is low for these species, and impacts will be avoided if trees are retained.*

  (Source: R. Clancy, 'Swan Hill Boat Ramp: Statement of Environmental Effects, Report for Swan Hill Rural City Council, Biosys Pty Ltd, dated 19 February 2018, pg 10)

- *The database search also predicted potential presence or habitat for three threatened mammal species:*
  - *Corben's Long-eared Bat, Greater Glider and Koala:*
    - *The study area is well outside the distribution of the Greater Glider, and does not support suitable habitat for this species.*
    - *The Koala has been recorded in the area, although there are no records more recent than 1981, and these records are likely to be the result of unsuccessful attempts to establish a local population using koalas sourced from overpopulated areas in southern Victoria. The study area does not support core habitat for the koala.*
    - *Within North-west Victoria and South-west New South Wales, Corben's Long-eared Bat is typically only recorded within large expanses of old-growth vegetation, with a strong preference for old-growth Mallee shrublands. It is considered unlikely to be present with the study area.*

      (Source: R. Clancy, 'Swan Hill Boat Ramp: Statement of Environmental Effects, Report for Swan Hill Rural City Council, Biosys Pty Ltd, dated 19 February 2018, pg 10)

- *Conclusions from the AoS stated:*
  - *The impact of the proposed action on threatened aquatic fauna is not likely to be significant, as the action involves negligible alteration to the aquatic environment or flow regimes.*
  - *The impact of the proposed action on threatened woodland birds is not likely to be significant, as the action involves no impact upon woodland habitat.*

  Therefore, a SIS is not required for any threatened species.

  (Source: R. Clancy, 'Swan Hill Boat Ramp: Statement of Environmental Effects, Report for Swan Hill Rural City Council, Biosys Pty Ltd, dated 19 February 2018, pg 10)

A study undertaken for Murray River Council, by Zenith Town Planning, dated December 2018, provides biodiversity assessment of the Murray Downs area, immediately adjacent to the subject site on the opposite riverbank. The Zenith Town Planning report notes that:

"The Murray River that forms the south-western boundary to Murray Downs is mapped as being environmentally sensitive on the Terrestrial biodiversity map, the Wetlands map and the Watercourse map of Wakool LEP 2013, as it forms part of the aquatic threatened ecological community listed under the NSW Fisheries management Act 1994"

(SOURCE: page 120, The settlements. Section 4.6 'Murray Downs', 4.6.5 Environmental attributes – 4.6.5.3 Biodiversity, 'Murray River local profile', prepared for Murray River Council, by Zenith Town Planning, dated December 2018)

The report notes, however, that in relation to threatened or migratory species:

"No threatened plant species are known from the vicinity (bionet 2018). The migratory species, Caspian Tern, is known from Swan Hill, this and other bird species are likely to use the wetlands/lakes in the golf course/country club."

(SOURCE: page 120, The settlements. Section 4.6 'Murray Downs', 4.6.5 Environmental attributes – 4.6.5.3 Biodiversity, 'Murray River local profile', prepared for Murray River Council, by Zenith Town Planning, dated December 2018)

- *Aquatic Ecological Assessment (Refer **Appendix 4**)*

  MPR did not identify the presence of any threatened species or threatened ecological communities at the site, considering any threatened species to be transient within the main channel, with the exception of the possibility of Murray Crayfish being present, where suitable mitigation measures are available.

  MPR did not identify the presence of any endangered or critically endangered species or ecological communities in the vicinity of the proposed works. On this basis further investigation or impact analysis of the proposed works is not warranted and the proposed works can be considered to generally be in keeping with the purpose of the Act.

6.2.4. Biodiversity Conservation Regulation 2017

In conjunction with consideration and assessment of the proposed works, and the revision of proposed embankment protections from initial concept stage to submission development to reduce the footprint of the work, the Proponent presents that the proposed works are compliant with requirements under the BC Act and the BC Regulation 2017. It is noted that the Regulation nominates Additional biodiversity values, which are addressed as follows:

Table 2: Biodiversity Conservation Regulation – Additional Biodiversity Values (Part 1, Cls 1.4)

The following are prescribed as additional biodiversity values for the purposes of the Act (S1.5) -

a) threatened species abundance—being the occurrence and abundance of threatened species or threatened ecological communities, or their habitat, at a particular site,	The proposed works do not impact the occurrence or abundance of threatened species or ecological communities or their habitat at the site. No loss of critical habitat or vegetation.
b) vegetation abundance—being the occurrence and abundance of vegetation at a particular site,	No loss of native vegetation either terrestrial or aquatic. No impact on availability of vegetation.
c) habitat connectivity—being the degree to which a particular site connects different areas of habitat of threatened species to facilitate the movement of those species across their range,	The riverbank has previously been disturbed and modified. The proposed works do not alter existing habitat connectivity or impact movement of species. The pontoon structure may provide additional shelter for aquatic species and the armour stone adds some complexity to the riverbank where placed.
d) threatened species movement—being the degree to which a particular site contributes to the movement of threatened species to maintain their lifecycle	The waterway provided connectivity for movements of aquatic species along the river system. The floating pontoons and piling, do not impede movement or connectivity and provide some additional shelter for aquatic species.
e) flight path integrity—being the degree to which the flight paths of protected animals over a particular site are free from interference	The proposed works have no impact on flight path integrity. The structures are low level pontoons and embankment protection and the piling does not impact flight paths.

f) water sustainability—being the degree to which water quality, water bodies and hydrological processes sustain threatened species and threatened ecological communities at a particular site.	No adverse impacts on water sustainability. Suitable mitigation measures can be implemented to reduce risks from sediment dispersal or spills during construction and turbidity levels, to maintain water quality. Floating pontoon and piles will not impact hydrological processes and small area of slope and embankment protection will not impact hydrological processes. No wetlands present.

Biodiversity Conservation Conclusion

On the basis of the assessments undertaken in relation to the proposed works, and the literature review of available information and reports, it is submitted that the proposed works can be undertaken without adverse impacts to the existing ecology and biodiversity values of the site. There is no significant impact on habitat or native vegetation with no loss of native trees present at the site. Refer to ***Appendix 10*** for images of the site showing bare sediment and riverbank erosion at the proposed site of the works. The footprint of the works, and the footprint of any impacts is limited to exposed river bank and the existing boat ramp. Therefore, further biodiversity assessment is not warranted and a BDAR should not be required.

6.2.5. Fisheries Management Act 1994 (NSW) – Part 7

The objectives of the Fisheries Management Act 1994 (FM Act) are to conserve, develop and share the fishery resources of the State for the benefit of present and future generations. The FM Act applies to all waters that are within the limit of the State (NSW), including the Murray River. The Act requires that any proposed activity is to be assessed with regards to its potential impact on Threatened Species or ecological communities.

Part 7 addresses 'Protection of aquatic habitats' and Part 7A, and accompanying Schedules, lists threatened species of fish and marine vegetation, including endangered populations, ecological communities and key threatening processes. Part 7A, Div 4 notes that it is an offence to harm threatened species, populations or ecological communities, or damage critical or threatened habitat. Part 7, in general, sets out the conditions under which permits are required for various construction activities. Fisheries NSW specifies the conditions under which permits may be granted.

Section 220ZZ of the FM Act lists the factors to be considered to determine the impact of an activity on threatened species, populations, ecological communities of fish and marine vegetation.

The Murray River and River Murray environment are 'key fish habitat' areas. The subject area is not in a 'marine park' or an 'aquatic reserve'. The following species are noted as occurring in the waterway, under current Fisheries NSW spatial data mapping as per following snap shots:

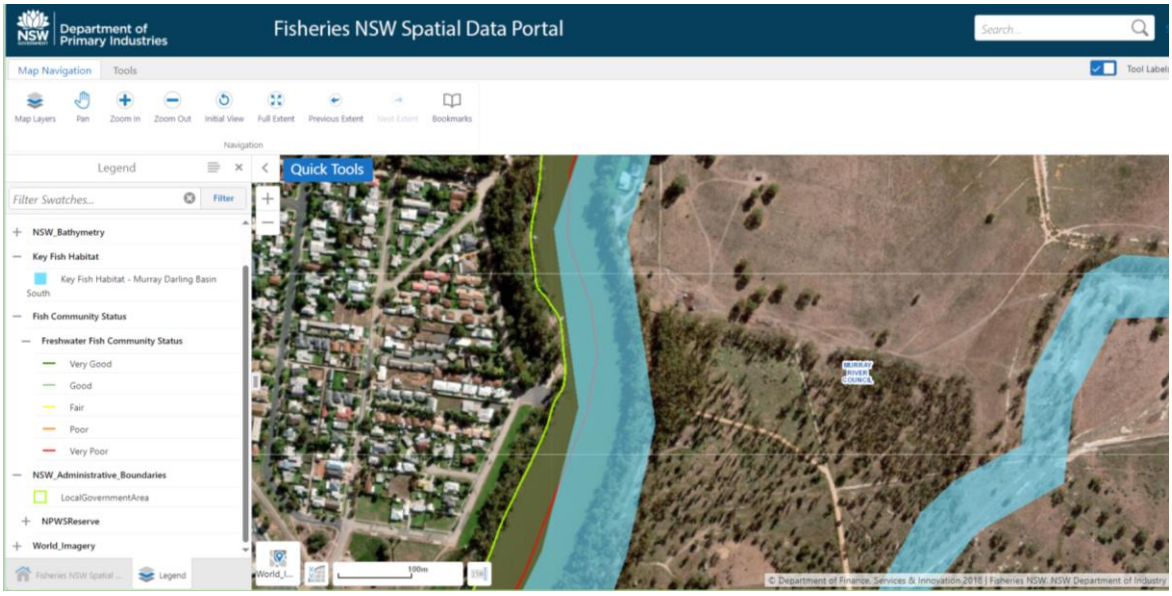

Figure 13: Key Fish Habitat - as Mapped- subject site
(Source: NSW DPI – Fisheries NSW Spatial Data Portal (viewed Sep 2024))

Murray crayfish ***Murray hardyhead*** ***Silver perch***

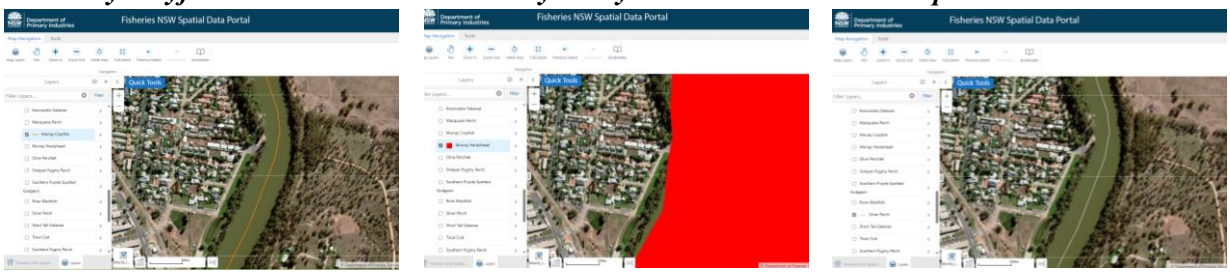

Figure 14: Native Aquatic Species - as Mapped- subject site
(Source: NSW DPI – Fisheries NSW Spatial Data Portal (viewed Sep 2024))

To address potential adverse impacts of the proposed works, an aquatic ecological assessment was undertaken for the subject site, by Marine Pollution Research Pty Ltd (MPR), to identify any threatened species, populations or ecological communities or critical habitat in the vicinity of the proposed works, with a focus on the ecological impacts in the aquatic and riparian zones, and to determine if further assessment would be necessary such as a Species Impact Statement (SIS). The Aquatic Ecology Assessment is appended to this SEE as ***Appendix 3***.

In summary, the assessment

"has considered a number of listed threatened aquatic species which could occur in the mid Murray River and concluded that owing to the simplified geomorphology of the section of river at and downstream of Swan Hill that functions primarily as a flood flow conduit to more open floodplain and meandering river habitats downstream it is concluded that this section of river provides a vital connectivity function for listed threatened fish that would use the river section to transit between suitable habitats up and downstream of this section of river. During droughts this section of river would also provide valuable drought shelter for fish species."

Therefore, the assessment has concluded

"that whilst this section of the river has a vital role for transiting fish it does not provide permanent habitat for threatened fish species and accordingly the project can be approved provided the works are timed to avoid the crucial habitat use for this portion of river being when it provides crucial drought refuge."

Additionally, the MPR report also notes that *"residual risk of construction related harm for intertidal habitats can be minimised by appropriate construction safeguards"* as nominated in the accompanying report.

Previous studies undertaken in association with the proposed boat ramp extension works, undertaken in 2018-2019 reached similar conclusions and supported that the boat ramp extension at this same site, at that time, would not have long term adverse impacts on the presence or habitat of threatened species.

With regards to the potential presence of and any impacts on Murray Crayfish, suitable habitat is considered possible with at least one good item of LWD within the footprint of the proposed works. Adverse impacts could be mitigated by field investigation of potential burrow activity, prior to the commencement of construction activities, with any crays to be caught and relocated to suitable nearby LWD. Capture and relocation of Murray Crayfish can be undertaken by established methods.

In their Assessment Report (***Appendix 3***) MPR notes that a *Part 7 Permit from NSW DPI Fisheries issued under the FM Act* – may be required. MPR also notes that *"Residual risk of construction related harm for intertidal habitats can be minimised by appropriate construction safeguards as set out in* ***Section 3.1*** *and* ***Section 3.2*** *above"*. It is also noted that there is no river dredging or reclamation required for the project, *"however there are bank excavations planned for the rock armouring placement therefore the project may require a Part 7 Permit under the FMA."*

Therefore, based on the findings of the aquatic ecology assessment as noted above, a Species Impact Statement is not required. A Permit may be required prior to commencement of construction activities.

6.2.6. National Parks and Wildlife Act 1974

The National Parks and Wildlife Act 1974 (NPW Act) aims to conserve nature, objects, places or features of cultural value within the landscape. The NPSW Act is the primary legislation regulating Aboriginal cultural heritage in NSW. Items of Aboriginal cultural heritage (Aboriginal objects) or Aboriginal places (declared under Section 84) are protected and regulated under the Act. Aboriginal objects are protected under Section 86 of the Act.

Under Section 90(1) of the Act, the Secretary may issue an Aboriginal heritage impact permit for an activity that would harm an Aboriginal object.

Assessment of the potential impacts on Aboriginal cultural heritage is provided in ***Section 5.3.5.*** It is proposed that the intended remedial works occurring within the footprint of previously disturbed building areas, being the existing boat ramp, and such a location where natural river flows and flood events regularly disturb, remove and replace sediment materials along the river embankments, along with a history of pedestrian traffic, that no items of Aboriginal cultural heritage are likely to be present or to be disturbed in the subject work areas.

A review of previous assessments undertaken at the time the existing boat ramp was extended also concluded that:

"No Aboriginal sites or objects were identified during the survey and no further archaeological work is required as the proposed works are located on the mud flats and slopes of the Murray River bank, which has low potential for the presence of Aboriginal sites and objects." (Biosis 2016).

Those assessments also concluded that *"no approvals are required under the NP&W Act."*

It is proposed that the Construction Environmental Management Plan, to be prepared by the selected contractor, should include relevant actions should any Aboriginal objects be encountered during the proposed works. Typical safeguards and mitigation measures would include:

- *works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist.*
- *If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying the relevant authorities and Aboriginal stakeholders.*
- Refer to ***Appendix 4*** for Austral Archaeology's Due Diligence Assessment Report and mitigation measures.

6.2.7. Other Integrated Development Considerations

(A) Water Management Act 2000

The objectives of the WM Act are to provide for sustainable and integrated water management with a focus on:

- Ecologically sustainable development
- Protect, enhance and restore water recourses
- Recognise and foster social and economic benefits
- Recognise the role of the community
- Provide efficient and equitable sharing of water
- Management of water sources with other aspects of the environment including native vegetation and native fauna
- Encourage the sharing of responsibility and efficient use of water
- Encourage best practice management and use of water.

As works include the excavation of material and the deposition of material both on land and within the waterway, a '***Controlled Activity Approval***', issued under the WM Act, may be required from the NSW DPIE. This will be confirmed through a referral to DPIE during the integrated DA assessment process. It is proposed that construction activities will be undertaken in such a way as to ensure that no more than minimal harm will be done to any waterfront land as a consequence of the carrying out of the proposed controlled activity.

Refer to the following extract from the **WM Act 2000** *(Source: WM Act 2000 'Dictionary'):*

- **controlled activity** means—
  a) the erection of a building or the carrying out of a work (within the meaning of the *Environmental Planning and Assessment Act 1979*), or
  b) the removal of material (whether or not extractive material) or vegetation from land, whether by way of excavation or otherwise, or
  c) the deposition of material (whether or not extractive material) on land, whether by way of landfill operations or otherwise, or
  d) the carrying out of any other activity that affects the quantity or flow of water in a water source.

(B) PoEO Act

Based on assessments untaken in relation to the proposed works and proposed construction approach, it is unlikely that the proposed works trigger the requirement for an approval or licence issued under the PoEO Act. It is acknowledged that conditions may be issued, however,

by NSW EPA (OEH) in relation to safeguard measures to be implemented during construction, during the assessment process.

(C) Marine Safety Act 1998

As the proposed works involve a fixed and floating structures in and over navigable waters, referral to Transport for NSW (TfNSW) – Maritime, will be require. Notification of the proposed works has been made to TfNSW prior to lodgement of Landowners Consent Application to Crown Lands and referral is expected to be made during the Development Application assessment process.

The preferred layout has been selected with consideration of safety and navigational impacts on the main river channel.

6.3. SEPP Biodiversity & Conservation 2021

6.3.1. Chapter 4 – Koala Habitat Protection 2021

The proposed location of works falls within the Murray River Council LGA. Schedule 2 of the SEPP BC 2021 lists the area as falling within the Far West Riverina Koala Management Area (KMA).

"*The Far West and South-west Koala Management Area (KMA 7) extends west from the Hay, Ivanhoe and Wilcannia districts to encompass the western-most part of New South Wales. Most of this region is unsuitable for koalas*."

(Source: *www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/programs-legislation-and-framework/nsw-koala-strategy/local-government-resources-for-koala-conservation/far-west-and-south-west-koala-management-area, accessed 30/07/2024, 16:00)*

There are no recorded sitings (evidentiary or anecdotally) of koala at location of the boat ramp and it is not proposed to remove any large trees. Therefore, this is no anticipated resultant impact on potential koala habitat at the site. Initial design considerations altered proposed embankment protections to reduce the impact on tree root protection zones and therefore mitigate the potential loss of native trees. Suitable mitigation measures during construction will minimise potential impacts on the site.

It is noted that the koala can exist in riparian zones and floodplains as per the location of the proposed works. Reference is made that within the Riverina KMA, a population is known to exist in the Murray Valley National Park, generally located between Barmah and Moama, approximately 115km upstream from the subject site. However, reports prepared for this site for previous development associated with the boat ramp, state that no koala have been identified at the subject site.

It is also noted, with reference to relevant mapping available within the NSW Planning Portal Spatial Viewer, as viewed 26/07/2024, the subject site is not mapped under Koala Habitat Map and is not mapped under Koala Management Plan Map (*Reference: NSW Planning Portal Spatial Viewer, as viewed 26/07/2024*)

With reference to the information above, and based on review of both previous studies and literature available, and with consideration of the size and scope of works proposed and minimal removal of ground cover vegetation, it is submitted that there are no adverse impacts from the proposed works on any known or potential koala communities and suitable alternative vegetation remains on the NSW side of the river and in upstream and downstream locations along the riparian corridor.

Therefore, is it submitted that the development is likely to have low or no impact on koalas or koala habitat. The majority of the works are located over water and in the riparian zone.

6.3.2. Chapter 5 – River Murray Lands

The aims of Chapter 5 River Murray Lands are to "*conserve and enhance the riverine environment of the River Murray for the benefit of all users.*" (Source: SEPP BC - Chpt 5, Part 5.1, Sect 5.1)

In relation to the 'General principles' noted *(Sect 5.8*) it is submitted that the proposed works are not likely to affect adjacent and downstream LGAs and will have no additional or cumulative impact on the River Murray as the proposed works relate to enhancement and preservation of existing infrastructure for public use.

In relation to the Specific principles detailed in ***Section 5.9,*** of the SEPP, the following table addresses the relevant principles.

Table 3: Compliance with Specific Principles (SEPP (B&C) Chpt 5, Part 5., Section 5.9)

Specified Principles	Desired Outcomes/ Considerations	Compliance Comments
Access	Waterway & foreshore is a public resource and should not be alienated for private purposes	Proposed works are public development, intended to facilitate public access to the waterway for recreational use. The proposed works will not alienate or obstruct the foreshore of the river.
	Development should be for public purposes and moorings in the main channel should be for short stay occupation only	Proposed works are for public use and provision of short-term mooring to facilitate launch and retrieval of trailer vessels for recreational purposes.
	Management of human and stock access to minimise adverse impacts of uncontrolled access on bank stability & vegetation growth	It is proposed to stabilise the local embankment, immediately adjacent to the boat ramp with armour stone slope protection and scour protection, designed to minimise direct loss or consequential loss of native vegetation in the immediate vicinity. The proposed works will assist to formalise human access to waterway at site of boat ramp by providing short term mooring facility for launch and retrieval of recreational vessels and compliant access for passengers. The proposed works are intended to improve access to the river and reduce risk to people, property and the surrounding environment by providing appropriate & compliant access.
Bank Disturbance	Minimising disturbance to shape of bank and riparian vegetation	Disturbance to the river bank and riparian vegetation will be minimised, with stabilisation of the river bank to be provided through scour protection from armour stone placement. Localised excavation and minor shaping of the existing embankment will be required to achieve required 1:1.5 slope for placement of armour stone embankment scour protection and along existing batter slope adjacent to the boat ramp to accommodate the concrete walkway and access pontoon and proposed batter slope stabilisation.

Flooding	Considerations for land subject to inundation by floodwater: - Hazards & benefits from development - Redistributive effects on floodwater - Suitability of site for works - Impacts on access for essential services - Pollution threats in event of flood - Cumulative effect on behaviour of floodwater - Cost of providing emergency services and replacement of infrastructure in event of flood	Proposed works will not affect the flow, use or control of water in the River Murray. Works can be considered minor in nature and consist of floating pontoon structure, concrete walkway at similar elevation to the existing boat ramp, and embankment protection from sloped armour stone placement rather than vertical wall. There will be no additional impact related to flooding as a result of the project. High water level and 1/100 year events have been accommodated in the design.
	Flood mitigation works – *not applicable*	Not applicable – no flood mitigation works proposed
Land degradation	Seek to avoid degradation such as erosion, loss of native vegetation, pollution of waterway, adverse effects on quality of terrestrial & aquatic habitat	The project will improve access to the river and reduce risk to people, property and the surrounding environment by providing appropriate and compliant access for recreational boating activities. Localised armour stone embankment scour protection will assist in reducing erosion of localised embankment. The project will not result in increased land degradation; and erosion and sediment controls will be implemented during and post construction. There is demonstratable loss of native vegetation.
Landscape	Maintain and enhance riverine landscape by maintaining native vegetation and stabilising and revegetating riverbanks with appropriate species	Armour stone embankment scour protection will assist in reducing erosion of localised embankment with top of armour stone proposed at top of embankment. Irregular armour stone, locally sourced, is to be placed for scour protection as per layout plans. It is then proposed that the top of the adjacent embankment be planted out with appropriate vegetation or turf to be nominated for the site.
River related uses	Demonstrated essential relationship with the river	The proposed boat mooring platform is associated with the existing public boat ramp. The floating facility and embankment protection works are associated with existing public recreational use of the waterway. The proposed works are river related use and will not impact on water quality or wetlands.
Settlement	*Not applicable*	*Not applicable*

Water Quality	Seek to minimise or reduce pollution caused by salts & nutrients entering waterway	The boat mooring platform (pontoon) is a river related use and will not impact on water quality or wetlands. The scour protection will work to stabilise the embankment in this location with no ongoing adverse impacts on water quality or wetlands. Proposed use will not result in salts or nutrients entering the waterway.
Wetlands	Ensure appropriate consideration of land use and management of wetlands.	Proposed works will not have adverse impacts on wetlands. Nearest RAMSAR is located more than 170km downstream and works are not within the vicinity of local wetland areas.

Section 5.11 – outlines general provisions for consultation. The proposed works are to be submitted to TfNSW regarding boating safety and navigational impacts and Fisheries for consultation and review, under Integrated Development.

Section 5.12 - provides planning controls and consultation requirements for particular types of development on the Murray River. Relevant items are addressed in the table below. The proposed works are consistent with the planning controls within the SEPP BC as the project relates to a river related use and aligns with general and specific planning principles.

Table 4: Planning Control & Consultation Considerations (SEPP (B&C) Chp 5, Part 5.3, Sect 5.12)

Planning Control	**Consent & Consultation Requirements plus any specific 'Matters for Consideration'**	**Comments**
Item 3 – Bank &/or Bed Work *"Works which relate to the excavation, dredging or alteration to the alignment or shape of the bank or bed of the River Murray (including construction of weirs and floodgates, boat ramps and bank stabilisation works)"*	Council consent required. Consultation required with: - TfNSW – re boating safety - DPIE if likely to significantly impact threatened species under BC Act 2016	Suitable approvals and permits will be sought in conjunction with planning approvals for bank stabilisation works. Shaping of the embankment through excavation will be minimised and limited to obtain require slope for armour stone placement.
Item 9 – Destruction of native vegetation *"The clearing, logging, removal or damaging of any species of trees and shrubs that are indigenous to the River Murray floodplain and that are on land shown on the map as native vegetation."*	Council consent required. Consultation with: - DPIE if likely to significantly affect threatened species, with consideration of Soil erosion and land degradation, effects on landscape, potential loss of wildlife habitat and endangerment of the species of vegetation - Permit application required for removal of native vegetation, if required, in degraded environment.	No destruction of vegetation in wetlands. Minimal removal of existing vegetation primarily minor impact on grassland (non-native). There is no demonstratable loss of any trees or significant native vegetation in the vicinity of the proposed works based on the preferred concept option.

Item 29 – Water recreation facility *"Piers, wharves, boat sheds or other structures which have a direct structural connection between the bank or the bed of the River Murray and which are used primarily for public recreational purposes."*	Council consent required. Consultation with: - TfNSW - DPIE (Dept of Planning Industry & Environment)	The proposed boat mooring platform (pontoon) is a water recreation facility and is associated with an existing public boat ramp used for public water recreation. The proposed works support continued recreational use of the waterway.

In summary, the proposed works are generally compliant with the General Principals and objectives of the SEPP, and can be undertaken with minimal impacts on biodiversity and conservation under the SEPP.

6.4. WAKOOL LEP 2013

The proposed works are located within the Murray River Council LGA and subject to the Wakool Local Environmental Plan 2013 (WLEP2013). Under Part 2 – Permitted or prohibited development, of this LEP, the site of the proposed pontoon and embankment works are in an area zoned '**W1 Natural Waterways'**. The proposed works are categorised as ***"Water recreation structure"*** which is defined in the WLEP 2013 Dictionary as ***"****a structure used primarily for recreational purposes that has a direct structural connection between the shore and the waterway, and may include a pier, wharf, jetty or boat launching ramp."*

Water recreation structures are permitted with consent within the **W1 Natural Waterways** zone of the WLEP2013.

The objectives of the W1 Natural Waterways zone are:

- To protect the ecological and scenic values of natural waterways.
- To prevent development that would have an adverse effect on the natural values of waterways in this zone.
- To provide for sustainable fishing industries and recreational fishing.

The proposed works do not contravene the objectives of the ***W1*** zone. The proposed works relate to the construction of a concrete walkway aligned with the existing concrete boat ramp at ground level, to provide compliant access to the waterway. The proposed boat mooring platform is a floating pontoon structure which will rise and fall with the river level and to be secured in place by seven (7) no. steel piles in keeping with typical maritime development. The proposed works support recreational use of the waterway.

Ecological assessment has been undertaken and generally supports the proposition that the works will not adversely impact ecological values. The works are compatible with the existing and continued use of the location, involve low level structures, with the exception of the piling, and therefore will not adversely impact scenic values. Suitable measures have been proposed to be implemented (e.g. through design and mitigation measures as described in the preliminary Statement of Environmental Effects) to ensure that the ecological and natural values of the Murray River will not be adversely impacted. Refer to the following sections identifying mitigation measures and the suggested preliminary CEMP, supporting recommendations as outlined in the MPR Aquatic Ecology Assessment, ***Appendix 3***, ***Section 3.2.1.)***

In relation to ***WLEP 2013, Part 5 – 'Miscellaneous Provisions', Section 5.10*** "***Heritage Conservation***", consideration has been given to any potential impacts of items of Aboriginal and non-Aboriginal cultural heritage. A desktop assessment and site field inspection have been undertaken by Austal Archaeology, in August 2024. The assessment found that the activity area has already been previously disturbed by the existing boat ramp and park infrastructure as well as natural processes such as embankment erosion and inundation over time. Therefore, as a result of previous disturbance and a desktop assessment identifying the nearest listed Aboriginal Cultural Heritage Place being 8km away, that the activity area is no longer within an area of sensitivity and further assessment is not warranted. It can be concluded that the proposed works will not impact Heritage Conservation areas or heritage items and adequate mitigation measures can be established to address any unexpected finds encountered during construction of the proposed works. Therefore, a Heritage Conservation Management Plan (NSW) or Cultural Heritage Management Plan (VIC) are not required.

In relation to flood planning (***Sect 5.21, WLEP***), the proposed works are compatible with flood function and behaviour and will not impact flood function or behaviour or present cumulative impacts on flood behaviour. The works will not "*adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or reduction in the stability of river banks or watercourses.*" (S5.21, Cls (2)(e)) Development is not 'sensitive and hazardous development' as identified in the LEP.

There are a number of additional local provisions in ***Part 6*** of the WLEP2013 that apply to the proposed works. These are addressed in the table below.

6.4.1. PART 6 – Additional Local Provisions – Summary

Table 5: LEP Part 6 - Additional Local Provisions Compliance

Part 6 - Provision	Response	Proposed Mitigation
6.1 Earthworks	The objective of this clause is to ensure that earthworks for which development consent is required will not have a detrimental impact on environmental functions and processes, neighbouring uses, cultural or heritage items or features of the surrounding land. Some earth works are required to be undertaken for founding the concrete walkway to achieve a slope of 1:14. These earth works are localised and it is unlikely the works would have a significant impact on drainage or soil stability during excavation. Suitable erosion control measures can be implemented The earthworks associated with the proposed walkway and pontoon landing facility are not likely to have any significant impacts on the drainage patterns, soil quality or stability, future use or redevelopment of the land, or the amenity of adjoining properties. The proposed scour protection embankment works are intended to improve stability of the embankment at the site with minimal	Form work and founding and small scale armour stone adjacent to the access way will provide longer term bank stability along the boat ramp and pontoon access. For the rock armouring on southern (upstream) and northern (downstream) embankments, shaping and some excavation works are needed to achieve a 1:1.5 slope. A geofabric textile fabric will be laid over soil to prevent erosion with rock armouring placed on top. A preliminary Erosion and Sediment Control Plan has been developed and is to be finalised by the nominated Contractor and implemented to prevent sediment run off entering the Murray River.

	excavation. Excavated material will be reused or disposed of off-site. The likelihood of disturbing relics is considered low as reported in the Archaeology Due Diligence Assessment undertaken by Austal Archaeology and appended to this report (refer ***Appendix 4***) Previous works to extend the boat ramp did not uncover any unexpected Aboriginal sites or objects. The embankment and landforms in the subject area consist of the mud flats and the inner river bank slope, which are frequently inundated and disturbed by flood events and would not have provided a good area for occupation.	
6.2 Flood Planning	The project is compatible with the flood hazard of the land and will not significantly adversely affect flood behaviour or the environment.	Mitigation measures (described in Section 5) will be implemented to ensure that the ecological and natural values of the Murray River will not be impacted.
6.3 Terrestrial Biodiversity	This clause applies to land identified as "Biodiversity" on the Terrestrial Biodiversity Map. The proposed works are located within the banks of the Murray River (zoned W1 Natural Waterways) adjacent to the land mapped Terrestrial Biodiversity. The scope of the proposed embankment armour stone protection works has been reduced and limited such as to reduce the impact on the large native trees identified under Native Vegetation Assessment.	Shaping and placement to be restrained and kept to minimum amount required to satisfy design requirements. No demonstratable loss of native vegetation. Therefore, no adverse impacts on biodiversity or habitat in the terrestrial zone for these works.
6.4 Riparian Land & Watercourses	The proposed works are located within the banks of the Murray River, which is identified as a "Watercourse" on the Watercourse Map. Disturbance to the river bank and riparian vegetation adjacent to the site will be minimised as much as possible. The works will not result in fragmentation of aquatic habitat or reduction in water quality, as the works are limited to a small section of the river and river bank; and will not impede water flow within the river, as there is already an existing boat ramp in this location and the pontoon is a floating structure held in place with pontoon piles. The armour stone embankment works will support stabilisation of the bank. The river bank habitat to be modified is already disturbed and is well represented within the area and more broadly throughout the river system.	The study site is located in an area defined as "Watercourse" on watercourse map WCL_005. In relation to the objectives of this clause, the proposal is unlikely to have any significant impact on water quality, aquatic habitats, banks and river bed stability, and fish passage, plus any construction risks can being mitigated by the appropriate construction safeguards as set out in Section 5 *Reference:* *Threatened and migratory species* *No threatened plant species are known from the vicinity (bionet 2018). The migratory species, Caspian Tern, is known from Swan Hill, this and other bird species*

	Reference: *The Murray river that forms the south-western boundary to Murray Downs is mapped as being environmentally sensitive on the Terrestrial biodiversity map, the Wetlands map and the Watercourse map of Wakool LEP 2013, as it forms part of the aquatic threatened ecological community listed under the NSW Fisheries management Act 1994:* *SOURCE: page 120, The settlements. Section 4.6 'Murray Downs', 4.6.5 Environmental attributes – 4.6.5.3 Biodiversity, 'Murray River local profile', prepared for Murray River Council, by Zenith Town Planning, dated December 2018*	*are likely to use the wetlands/lakes in the golf course/country club.* *SOURCE: page 120, The settlements. Section 4.6 'Murray Downs', 4.6.5 Environmental attributes – 4.6.5.3 Biodiversity, 'Murray River local profile', prepared for Murray River Council, by Zenith Town Planning, dated December 2018*
6.5 Wetlands	The river is defined at "Wetlands" on the wetlands map WET_005. The objectives of this clause are to ensure that wetlands are preserved and protected from the impacts of development. With respect to the objectives, the proposal is unlikely to have any significant impacts on native fauna and flora, habitat quality and surface and groundwater dynamics. Whilst the rock armouring will be overlaying a small section of bank habitat, the rock boulders will add further habitat complexity for fish refuge at different water levels. (MPR, pg 24, ***Appendix 3***)	If LWD requires relocation in the vicinity of the pontoon system for safe access to berthing, it is proposed to relocate the existing LWD either immediately upstream or downstream to maintain LWD habitat in the vicinity. It is not anticipated that any woody debris will need to be removed or relocated to accommodate armour stone placement and associated excavation for embankment protection in the waterway.
6.6 Development on riverfront areas	As the proposed works are limited to installation of the floating boat mooring system (pontoon system) and stability piles, along with the proposed embankment scour protection works *The proposed works are unlikely to significantly impact the natural migration of the river channel, including riverine processes, bed and bank stability, water quality, amenity or scenic landscape values, public access to riverine corridor or wildlife habitats.* *The proposed pontoon does extend into the river, however the structure would only extend approximately 15m into the 100m wide channel and will not significantly impact the navigability of the river.* (MPR, pg 24) The embankment protection works, may have localised impact on stabilising the embankment but is not anticipated to have significant impact on the natural migration of the river channel. Minor restricted public access will occur during construction, but can reasonably be	Appropriate sediment and erosion controls to be implemented during construction. No native vegetation is to be lost through the works.

	expected to be of short duration and temporary nature. Overall accessibility will be improved over the longer term. The proposed works will improve recreational access to the river in this location, which will help to reinvigorate the public space and enhance its overall social, environmental, cultural and economic values.	
6.7 Development on river beds and banks	As above	As above

Figure 15: Riparian Lands & Watercourse Map - Wakool LEP

Figure 16: Wetlands Map - Protection - Wakool LEP

SUMMARY – LEP - IMPACT & MITIGATION SUMMARY

- S6.1 'Earthworks'

  As established above, and in the environmental assessment below, the excavation of embankment to accommodate the concrete pathway and armour stone protection are minor in nature and are considered unlikely to have any adverse impacts on heritage or disturb relics, and are design to stabilise the embankment in the immediate vicinity. Placement of armour stone will not impact drainage and will improve soil stability. Fill material is unlikely to be required and ground will be shaped to achieve desired slopes. Established mitigation measures can be implemented during construction.

- S6.3 'Terrestrial Biodiversity'

  It is noted that:

  "The Murray River that forms the south-western boundary to Murray Downs is mapped as being environmentally sensitive on the Terrestrial biodiversity map, the Wetlands map and the Watercourse map of Wakool LEP 2013, as it forms part of the aquatic threatened ecological community listed under the NSW Fisheries management Act 1994"

  SOURCE: page 120, The settlements. Section 4.6 'Murray Downs', 4.6.5 Environmental attributes – 4.6.5.3 Biodiversity, 'Murray River local profile', prepared for Murray River Council, by Zenith Town Planning, dated December 2018

  It is noted, however that, in relation to threatened or migratory species:

  "No threatened plant species are known from the vicinity (bionet 2018). The migratory species, Caspian Tern, is known from Swan Hill, this and other bird species are likely to use the wetlands/lakes in the golf course/country club."

  SOURCE: page 120, The settlements. Section 4.6 'Murray Downs', 4.6.5 Environmental attributes – 4.6.5.3 Biodiversity, 'Murray River local profile', prepared for Murray River Council, by Zenith Town Planning, dated December 2018

  In relation to native flora, the proposed works have been assessed as having minimal impact native flora. Native vegetation removal impacts have been assessed by NR Links and the assessment report is attached as Appendix 6. The assessment concludes there is no demonstratable loss of native vegetation.

- S6.4 'Riparian Land and watercourses'

  The proposed works have been assessed by MPR Pty Ltd as outline above. The report is attached in full as ***Appendix 3*** to this Statement. The impact of the proposed works on aquatic & riparian species, habitats and ecosystems has been assessed as minor. The proposed armour stone placement is intended to protect the slope and local embankment along the proposed walkway. The works will not impact habitat or free passage for fish within or along the watercourse. A permit may be required for relocation of existing LWD to an alternate location adjacent to the proposed site. This has been assessed as having minimal impact with mitigation recommended by undertaking a search for Murray Crayfish and relocation of Murray Crayfish if any found at the site prior to the commencement of works.

- S6.5 'Wetlands'

  As noted above, the proposed works will not have adverse impacts on wetlands. Nearest RAMSAR is located more than 170km downstream and works are not within the vicinity of local wetland areas.

6.5. WAKOOL DCP 2013

The Wakool Development Control Plan 2013 details requirements for development which must be taken into account when preparing a development application. The following table (*Table 5*) lists and addresses all relevant clauses to the proposed development woks.

Table 6: DCP Compliance Summary

Provision	*Response*	Mitigation/ Controls
Earthworks & Erosion/ Sediment Controls	Earthworks associated with the proposed works will be undertaken in accordance with WLEP2013 Clause 6.1 and controls in the WDCP2013.	A preliminary Erosion and Sediment Control Plan has been developed. A final plan, including locations of environmental controls is to be finalised by the Contractor and submitted for approval prior to commencement of construction activities.
River Structures & Boating Facilities	Recreational boating facilities require approval under the provisions of relevant legislation including the SEPP (BC) 2021, as address in S*ection 3.2.2 above.* This SEE addresses the requirements of Part 6 of the WLEP2013 (Table 2), including Clause 6.6 Riparian land and the Murray River and other watercourses, as well as Clause 6.7 Development on river bed and banks of the Murray River. The proposed works are not inconsistent with the controls for River Structures and Boating Facilities in WDCP2013.	Design in compliance with relevant Australian Standards including, but not limited to AS3672 and AS 4997 latest issues.
Natural Environment	Native species are limited to a narrow strip along the river bank, and within the study area the only native species observed were River Red-gum Eucalyptus camaldulensis, Spear Grass Austrostipa spp., Ruby Saltbush Enchylaena tomentose var. tomentose and Hedge Saltbush Rhagodia spinescens. No threatened flora or fauna were recorded over the duration of previous the field investigations undertaken by Biosys in 2017 in relation to the boat ramp extension works. The proposed pontoon and embankment works will not impact upon any listed threatened species or communities (Biosis 2017a).	Appropriate erosion and sediment control measures will be installed at all sites to avoid sedimentation of receiving waters or other indirect impacts to surrounding biodiversity values. The top of the embankment, above high water mark, could be further planted out with suitable native vegetation to be nominated by Council or others. There is no demonstratable loss of native vegetation.
Heritage & Culture	As part of this due diligence, a desktop assessment of the proposed study area was undertaken to determine the likelihood of Aboriginal heritage sites occurring within the study area. A review of AHIMS listings was undertaken within specific coordinates	Based on the results of the survey and background research the following recommendations have been made: *a) No further archaeological assessment is required*

	centred on the study area. As a result, NO sites were identified within the location of the works. Four sites were identified on the NSW side of the Murray River further afield, including a burial, earth mound, modified tree, artefact and shell. None of these sites were located within the subject area and will not be adversely impacted by the works.	No further archaeological work is required in the study area as the location of the NSW part of the study area on the mud flats and slopes of the Murray River bank has low potential for the presence of Aboriginal sites and objects. *b) Discovery of Unanticipated Aboriginal Objects* All Aboriginal objects and Places are protected under the NSW National Parks and Wildlife Act 1974. It is an offence to knowingly disturb an Aboriginal site without a consent permit issued by the Office of Environment and Heritage (OEH). Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying the OEH and Aboriginal stakeholders. *c) Discovery of Aboriginal Ancestral Remains* Aboriginal ancestral remains may be found. If any suspected human remains are discovered during any activity you must: 1. Immediately cease all work at that location and not further move or disturb the remains 2. Notify the NSW Police and OEH's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location 3. Not recommence work at that location unless authorised in writing by OEH.
Bank and/ or Bed Works Application	Under the WDCP2013, the requirements for Bank and/or Bed Works applications include: • Contour levels and finished level details are included on the attached site plans. • No trees or native vegetation will be removed from the river bank as a result of the proposed works. • Land Owner Consent from NSW Crown Lands has been received to	NSW Crown Lands has provided Landowner's consent for the DA submission with submissions to TfNSW and DPI – Fisheries NSW for relevant consent and any GTAs. No requirements for native tree removal above high water mark have been identified as being required in the immediate location of the works to accommodate the proposed

	accompany a development application for the proposed works. • Plans of the proposed works are required to accompany a development application, which include locality plan, site plan, cross sections, and erosion and sediment control plan. The proposed works are located on the bank of the Murray River (Victorian side) approximately 500m north of the Swan Hill Bridge and include the installation of a floating boat mooring system with pontoon support piling and concrete access walkway and embankment scour protection through armour stone placement. Works will include the following activities: • Establish environmental controls in accordance with any Development Consent Conditions and the approved Erosion and Sediment Control Plan. • Disposal of excess soil or wastes if required. • Ongoing operation of the boat ramp. • Any ancillary facilities or storage of materials will be located away from the river bank and included as part of the other associated construction activities in Swan Hill, Victoria.	embankment protection works and pontoon access way. An approved Erosion and Sediment Control Plan will be implemented. Construction is proposed to be undertaken at a time when the river is low (e.g. not during high summer irrigation flows or high winter rainfall runoff periods) to minimise any potential impacts on the riverine environment. The construction period will be temporary and public access to the area will be restored upon completion

6.6. SUMMARY – STATUTORY COMPLIANCE & PERMISSIBILITY

In summary, the proposed development works are located within the river and riverbank and are therefore on Crown Land, being '*land associated with non-tidal waterways*.' Landowner's consent is required, and has been received, from Crown Lands. The proposed development is for the purpose of provision of community and recreation facilities, in W1 zone waterway and is development permissible with consent. All proposed works are adjoining existing and approved public recreational maritime facilities, improvements and immediate surrounds.

Murray River Council (MRC) is the determining authority for the Proposed Activity where the activity consists of the proposed concrete walkway and concrete pad, pontoon access ramp and pontoon mooring system and associated pontoon piling, and proposed armour stone embankment protection. This Statement of Environmental Effects (SEE) has been prepared which examines and considers matters affecting or likely to affect the environment as a result of the Proposed Activity.

In addressing compliance with relevant planning controls, the proposed works are designed to meet the development guidelines set out in applicable SEPPs and the MRC Wakool LEP 2013, relevant Australian Standards and the Building Code of Australia. The MRC Wakool DCP 2013 is applicable to the works, and the works seek to generally comply with relevant controls.

7. EVIRONMENTAL IMPACTS & MITIGATION MEASURES

7.1. SUMMARY – KEY IMPACT AREAS

The proposed works are subject to environmental assessment by specialist consultants to identify potential impacts on, in particular, aquatic and riparian ecology, native vegetation and Aboriginal Cultural Heritage at the site of the works and both in the immediate upstream and downstream vicinity.

An Aboriginal Due Diligence Assessment has found that in general the location of the proposed works associated with upgrading the facilities for the boat ramp, is in an area that has already been heavily disturbed by the existing boat ramp and by works on associated park infrastructure, as well as natural erosion and inundation of the site. The desktop assessment concludes that there are no Aboriginal Cultural Heritage Places located within 200m of the works (the closest is 8km away) and field inspection confirmed the previous disturbances. No further assessment is required and a Cultural Heritage Management Plan is not required for the site or proposed works.

In relation to native vegetation, the proposed works seek to minimise the removal of existing vegetation where possible. The location of the works does not have significant ground cover and, whilst an assessment has identified that the tree protection zone of onw (1) tree is impacted, the impact is determined to be only to 2.7% of the TPRZ and below the 10% threshold, such that impact is not considered enough for the tree to be assumed as 'lost'. Any existing woody debris within the waterway, on the riverbed, in the vicinity of the proposed works will be relocated within the waterway immediately downstream or across the river in the vicinity of the works, if required to be relocated with navigational and boating safety considerations.

An aquatic ecology assessment has been undertaken by Marine Pollution Research Pty Ltd (MPR) and it is proposed that the works will have minimal adverse impacts on threated ecological communities or species within the waterway and riparian zone where the works are located. The floating pontoon system will provide some shelter and habitat for aquatic species within the waterway. Sloped armour stone slope protection with irregular stone placement and sizes will provide embankment habitat in the riparian zone.

Impacts associated with construction activities can be mitigated through use of best practise and established construction methods including, but not limited to, the use of floating sediment containment booms, and if required, temporary coffer dam. Appropriate site controls for storage of materials above high water and within an appropriate area with sediment controls and bunding where required to control stormwater run-off and impacts on water quality.

7.2. GENERAL MARITIME CONSIDERATIONS

7.2.1. Safety

The proposed works are located in an area of the river with adequate river width and adequate water depth at various water levels to accommodate the layout and orientation of the pontoon system within the waterway, to support public use of the boat ramp and recreational use of the waterway. The location of the existing ramp and proposed pontoon will have high visibility to waterway users when approaching the facility. It is not anticipated that the siting of the proposed pontoon system with a return along the embankment will adversely impact navigation in the waterway.

The proposed works are associated with existing public access. The design is intended to achieve DDA compliance in slope and width for 80% of the time, based on nominated high and low water levels, to facilitate safe access and improved safety & security for launch & retrieval activities. The

proposed boat mooring system seeks to consolidate loading and unloading activities along the pontoon system rather than informally along embankment, and to consolidates foot traffic along the concrete walkway and boat ramp footprint.

Armour stone embankment protection seeks to stabilise the existing embankment immediately adjacent to the boat ramp and reduce accumulation of sediment in the waterway under the pontoon from erosion of the embankment, impacting water depth for mooring at low water levels.

The existing boat ramp and immediate embankment areas are to be secured against public access during construction works onsite. The facilities will be available for public access once works are completed with appropriate compliance and consent certificates.

7.2.2. Access

The proposed boat mooring platform is to be accessed via a new concrete walkway, adjacent to the existing concrete boat ramp. Parking is available for vehicles with trailers adjacent to the boat ramp in an existing public waterfront reserve. The access walkway is design for the provision of DDA compliant access requirements in slope and width for 80% of the time, based on nominated high and low water levels.

During construction, and for ongoing use, access to and from the location of the existing boat ramp and proposed walkway and pontoon system, is through local public roads and public reserve.

Terrestrial and bathymetric surveys have been undertaken for the site to assist in compliant design and determining positioning of pontoon to achieve desired water depth with sufficient keel clearance for design vessel. Survey fieldwork was undertaken in June 2024, by Total Surveying Solutions (TSS), with detailed survey plans issued in July 2024, identifying spot levels, contours, key features and boundaries and riverbed levels. Survey and locating data have been incorporated into design plans for siting the works and the full set of survey plans can be reviewed in ***Appendix 1.***

Access during construction will be limited, in the vicinity of the existing boat ramp. The existing boat ramp and immediate foreshore area in the vicinity of the proposed works will not be available during the construction period. A small section of the waterway will be impact during construction. It is proposed that a barge will be anchored at the site for provision of materials, installation of piles, installation of pontoon units and placement of armour stone for bank protection.

7.2.3. Amenity

The proposed works are for public infrastructure administered under Swan Hill Rural City Council for public recreational use of the waterway.

The existing boat ramp provides access to the Murray River for boating public for activities including fishing and water-based activities. Existing structures in the subject area include:

- the existing concrete boat ramp, which was widened and extended in 2018/02019 with consent,
- public sealed car park area which accommodates private vehicles with boat trailers
- sealed public access roadway
- sealed public walkway through the reserve along the embankment, and
- public amenities.

As noted previously, development activity in 2018 and 2019 resulted in the extension and widening of the existing boat ramp to improve the amenity, with construction of the adjoining sealed carpark.

There are no changes to the current use of the reserve and boat ramp and no adverse changes to access. Proposed works seek to enhance accessibility for all recreational vessel and waterway users

through provision of accessibility compliant access for loading and unloading of passengers and for launching and retrieval of recreational vessels.

7.3. UNIQUE HAZARDS & RISKS – Site Specific

7.3.1. Existing environment - Site Specific:

- Subject site is a riverine environment with the majority of works occurring below the high-water level. The site is an existing public boat ramp, managed and maintained by SHRCC and the proposed works lie immediately adjacent to the existing structure.
- Riverine environments can be subject to flood flows and flood events.
- Works involve working within the waterway and immediately adjacent which presents risks associated with health and safety in marine environments and impacts on water quality.
- The terrestrial riparian edge is dominated by river red gums providing habitat and contributing the riverbank stabilisation.
- Embankment consists of bare alluvial silty clay with quartz sandstone, pebbles and ironstone fragments, with bare ground being largely due to pedestrian traffic and steeper embankment sections.
- In the vicinity of the boat ramp, the current riverbank levels are generally less than 3.5m high and roughly sloped at 50^{O} grade
- Medium and large trees are located along and behind the crest of the riverbank and flanking the existing boat ramp. Root structures are exposed along the embankment. The embankment surfaces are relatively bare of ground of cover.

7.3.2. Potential Impacts

- Risks associated with use of structures in maritime environment where water levels, sediment build up and wet surfaces can result in adverse impacts to users.
- Siting of the works may have adverse impacts on vegetation and habitat. It is highly desirable that existing vegetation along the embankment and riparian zone be protected and maintained where possible.
- Proposed layout has been considered to reduce the potential loss of native trees and vegetation in riparian zone and reduce potential for instability of embankment in the vicinity from excavations associated with the proposed works.
- Damage to native vegetation along embankment during construction activities – appropriate protections required to minimise risk.
- Impacts on water quality during construction
- During construction activities, care would need to be taken to protect plant and equipment and construction personnel from the risk of flood or storm water flows which could result in injury to persons and/ or damage to plant and equipment. Potential impacts could be mitigated as nominated in this report.
- During ongoing use, maintenance would be required to maintain algal-free surfaces.
- No additional ongoing use on vegetation from appropriate use of the mooring system once practical completion reached.

7.3.3. Safeguards & Mitigation/ Management Measures

- Design of slip-resistant surface for concrete walkway and FRP mesh deck ramp(s) during ongoing use and design to address siting, layout and construction to accommodate various water levels and flood events.

- Development of suitable CEMP with implementation of acceptable and established construction methods and protections to address impacts and hazards in riverine environment, including but not limited to deployment of erosions & sediment controls.
- During construction - monitor weather and river conditions daily - impacts can be minimised and mitigated by ensuring activities are not undertaken during adverse river flows or flood flows or weather conditions and conditions are monitored throughout the period of work, especially during periods of higher water levels.

7.4. BIODIVERSITY/ ECOLOGICAL

The Murray River in this area is a meandering river lined with magnificent forests of red gum and sandy beaches in its lower reaches. The region is home to plentiful wildlife, supporting over 350 varieties of birds, as well as many species of mammals, reptiles and fish, including the native Murray cod, and other river residents like the golden perch, trout, catfish and freshwater cray.

7.4.1. Methodology – site investigation

A desktop assessment into aquatic and riparian ecological communities and species was undertaken for the site of the proposed works in July/ August 2024 by Marine Pollution Research Pty Ltd (MPR), to identify any species or habitat of high ecological significance and sensitivity, and the presence of any threatened species and to assess likely impacts of construction activities for the nominated location. The full Aquatic Ecology Impact Assessment is appended as ***Appendix 3.*** A detailed assessment of impacts to Native Vegetation to identify any loss or clearance of native vegetation associated with the works. (Refer to ***Appendix 6*** for detailed assessment).

A desktop review of available previous reports and websites related to terrestrial biodiversity was undertaken in-house with consideration given the layout and siting of the proposed works.

7.4.2. Existing environment - Site Specific:

The aquatic riverine habitats are the main river channel and the sloping riparian edge flood zone. The terrestrial riparian edge is dominated by river red gums providing habitat and contributing the riverbank stabilisation.

It is noted that the Murray River is listed as an Endangered Ecological Community area (EEC) which is based on provision of suitable habitat for a variety of aquatic fauna and threatened species including Tandanus – eel tailed cafish and Ambassis agassizii Olive Perchlet. However, the BioNet Atlas Database lists no aquatic species within a 10km x 10km area around Swan Hill. It is also additionally noted that there is a possibility of Murray Crayfish habitat at the site.

7.4.3. Potential Impacts

In assessing the impacts of the proposed works, the Aquatic Ecology Assessment finds that:

- The proposed pontoon will essentially lie in water depths of approximately 1.5m and that *"Given the varying river depths and flow rates and the generally turbid nature of the river waters, it is unlikely that there will be established inshore submerged or emergent macrophyte beds that could be lost to placement of the shore connection ramp and it is also expected that there would be no macrophytes in the deeper offshore waters under the proposed pontoon jetty. The pontoon structure could in fact add some shading habitat complexity for fish that prefer overhanging snags and fallen tree habitat - such as the Murray Cod."*

- The proposed rock armouring will provide *"instream and riparian bank stabilisation from further erosion (due to river flows and present boat traffic) it will have a beneficial impact in lowering overall river water turbidity and smothering from mobilised eroded banks and the placement of the rock boulder armouring would also add habitat complexity for riparian and edge aquatic fauna."*
- However, placement of the armour stone protection could also result in minimal loss of clay bank potential burrow habitat for Murray Crayfish which has recently been reintroduced further upstream.
- The proposed works have minimal footprint above high-water level and minimum impact on terrestrial habitat and communities. No known terrestrial fauna will be impacted by the proposed works
- No significant impact on threatened species 'lifecycle' and no viable population present
- No significant impact on endangered species as a result of reducing occurrence or modifying ecological community composition
- No significant impact on habitat of threatened or endangered ecological community as habitat already fragmented at the site and works will not significantly further fragmentation or modify composition in the long term.
- The site is not a declared area of 'outstanding biodiversity value' and will not have impacts on other areas as they are significantly distanced from the site both upstream and downstream. Works are of a minor nature in a small specific site.
- Works have been assessed as not having any demonstratable loss of native vegetation. Additional suitable habitat is also immediately adjacent and available.
- The natural state of the landscape at the specific subject site has been previously modified.
- Habitat at the site is not consistent with presence of threatened species.

7.4.4. Safeguards & Mitigation/ Management Measures

Aquatic

- The river bank habitat to be modified is already disturbed and is well represented within the area and more broadly throughout the river system.
- Suitable mitigation options are available to offset the potential habitat loss, with placement of any existing woody debris along the river bank that may be required to be relocated from the embankment to facilitate the works, *"to be re-purposed as Large Woody Debris downstream of the boat ramp and pontoon facility as suitable offset for the loss of clay bank habitat to rock armouring."*
- Pontoon structures can provide shelter and shading habitat complexity for fish that prefer overhanging snags and fallen tree habitat (such as Murray Cod)
- Murray Crayfish - As the bank works require minor excavations for placement of the rocks, the riparian bank and adjacent shallow edge aquatic habitats will be temporally disturbed. To minimise habitat loss and impact to aquatic fauna, the following ***pre-construction*** recommendations are made:
    - Capture and relocate Murry Crays from the existing LWD and from the upper armouring bank section(if found) suitable alternative LWD. This can be done using established relocation methods as developed by DPI Fisheries (see for instance
    - Relocation of the existing upstream LWD to be incorporated into the new LWD location downstream.
    - The large woody 'snags', large branches or fallen trees (LWD) that will need to be relocated from the rock armour bank are to be identified and a suitable downstream

location is to be specified for their relocation.
    - Prior to moving the identified LWD, a targeted survey for possible Murray Crayfish occupation of the whole rock armouring site must be undertaken and if found there will need to be an application to DPI Fisheries for a fish salvage (baited trap or net) operation to capture and relocate Murray Crayfish. These works will require a permit issued by DPI Fisheries.
    - Captured crayfish are to be relocated to the newly established LWD area downstream.
    - Once the area is cleared the in-situ LWD can be relocated to form part of the new LWD area downstream.
- Suitable mitigation measures are also proposed within the Aquatic Ecology Assessment to mitigate any impacts during construction activities for the proposed works. Refer to *Section 3.2 of the Aquatic Ecology Report* in ***Appendix 3***
    - Sediment & erosion controls to be installed to ensure any sediment or erosion disturbed during construction is contained and prohibited from impacting water quality for both recreational use and for habitat quality. A Sediment and Erosion Control Plan should be prepared by the Contractor prior to commencement of works onsite, in accordance with applicable guidelines and requirements to address arrangements for capturing sediments and addressing works during high risk weather events/ conditions.
    - An emergency response plan should also be developed by the Contractor in the event of any spills. The plan is to address the location and deployment of spill kits, emergency response procedures and notification and clean up procedures.
    - Storage of plant, equipment and materials should be in areas above possible inundation levels. Only place stockpiles in cleared areas or, where cleared areas are unavailable in areas with minimal/ low value vegetation.

Terrestrial

- Remove minimum required vegetation associated with existing riverine banks and minimise disturbance to remaining vegetation.
- Only place stockpiles in nominated cleared or grassed areas with minimal/ low value vegetation.
- Where existing vegetation is to be retained, a qualified arborist shall install bunting around the vegetation

7.5. ABORIGINAL CULTURAL HERITAGE

The Swan Hill area has a rich heritage landscape. The original custodians of the lands are the Latji Latji, Tati Tati, Wamba Wemba, Barapa Barapa and the Wadi Wadi Nations. Before European settlement, the Wamba-Wemba people settled in the area around the Loddon River, through to Matakupaat (Swan Hill).

7.5.1. Methodology – site investigation

An initial basic search of the AIHMS database provided results that no Aboriginal sites are located in the immediate vicinity of the proposed works. The basic search outputs are appended to this report. (Refer ***Appendix 7***).

A Due Diligence assessment was undertaken by Austral Archaeology in August 2024. Refer to ***Appendix 4*** for full assessment report.

7.5.2. Existing environment - Site Specific:

The desktop assessment undertaken identified that there were no Aboriginal Cultural Heritage Places (ACHPs) located within 200 meters of the study area, with the closest one being located 8 kilometres away from the activity area. The desktop assessment identified that there was a levee constructed on a portion of the activity area in the late 1800s, and that the original boat ramp was constructed in the 1970s.

The site of the proposed works is an area that has previously been assessed and disturbed in recent years in association with the extension of the boat ramp, as well as disturbance of the river embankment from flood and river current and weather events.

The proposed works can be considered low-impact activity as the works, under Clause 80B, Section 87 (4) of the NPW Regulation, notes that low impact activities are being undertaken on land that is previously disturbed such as by the "construction of buildings and the erection of other structures", where human activity has changed to the land's surface. However, care should be taken if Aboriginal objects are later found.

7.5.3. Potential Impacts

Based on the outcomes of the Aboriginal Cultural Heritage Due Diligence Assessment, it is determined that there are no anticipated adverse impacts associated with the proposed works.

7.5.4. Safeguards & Mitigation/ Management Measures

It is recommended that the Contractor proceed with caution, and if Aboriginal objects are later found when the Contractor(s) is carrying out development activity, they must stop work,

Notify EPA Enviroline on 131555, and/ or Dept Environment, Climate Change & Water (DECCW) and apply for an AHI Permit if works will result in harm those 'known' objects.

Contact ALC and engage a suitably qualified aboriginal heritage consultant and/ or archaeologist.

In this event, all works are to stop until permits are obtained and written consent provided by relevant authorities.

7.6. NON - ABORIGINAL CULTURAL HERITAGE

Whilst the Swan Hill and Murray Downs areas have a rich history, there are no items of heritage significance in the vicinity of the proposed works. The works occur within a small physical footprint in relation to the township and wider community. Heritage items noted under the Wakool LEP and Swan Hill Planning Scheme are not in the vicinity of the boat ramp and are not likely to be impacted by construction activities or ongoing use of the proposed boating facility or embankment protection works.

7.7. MITIGATION MEASURES – SUMMARY TABLE

The following table summarises mitigation measures to avoid potential environmental impacts:

Table 7: Mitigation Measures - Summary

Environmental Consideration	Potential Impact & Description/ Response	Proposed Mitigation Measures
7.7.1. Soil, Sediment & Erosion	Potential for erosion and sedimentation, reduced soil stability, and bank erosion during construction works. Risks are of short-term duration during construction and not anticipated to continue once works have been completed and site disestablished. Proposed works include long-term scour protection works to protect embankment from further erosion during high river flows and flooding. Excavation works associated with the placement of founding rock for the embankment protection and associated embankment shaping to achieve 1:1.5 slope will require placement of containment boom to contain disturbed sediment to the local site. Excavation associated with foundations for concrete walkway can be controlled and contained with suitable containment boom around work site. Disturbance of sediment can result from piling activities. Therefore, it is proposed that piles are to be driven into the river bed. It would be anticipated that any sediment or suspended solids disturbed during the piling works should settle fairly quickly but may be carried downstream with water flow.	• An Erosion & Sediment Control Plan shall be prepared before starting work and implemented throughout the works. • Instalment of a floating boom installed around appropriate sections of the work site during construction could be utilised to contain any materials within the site. • Any stockpiles or construction materials will be located away from drainage lines and bunding practices implemented. • Fill material should be reused where appropriate on site with approved sourcing required for fill materials, armour stone and such to be used on site. • Waste material to be removed from site • Incorporation of best management erosion and sediment control practices such as those found in the Department of Housing's "Blue Book" on erosion and sediment control. • Within extents of work area, all topsoil and any deleterious material shall be stockpiled for re-use on-site or disposed of to an offsite licensed waste mngt centre, in accordance with NSW EPA Waste Classification Guidelines - Part 1: Classification of Waste (2014). All stripped and excavated materials which will not be reused to be removed. • Under no circumstances shall such materials be disposed below water.

7.7.2. Waterways & Water Quality	Seek to minimise or reduce pollution caused by salts & nutrients entering waterway. The proposed development will have no significant ongoing impact on water quality from ongoing use. Mitigation measures to be implemented to maintain water quality during construction by use of floating containment booms to contain sediment to area of works. Displacement of sediments will be localised to area of work and the vicinity of the boat ramp.	The boat mooring platform (pontoon) is a river related use and will not impact on water quality or wetlands. The scour protection will work to stabilise the embankment adjacent to the pontoon and walkway with no ongoing adverse impacts on water quality or wetlands. Proposed use will not result in salts or nutrients entering the waterway. Floating sediment containment booms with silk curtain (or similar) to ensure sediment is locally contained, with Works during suitable weather/ river conditions to minimise erosion during exposure and excavation and armour stone placement.
7.7.3. Air quality	Possible localised impacts from dust or emissions associated with construction of proposed works, from plant & equipment pf from excavation and rock placement activities during construction. These are of short-term duration. No long-term or permanent impacts.	Dust & Emissions can be managed under a suitable CEMP to be prepared and submitted by the Contractor. It is recommended that exposed areas and stockpiles are to be protected or wetted down in accordance with requirements of water conservation measures to minimise dust generation. Plant & equipment is to be in good working order to reduce emissions.
7.7.4. Noise & Vibration	There may be some short term, minor noise impacts to nearby receivers as a result of the proposed works, associated with construction activities. Potential adverse impacts are limited as the works are not located immediately adjacent to residences or other business entities or structures. <u>Noise</u> Construction activities are anticipated to generate some additional noise levels associated with piling & construction works. Noise sources are likely from use of small -medium excavator, use of plant & equipment for driving piles, concrete pours, crane movements for lifting & placement of prefab units. <u>Vibration</u> Typical construction works may generate ground vibration, mostly associated with piling, which could be expected to be of an intermittent nature and short duration. <u>Ongoing</u> No changes in use – no additional noise impacts.	Construction-generated noise will be of a short-term duration and impact. No residences are located immediately adjacent to the site of the proposed works. Additionally, works would be caried out during standard construction hours therefore disturbance during the evening and night time would not occur. Works will be carried out during normal work hours (i.e. 7am to 6pm Monday to Friday; 8am to 1pm Saturday). Any work that is performed outside normal work hours or on Sundays or public holidays is to minimise noise impacts. The Contractor(s) undertaking the works should adopt all typical standard noise and vibration mitigation measures and adhere to any relevant license and approval conditions. Construction works traffic routes should avoid residential areas outside of standard construction hours.

7.7.5. Heritage – non-Aboriginal	No heritage items will be impacted by the proposed works. There are no items of heritage significance indicated for the site under the Wakool LEP 2013, or under relevant Swan Hill Planning Scheme.	Items of heritage significance in the wider communities of Murray Downs and Swan Hill will not be impacted by the proposed works either during construction or from ongoing use. They are not located in the vicinity of the works.
7.7.6. Heritage – Aboriginal Cultural	AHIMS web search showed no aboriginal sites recorded in and no Aboriginal places declared in or near the subject site. Refer ***Appendix 7*** for copy of relevant AHIMS search It is noted that the location of the NSW part of the study area on the mud flats and slopes of the Murray River bank has low potential for the presence of Aboriginal sites and objects. ACHDDA undertaken by Austral Archaeology determined that previous disturbance made it unlikely that Aboriginal heritage sites would occur within the subject area and that the nearest site is some 200m away. No further assessment is required.	Refer to ***Appendix 4*** for Due Diligence assessment and mitigation recommendations. In summary: ***Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist.*** *If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying the OEH and Aboriginal stakeholders.* *If any suspected human remains are discovered during any activity you must:* *1. Immediately cease all work at that location and not further move or disturb the remains* *2. Notify the NSW Police and OEH's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location* *3. Not recommence work at that location unless authorised in writing by OEH.*
7.7.7. Biodiversity – Aquatic	The river bank habitat to be modified is already disturbed and is well represented within the area and more broadly throughout the river system. Suitable mitigation options are available to offset the potential habitat loss, with placement of any river bank woody debris that may be required to be removed from the embankment to facilitate the works. Pontoon structures can provide shelter and shading habitat complexity for fish that prefer overhanging snags and fallen tree habitat (such as Murray Cod)	• Suitable mitigation measures are also proposed within the Aquatic Ecology Assessment to mitigate any impacts during construction activities for the proposed works. Refer to *Section 3.2 of the Aquatic Ecology Report* in ***Appendix 3*** • Sediment & erosion controls to be installed to ensure any sediment or erosion disturbed during construction is contained and prohibited from impacting water quality for both recreational use and for habitat quality. A Sediment and Erosion Control Plan *Repurpose Large Woody Debris downstream of boat ramp and pontoon facility as suitable offset for the loss of clay bank habitat to rock armouring.*

7.7.8. Biodiversity – Native Vegetation & Trees	The works occupy a small (minor) terrestrial footprint, immediately adjacent to the existing boat ramp. Minimal native vegetation is present within the footprint of the works. No threatened species habitats or ecological communities have previously been identified - Previous assessments and literature review support that works will not result in significant impacts on diversity or quality of ecosystems and/ or biodiversity. The proposed works provide for stabilisation of riverine embankment in the vicinity of human recreational activities to minimise erosion and consolidate access via formed walkway to floating mooring platform rather than informal use of embankment areas for launch and retrieval, loading and unloading activities.	• During Construction, care is to be taken during excavation near the root zones of the River Red-gumtrees on the bank, to minimise damage to tree roots. If roots need to be cut, ensure cuts are clean and undertaken by hand (e.g. saw, pruning blade etc.) rather than by machinery. • Appropriate erosion and sediment control measures should be installed at all sites to avoid sedimentation of receiving water bodies or other indirect impacts to surrounding biodiversity values. • All vegetation onsite shall be retained where practical. Remove minimum required vegetation associated with embankments where impacted by excavation for walkway and minimise disturbance to remaining vegetation. • Only place stockpiles in nominated cleared or grassed areas with minimal/ low value vegetation. • Where existing vegetation is to be retained, a qualified arborist could be engaged to install bunting around the vegetation if determined to be required.
7.7.9. Cumulative Impacts	The existing works are limited to the existing footprint of development at the site. The proposed structures are compatible with and relevant to ongoing recreational use of the boat ramp and waterway. Adverse impacts from the proposed development would be limited to construction activities and therefore of short-term duration. The proposed works would not generate additional traffic or have cumulative impacts beyond the construction period.	No change of use and use of low level and floating structures to ensure compatibility with existing boat ramp. • No additional structures or amenities beyond provision of the floating boat mooring systems.

7.7.10. Traffic, parking & transport	Site is Council Reserve area with designated existing carpark area. There are no long term adverse impacts associated with the proposed boat mooring & embankment protection works. Ongoing use will be from Victoria side of the river. Formal existing parking arrangements are already in place for the boat ramp, suitable for private vehicles and boat trailers. Vehicle access points to the reserve parking area and boat ramp in this location are via sealed access roads Temporary impacts will be incurred on land within the Swan Hill LGA, associated with the construction activities for the proposed works. It can be anticipated that there will be a temporary increase in vehicle movements such as trucks for delivery of plant & equipment and materials to site. Increase in local parking demands within reserve whilst workers are onsite. There will also be temporary exclusions zones around worksite and closure of the boat ramp during works, which may result in short-term disruption to local vehicle and pedestrian traffic adjacent the site. It is noted that the works are very localised to the immediate vicinity of the boat ramp and are located in public reserve area. It is noted that the proposed works will be undertaken from the river bank and waterway. There will be no long-term disruption to local traffic associated with the works.	Construction traffic impacts can be managed by development of a Traffic Control Plan/ Traffic Management Plan to be submitted to and approved by Council, prepared by the Contractor, prior to works commencing. The plan should include: • heavy vehicle routes for movement of plant and equipment • maintenance of pedestrian access along riverside walk where practicable • isolation of work areas against public access • site specific traffic control measures including management of construction related parking requirements and site establishment & stockpile requirements • access via designated site entry and exit locations as required, and • a response plan for any construction traffic incidents or accidents. Selected contractor is to provide safe and adequate emergency access to the site at all times for pedestrians, plant, and equipment during the Contract, and is to take all precautions to ensure that public roads, thoroughfares, accessways and haulage routes are not obstructed or damaged as a result of the Construction Works or transport of equipment and materials Pedestrian access is to be managed within, through and around the Contractor's Working Area in accordance with WHS regulations. As a minimum, man-proof temporary security fencing shall be erected and maintained around the Works Compounds and Project site.

7.7.11. Socio-economic	The development is considered to have localised positive economic & social impacts through provision of DDA compliant access for recreational use of the waterway. It is intended that the proposed works will benefit the wider community by improving the boating facilities in the river front area. Nomination of locally sourced armour stone for embankment works will have local economic impact and reduce transport costs and emissions from transport. The works are not contrary to water recreation-based tourism. Visitors are attracted by recreational opportunities on and around the river and waterways.	The proposed works support Swan Hill Rural City Council in providing improvements to amenities and facilities along the riverfront and can be associated with enhancing public space. Works will facilitate recreational use of the waterway and support tourism/ visitation to the region for water-based activities. Overall, the proposal would provide improvements to accessibility, which would generate a significant positive impact to users with reduced mobility. Design is to ensure compliance with relevant Australian Standards and Best Practise Guides.

7.7.12. Landscape Character & Visual Amenity	The proposed works will not substantially alter the wider landscape or character of the reserve. The works are complementary to the existing boat ramp and compatible with ongoing recreational use of the waterway and adjoining parkland reserve.
	
	The proposed walkway, pontoon units and embankment protection are at ground and water level and predominantly below the existing embankment level when viewed from local streets and reserve (from Victorian view points), and from across the river (from NSW view points).
	
	Embankment protection is natural stone, locally sourced. The concrete walkway and pontoon FRP decking is to be a neutral colour.
	
	The pontoon piling will be visible above the embankment level. It is proposed that the steel piles will be HDPE sleeved with white capping and will be in keeping with the maritime development. Whilst being visible from most vantage points, the piles will not obstruct views to or from the waterway
	
	Visual impacts associated with the presence of plant and equipment, and site fencing, during construction, will be of a temporary nature limited to the construction period. Construction impacts can be managed through standard practices.
		The works maintain existing view and vistas and have no adverse impacts on scenic value. The works relate to low level maritime structures for recreational use and casual berthing, and propose the use of compatible and comparable materials to maintain aesthetic appears.
		
		To mitigate adverse impacts on visual amenity associated with Construction activities, it is proposed that:
		• Disturbed areas will be reinstated and landscaped as soon as practicable.
		• Community information & stakeholder communications around program of works
		• Visual impacts during construction will be of short-term duration
		• During construction, visual impact can be mitigated by:
		  ○ screening areas of work where suitable.
		  ○ ensuring site is tidied and secured at the end of each day.
		  ○ Plant and equipment are to be kept tidy and maintained during works.
		• Minimise spread of waste and stockpiles during construction

7.7.13. Waste	Pre-fabrication off site of pontoon, piles, connections etc, and reuse of materials on site in relation to embankment shaping will result in minimal waste being generated as a result of the proposed works. It is intended that a local quarry is to supply armour stone to reduce transportation requirements and provide flexibility of deliveries to reduce storage and waste. Typical waste management procedures during construction can mitigate potential adverse impacts. No ongoing waste from use of the site.	• Preparation of a Waste Management Plan by the selected Contractor prior to commencement of works on site. • The Contractor is to ensure the works area is kept free of rubbish & waste materials and cleaned up at the end of each working day. • All surplus material, off cuts, and other debris resulting from the work shall be removed from site and disposed of by a licensed contractor to a licensed waste management facility - classification of waste materials for reuse, recycling, stockpiling or disposal, according to EPA Waste Classification Guidelines, Part 1, 2014 • Minimise waste generation by looking for opportunities for pre-fabrication of components/ sections offsite. • Waste material is not to be left on site once the works have been completed.

7.8. CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

- Contractor to prepare of Construction Environmental Management Plan prior to commencement of works and submit to Swan Hill Rural City Council, with copy to Murray River Council, for approval prior to commencement of works on site.
- All contractors to be inducted on the environmental sensitivities of the work site(s) and relevant safeguards prior to commencement.
- Installation of sediment and erosion control barriers during works to minimise risk of disturbed materials or waste materials entering waterway or being wind-driven to adjacent areas (streets, parking, parklands).
- Reconfirm DBYD and services locations prior to commencement of excavation.
- Reconfirm suitability of nominated compound and material storage areas.
- A Marine (Vessel) Traffic Management Plan may be required to address vessel movements on the river waterway during construction activities.

7.8.1. Suggested Aquatic CEMP Inclusions for Construction Activities

The risk of habitat losses due to use of vessels for construction works can be minimised by including the following conditions to the project Construction Environmental Management Plan (CEMP).

All contractors undertaking construction work associated with the project shall ensure that their activities do not cause undue sediment scouring and associated risk of smothering of inshore habitats. In order to achieve these aims, contractors shall implement the following precautions:

- There will be no stockpiling of demolition or construction materials on the river bed.
- In order to minimise wash and prevent bottom scouring, towing or pushing vessels must not use excessive power to manoeuvre barges into place near shore.

- Ingestion risks for marine biota arising from offcuts and debris from construction works and from provision of electrical and/or utilities to the pontoon can be mitigated by including ingestion risk into the CEMP and ensuring that this is discussed at inductions and tool box meetings.
- However, if turbidity curtains are to be deployed, they should be set in a manner that does not increase the risk of snagging onto inshore roots or snags due to river flow as irretrievable silt curtain fragments held on the bottom eventually washed downstream, could potentially present smothering and ingestion risks for biota downstream.

Murray Crayfish

As the bank works require minor excavations for placement of the rocks, the riparian bank and adjacent shallow edge aquatic habitats will be temporally disturbed. To minimise habitat loss and impact to aquatic fauna, the following ***pre-construction*** recommendations are made:

- Capture and relocate Murry Crays from the existing LWD and from the upper armouring bank section (if found) to the newly placed downstream LWD. This can be done using established relocation methods as developed by DPI Fisheries (see for instance
- Relocation of the existing upstream LWD to be incorporated into the new LWD location downstream.
- The large woody 'snags', large branches or fallen trees (LWD) that will need to be relocated from the rock armour bank are to be identified and a suitable downstream location is to be specified for their relocation.
- Prior to moving the identified LWD, a targeted survey for possible Murray Crayfish occupation of the whole rock armouring site must be undertaken and if found there will need to be an application to DPI Fisheries for a fish salvage (baited trap or net) operation to capture and relocate Murray Crayfish. These works will require a permit issued by DPI Fisheries.
- Captured crayfish are to be relocated to the newly established LWD area downstream.
- Once the area is cleared the in-situ LWD can be relocated to form part of the new LWD area downstream.

7.8.2. Construction Waste Management

Depending on the Contractor's program of construction, some materials may need to be stockpiled until the Works have progressed to the stage where the materials can be used. The Contractor shall be responsible for meeting all costs associated with disposal off site of unsuitable and surplus materials, including any tipping and haulage fees which may be levied.

a) Potential Impacts

The proposed works do not change the current use of the site and will not generate additional ongoing waste during operation.

Construction waste is likely to be generated during excavation activities associated with the proposed works and could include clay, sand and rock, along with general construction waste and domestic waste from workers. Construction waste would be disposed of offsite at an appropriate licensed waste facility.

The construction works are not expected to generate hazardous waste. However, any hazardous materials identified during the works would be removed and disposed of as required through appropriate licensed trade waste facilities.

b) Safeguards & Mitigation/ Management Measures

Effective safety and mitigation measures include:

- Preparation of a Waste Management Plan by the Contractor prior to commencement of works
- Other than unsuitable and surplus materials, materials won from onsite shall be reused in the Works in a cost-effective manner.
- Unsuitable and surplus materials shall become the property of the Contractor and shall be removed from the site and legally disposed of by the Contractor.
- Recycling and disposal off site shall comply with statutory requirements, such that materials disposed of by a licensed contractor to a licensed waste management facility - classification of waste materials for reuse, recycling, stockpiling or disposal, according to EPA Waste Classification Guidelines, Part 1, 2014
- Minimise waste generation by looking for opportunities for pre-fabrication of components/ sections offsite.
- In the event that asbestos is found during demolition works, the Contractor shall notify the Council **immediately**. Removal of asbestos shall be undertaken in accordance with Work Health Safety Regulations and the code of practice issued by Safe Work Australia for safe removal of asbestos.

7.8.3. Construction Noise & Vibration

a) Potential Impacts

Typically, the location is subject to background noise levels which include standard vehicular traffic along the roadway, river sounds, and human sounds from recreational users. Potential adverse impacts are limited as the works are not located immediately adjacent to residences or other business entities or structures.

Noise

Construction activities are anticipated to generate additional short term noise levels associated with construction and installation of the proposed works. Noise would be generated by the use of use of various plant and equipment to excavate along the side of the boat ramp and shaping of the embankment to achieve required slope, delivery and placement of armour stone along embankment, driving or screwing of four (4) no. piles into the river bed, and placement of prefabricated units.

Construction-generated noise will be of a short-term duration and impact. Whilst residences are located in the area, none are immediately adjacent to the site of the proposed works. Additionally, works would be carried out during standard construction hours therefore disturbance during the evening and night time would not occur.

Note: A Vibration and Noise Management Plan could be required if the contractor is required to work outside of the hours, due to weather, unforeseen and latent conditions to meet the project deadline.

Vibration

Construction of the proposal would require some excavation of ground material at the site. It is anticipated that, due to the nature of the site and the minor scope of works, the excavation would be undertaken by small excavators. Vibration from works, including pile driving, would be

limited, or short duration and generally localised to the site of the works. Typically, construction works which generate ground vibration could be expected to be of an intermittent nature.

Ongoing

The proposal is not expected to generate additional noise and vibration above what is existing. The proposed works do not include changes to current existing uses of the site and facilities and would therefore not be anticipated to have any operational impacts in relation to noise or vibration.

b) Safeguards & Mitigation/ Management Measures

Mitigation can be achieved by ensuring construction activities are limited to standard construction and daylight hours where noise generated will be less noticeable against general background noise and traffic levels. The Contractor(s) undertaking the works should adopt all typical standard noise and vibration mitigation measures and adhere to any relevant license and approval conditions. Construction works traffic routes should avoid residential areas outside of standard construction hours.

Where a contractor may determine that out-of-hours activities are required, then a Noise and Vibration Management Plan may be required and if so, should be prepared and implemented in consultation with sensitive receivers.

7.8.4. Construction Air Quality

a) Potential Impacts

The proposal would have the potential for minor adverse impacts on air quality during construction activities associated with emissions from the use of plant and equipment onsite and minor activities such minor dust generated by cut and fill excavation activities associated the embankment area. Adverse impacts on air quality can be expected to be short-lived during the construction period. There are no changes to ongoing operations and no long-term or ongoing impacts to air quality are anticipated.

The proposed development works will not have any significant or long term adverse impacts on air quality at the subject site. Some emissions may be experienced from use of generators on board work barge or work boat. The works will be carried out by an appropriately experienced waterfront contractor with relevant work license and equipment maintenance procedures in place.

b) Safeguards & Mitigation/ Management Measures

Effective safety and mitigation measures include:

- ensure all plant and equipment is properly maintained to minimise emissions
- ensure plant and equipment shut down or running at minimum levels when not in use to reduce emissions
- works are scheduled to occur during suitable weather conditions such that dust generated during construction is able to resettle: ie dust-generating activities not to be undertaken during periods of high winds, and
- transportation vehicles moving waste or other materials should be covered during transit.

8. CONCLUSION

Swan Hill Rural City Council (SHRCC) is proposing to upgrade recreational boating facilities through the installation of a floating boat mooring system adjacent to the existing Milloo Street Boat Ramp to improve public access to the Murray River at Swan Hill. The project is located on the Victorian side of the river approximately 500m-600m downstream of the existing Swan Hill Road bridge.

In summary, the proposed works are permissible for the site given current zonings and permitted development and the works can be undertaken with no adverse impacts on Aboriginal cultural heritage or items of heritage significance. An Aboriginal Due Diligence has found that in general the location of the proposed works associated with upgrading the facilities for the boat ramp, is in an area that has already been heavily disturbed by the existing boat ramp and by works on associated park infrastructure, as well as natural erosion and inundation of the site. No further assessment is required and a Cultural Heritage Management Plan is not required for the site or proposed works.

The works have been assessed as having minimal adverse impacts on aquatic ecology in the river and riparian zone with suitable mitigation measures available for identifying, capturing and relocation of any Murray Crays located at the subject site prior to commencement of construction activities. The assessment undertaken by Marine Pollution Research Pty Ltd (MPR) found that the proposed works will have minimal adverse impacts on threated ecological communities or species within the waterway and riparian zone where the works are located. The floating pontoon system will provide some shelter and habitat for aquatic species within the waterway. Armour stone slope protection with irregular stone placement and sizes will provide embankment habitat in the riparian zone.

Native Vegetation Assessment has assessed the impact as negligible with no demonstratable loss of native vegetation and therefore it can also support that there will be no significant impacts on habitat through loss of valuable habitat or fragmentation.

The proposed works have been designed to avoid unnecessary impacts to the natural environments, while improving the existing infrastructure. The project has also been designed to minimise the removal of native vegetation. Therefore, it has been assessed that there will be no loss of large trees or significant native vegetation and no requirement for biodiversity offsets to be triggered. Construction may also involve installation of a small coffer dam to ensure that there is no sedimentation or pollution of the river as a result of the construction works.

To ensure that any potential environmental impacts are avoided and/or minimised, an Erosion and Sediment Control Plan is recommended to be developed and implemented and the mitigation measures proposed in this SEE prior to commencement of construction. It is also suggested that a Traffic Management Plan. Marine Traffic Management Plan and Waste Management Plan for Construction may be prepared by the nominated Contractor, once selected, for Council review and approval prior to commencement of construction.

This SEE has been prepared in accordance with the matters for consideration pursuant to Section 79C of the EP&A Act and addresses the requirements of relevant SEPPs, the WLEP2013 and the WDCP2013 in consideration of the proposed works.

9. APPENDICES

Appendix 1 ***Detailed Site Survey, including Bathymetric***

Appendix 2 ***Engineering Drawings***
As prepared by C W Henstock & Associates for relevant design items

Appendix 3 ***Aquatic Ecology Survey Report***

Appendix 4 ***CHMP/ Due Diligence Report***

Appendix 5 ***JK Geotechnics - Geotechnical Report***

Appendix 6 ***Native Vegetation Assessment***

Appendix 7 ***AHIMS***

Appendix 8 ***Landowners Consent – Crown Lands & SHRCC***

Appendix 9 ***Fisheries & TfNSW consents***

Appendix 10 ***SITE PHOTOS***