Review of Environmental Factors

Casino Suspension Bridge

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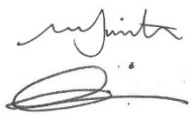
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Prepared for: Richmond Valley Council

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Executive Summary

Richmond Valley Council (Council) propose to construct a new elevated pedestrian footbridge (referred to as Casino Suspension Bridge) over Richmond River in Casino. The bridge would connect the Casino CBD to Queen Elizabeth Park. The bridge would replace an existing footbridge that is located along the lower Richmond River bank, and which is subject to regular flood inundation and damage. The existing bridge has been closed since the major flood event in 2022.

The northern bridge landing and footings would be constructed primarily in the Hickey Street road reserve, partially in McAuliffe Park (Lot 701 DP1056270, Crown Reserve R42402, managed by Council) and partially in Crown Waterway. The southern bridge landing and footings would be constructed within Crown Waterway and Lot 74 DP755627 (Crown Reserve R540053 and R93378, both managed by Council).

State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&ISEPP) enables the Casino Suspension Bridge to be constructed without development consent pursuant to Division 17 Roads and Traffic. As such, the works can be assessed and determined under Part 5, Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). GeoLINK has been engaged by Council to prepare a Review of Environmental Factors (REF) for the proposed Activity as per the requirements of Part 5 of the EP&A Act and the Department of Planning and Environment's *Guidelines for Division 5.1 Assessments* (June 2022).

The Activity includes the following:

- Site establishment works
- Excavation works
- Construction works
- Bridge installation works
- Site clean-up and demobilisation.

The Activity involves disturbance to:

- 0.35 ha of cleared areas comprising managed parkland and road reserve (note: this is a conservative estimate and is likely to be less).
- Removal of up to 0.07 ha of PCT 4070 Far North River Oak Wet Forest, comprising 13 mature trees, shrubs and ground cover.
- Removal of up to 0.02 ha of PCT 3428 comprising small trees and shrubs approximately 5 m tall or less and groundcover with bush regeneration throughout.

Areas of PCT 3428 are indicative of the TEC Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion. Potential pruning of branches from one Moreton Bay Fig and one Small-leaved Fig (these trees are indicative of PCT 3002) may also be required.

The National flying-fox monitoring viewer (DCCEEW, 2005) indicates that a nationally important flying-fox camp occurs proximate to the site. Past surveys have recorded Grey-headed Flying-fox, Little Red Flying-fox and Black Flying-fox utilising this camp.

All construction and operational activities associated with the proposed Casino Suspension Bridge are referred to herein as 'The Activity'.

Section 5.5 of the EP&A Act requires determining authorities, when assessing activities under Division 5.1, to examine and consider to the fullest extent possible all matters affecting or likely to affect the environment by reason of 'The Activity'. The purpose of the REF is to describe the Activity, to document the likely impacts of the Activity on the environment, and to detail safeguard/ mitigation

measures to be implemented. This REF has been prepared for approval by the determining authority (Council). A Crown Land licence has already been obtained by Council for the proposed Activity.

The description of the Activity and associated environmental impacts have been undertaken with regard to the Department of Planning and Environment's *Guidelines for Division 5.1 Assessments* (June 2022), the *Biodiversity Conservation Act 2016* (BC Act), the *Fisheries Management Act 1994* (FM Act) and the Australian Government *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Activity is considered justified given the potential environmental impacts and subsequent mitigation measures and safeguards. The Activity is in accordance with ecologically sustainable development principles and consistent with the objectives of the EP&A Act.

The potential environmental impacts of the Activity are not likely to be significant, therefore it is not necessary for an Environmental Impact Statement to be prepared, nor for approval to be sought for the Activity from the Minister for Planning and Homes under Section 5.7 or Division 5.2 of the EP&A Act. The Activity is unlikely to significantly affect threatened species or ecological communities or their habitats, within the meaning of the *Biodiversity Conservation Act 2016* or *Fisheries Management Act 1994* and therefore a Species Impact Statement (or BDAR if the Proponent elected) is not required. The Activity is also not expected to affect Commonwealth land or have a significant impact on any matters of national environmental significance. Accordingly, the proposed Activity has not been referred to the Australian Department of Climate Change, Energy, the Environment and Water.

1. Introduction

1.1 Project Background

Richmond Valley Council (Council) requires preparation of a Review of Environmental Factors (REF) for the proposed Casino Suspension Bridge, an elevated pedestrian footbridge over the Richmond River. The proposed bridge would connect McAuliffe Park, on the western side of the Richmond River, to Queen Elizabeth Park on the eastern side of the Richmond River. The bridge is required to replace the existing pedestrian bridge over the river which was damaged during the 2022 floods and is currently closed. Construction of the Casino Suspension Bridge is a recommendation of the Queen Elizabeth Park Plan of Management.

Council has engaged structural engineering company Forge to design and construct the suspension bridge. GeoLINK are engaged to undertake the environmental assessment (i.e. this REF).

The proposed Activity is permissible without development consent under Division 17 Roads and Traffic of State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&ISEPP). Section 2.109 of the T&ISEPP permits development for the purposes of a road or road infrastructure facility to be carried out by or on behalf of a public authority without consent on any land. Section 2.108 defines road infrastructure facilities and states that they include pedestrian bridges.

1.2 Project Need/ Justification and Analysis of Alternatives

The Activity is required to improve pedestrian connectivity between the Casino town centre and Queen Elizabeth Park. There has been a pedestrian footbridge connecting the Casino town centre to Carrington Park (now known as Queen Elizabeth Park) since 1888 (NSW State Heritage Inventory). The original bridge was constructed at the bottom of the riverbank, with a very low level of flood immunity. Since the time of original construction, Council has needed to repair the bridge after each major flood event that has significantly damaged the bridge.

Richmond Valley Council have allocated approximately $3.2 million for the design and construction of a new pedestrian suspension bridge. The Casino Suspension Bridge is expected to provide an accessible, shared pedestrian and cyclist bridge over the Richmond River, with a high degree of flood immunity, connecting the Casino CBD to South Casino residential and recreational areas.

Provision of a footbridge connecting the CBD to South Casino and Queen Elizabeth Park is important to the people of Casino and has historical significance to the town. The bridge would significantly improve safety for both pedestrians and cyclists who currently must cross Irving Bridge, located adjacent to the busy Bruxner Highway.

The Casino Suspension Bridge has been designed to provide a much greater level of flood immunity, and with much less susceptibility to flood damage. The bridge can be constructed without a significant environmental impact and would be an asset to the community.

Repair or replacement of the existing bridge in its current location was investigated by Council and was found to be an inferior solution, due to the ongoing risk of flood damage.

1.3 Purpose of this Report

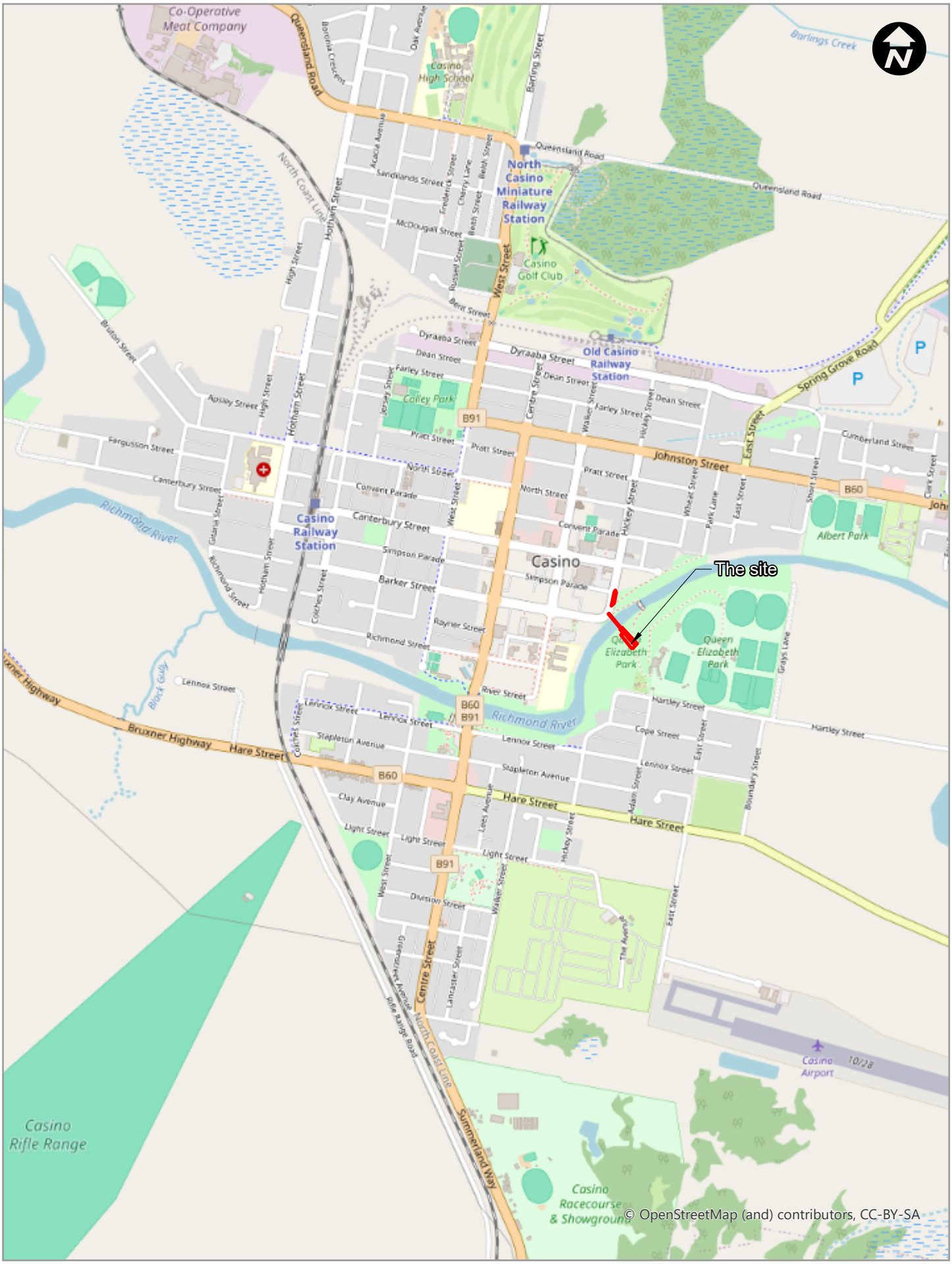
This REF has been prepared by GeoLINK on behalf of Council. For the purposes of these works (the Activity), Council is the proponent and the determining authority under Part 5, Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The purpose of the REF is to describe the Activity, to document the likely impacts of the Activity on the environment, and to detail safeguard/ mitigation measures to be implemented.

The description of the proposed works and associated environmental impacts have been undertaken in context of the Department of Planning and Environment's *Guidelines for Division 5.1 Assessments* (June 2022), the *Biodiversity Conservation Act 2016* (BC Act), and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). In doing so, the REF helps to fulfil the requirements of Section 5.5 of the EP&A Act, which requires the determining authority (Council) to examine and consider to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the Activity.

The findings of the REF would be considered when assessing:

- Whether the Activity is likely to have a significant impact on the environment and therefore the necessity for an Environmental Impact Statement to be prepared and approval to be sought from the Minister for Planning under Section 5.7 or Division 5.2 of the EP&A Act.
- The significance of any impact on threatened species as defined by the BC Act and/ or *Fisheries Management Act 1994* (FM Act), and therefore the requirement for a Species Impact Statement.
- The potential for the Activity to significantly impact a matter of national environmental significance or Commonwealth land and the need to make a referral to the Australian Government Department of Climate Change, Energy the Environment and Water (DCCEEW) for a decision by the commonwealth minister whether assessment and approval is required under the EPBC Act.



0 400 Metres

Site Locality - Illustration 1.1

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Review of Environmental Factors – Casino Suspension Bridge
5300-1005

Information shown is for illustrative purposes only
Drawn by: AB Checked by: RE Reviewed by: MES
Source of base data: Open Street Map
Spatial Reference: GDA2020 MGA Zone 56
Date: 7/08/2025



LEGEND

- Bridge and approach structure
- Temporary site compound
- Cadastre
- C2 - Environmental Conservation; C2, Environmental Management
- E2 - Commercial Centre
- R1 - General Residential
- RE1 - Public Recreation
- W1 - Natural Waterways
- Watercourse

0 30 Metres

The Site - Illustration 1.2

Information shown is for illustrative purposes only
Drawn by: AB Checked by: RE Reviewed by: MES
Source of base data: Nearmap 18/06/2024
Spatial Reference: GDA2020 MGA Zone 56
Date: 7/08/2025

2. Description of the Activity

2.1 Site Location

Casino is a large inland town in the Northern Rivers of New South Wales. It is the strategic centre of the Richmond Valley Local Government Area and has a population of around 11,000 people. The town contains the main offices of Richmond Valley Council, and many other civil services including Service NSW, Services Australia (Centrelink), the Casino Memorial Olympic Pool and the Casino and District Memorial Hospital.

The Casino CBD and most of the residential and commercial development associated with the town is positioned on the northern side of the Richmond River. However, there is also a significant amount of residential development, commercial development, parklands and sports grounds on the southern side of the Richmond River. There is only a single vehicle crossing connecting the two sides, being Irving Bridge, situated on the Bruxner Highway.

The proposed Casino Suspension Bridge would connect Hickey Street in the CBD to Queen Elizabeth Park in South Casino. The northern bridge landing and footings would be assembled/ constructed primarily in the Hickey Street road reserve, partially in McAuliffe Park (Lot 701 DP1056270, Crown Reserve R42402, managed by Council) and partially in Crown Waterway. The southern bridge landing and footings would be constructed within Crown Waterway and Lot 74 DP755627 (Crown Reserve R540053 and R93378, both managed by Council).

The site locality and the site are shown at **Illustration 1.1** and **Illustration 1.2**.

Plate 2.1, Plate 2.2, and Plate 2.3 show the location of the proposed Casino Suspension Bridge



Plate 2.1 Proposed bridge location – taken from Queen Elizabeth Park facing north



Plate 2.2 Proposed bridge location – taken from Queen Elizabeth Park facing north



Plate 2.3 Proposed bridge location – taken from McAuliffe Park facing south

2.2 Site Analysis and Key Constraints

The site has been mapped by Council as constrained by the following environmental factors:

- Landslide risk
- Bushfire risk
- Flood risk
- Key fish habitat in the Richmond River
- Biodiversity Values land and mapped Terrestrial Biodiversity
- Mapped nationally important flying-fox camp
- Heritage listed items in relatively close proximity to the disturbance area (Queen Elizabeth Park flagpole (Item 44) and the existing footbridge over the Richmond River (Item 59) are both listed in Schedule 5 of the Richmond Valley LEP).

The site does not contain any mapped Littoral Rainforest of Coastal Wetlands, does not contain any mapped acid sulfate soils and is not within a drinking water catchment. The site is not within a determined Native Title area.

2.3 The Activity

The Activity involves construction of a pedestrian suspension bridge connecting the Casino CBD (McAuliffe Park) to South Casino (Queen Elizabeth Park). The bridge would have a length of approximately 160 m and has been designed to avoid the requirement for earth ramps or filling works in Queen Elizabeth Park. **Plate 2.4** provides a render of the proposed bridge. The main bridge structure and approach structures would be constructed off site, transported to site and assembled in situ.

Design plans of the proposed bridge and a detailed Construction Methodology Statement have been prepared by FORGE (formerly Fleetwood Urban) (refer to **Appendix A** and **Appendix B**). A summary is provided in the following sections.



Plate 2.4 Render of the proposed Casino Suspension Bridge

2.3.1 Site Establishment Works

Site establishment works would involve the following:

- Establish safety controls, traffic and pedestrian management, protection to existing services.
- Establish temporary fence to protect public from construction works. Project specific signage detailing PPE requirements, emergency contact and project information would be fixed to the site and spaced out accordingly. Particularly access into site, which would be clearly sign posted with the project details, UHF channel, etc. for deliveries and subcontractors in and out, as well as visual signs to keep all vehicles on the lookout as they enter/ exit.
- Clear and remove trees and shrubs inside the designated works corridor (0.35 ha of cleared areas [managed parkland and road reserve] and 0.07 ha of PCT 4070, comprising 13 mature trees) as well as minor civil works for haul roads, access and crane pads.
- Establish designated material stockpile areas with sediment and erosion control.
- Establish a concrete wash out bay.
- Establish a materials storage area clearly delineated, signposted and secure for boardwalk and bridge components such as fiber reinforced polymer decking, balustrade, steel, cables.

- Establish a temporary granular crane pad for each respective crane location. The crane pad would be designed by a suitably qualified engineer and should also be designed to account for slope instability.
- Survey bridge/ boardwalk locations including pile locations, abutments, orientation by FORGE's surveyor. All survey pegs are to be offset accordingly, and controls points appropriately positioned around site. Re-surveying of finished concrete heights would be carried to capture any discrepancies in levels, hold down locations, etc and ensure steel fabrication takes these into consideration so any potential installation issues are eliminated prior to the bridge delivery.

2.3.2 Deliveries to Site

- All deliveries would be subject to traffic control requirements by a qualified traffic control team depending on the size of the delivery as well as suitably qualified spotters to supervise the loads while traveling under overhead powerlines. The traffic control team would also manage all pedestrian movement.
- All deliveries would report to the site office, located within a site compound as shown on **Illustration 1.2** prior to being unloaded.

2.3.3 Excavation Works

The following excavation works would be carried out:

- Excavate for the abutments and approaches using a suitably sized excavator. The machine would position itself approximately 4 m from abutment areas.
- Stockpile excavated material in designated location with sediment controls in place until abutment works are completed.
- Set pier locations and drill using a rock auger or core barrel.
- Treat any contaminated excavated material as per the Environmental Management Plans.

Excavation works are programmed to be undertaken during the months of September and October 2025 (weather permitting).

2.3.4 Concrete Works

The following concrete works would be carried out:

- Pier cages would be prefabricated and mechanically installed as soon as the auguring or core barrelling is complete.
- Abutment cages would be mechanically installed after the pier cages have been installed. All necessary inspections prior to pouring would be carried out.
- Cast-ins holding down bolts would be installed and secured as per the hold down design for the bridge.
- Pouring of concrete would be completed out of a line pump or boom pump with a smooth trowel finished to the design RL. Vibration of concrete during installation is to done to ensure no air pockets
- If chemical anchors have been designed into the scope, the location of the hold down location would be surveyed on site. The drilling/ coring would be done by specialist equipment to ensure environmental controls are met.
- Any concrete path or approach works being installed by Council would be coordinated on site to ensure that appropriate levels and tie in details are in place to prevent differential settlement.
- All necessary slump and compressive testing would be carried out if required.
- Once cured all formed concrete would then be stripped of the formwork.

- Concreting works are programmed to be undertaken during the months of September and October 2025 (weather permitting).

2.3.5 Site Installation

All manufacturing and assembly of the bridge components will take place off site. The following site installation works would be carried out:

- Assembly of the BALMORAL™ approach ramps would be completed off site and transported to site when required. Conduct quality inspections throughout the assembly process to verify compliance with design specifications and industry standards.
- Installation would be carried out in accordance with a detailed installation plan, considering factors such as access constraints, overhead powerlines, sequence of erection, lifting plan and equipment requirements, safety measures, and coordination with other trades.
- Temporary road closures of Barker Street with traffic management in place to allow for key material deliveries and installation works.
- Establish crane onsite on south-east side per lift study provided with adequate bearing plates.
- Begin with the onsite assembly of the tower, with columns and H frames for the suspension bridge, as well as any remaining preassembly of Balmoral™ ramp sections.
- Lift the south-east preassembled tower section in via crane and install with the assistance of Elevated Work Platforms (EWP's) followed by the preassembled Balmoral™ approach ramps per design specifications and RL's.
- Install draw cables from the town side over the tower columns and across the river with the assistance of the crane and cable winches.
- Draw through the primary support cables using the draw cable and secure all ends to the appropriate deadman footings.
- Utilise crane whilst in position to position the bridge hangers, frames and boardwalk sections required for the BINGARA™ suspension bridge on the approach boardwalk ready for progressive install.
- When all primary support cables are installed, secured and checked for the appropriate levels, the progressive installation of hangers, frames and joists can be completed using a combination of craneage, EWP's, specialist lifting and access equipment.
- As the frames, joists and bracing are installed, the fiber reinforced polymer decking and balustrade panels would be progressively installed behind to allow for safe access by all other workers to install handrails and fit off items.
- Hold down bolts and other structural connections would be checked. Grouting of all base plates to be carried out.
- Install final tower caps and remove all temporary riggings used for installation.
- Inspections and sign offs would be scheduled accordingly. ITP and QA documentation would be shared as part of the handover documentation or as requested.

Installation of bridge components is programmed to occur from March to May 2026 (weather permitting).

2.3.6 Site Personnel and Subcontractors for Site Works

The following is an overview of the site personnel and subcontractors that would be on site for the works:

- Full-time Site Manager during construction; who would manage delivery, program, resourcing, subcontractors, safety, quality and environmental controls.
- Site Manager would be supported by an off-site Project Manager & Contracts Administrator who would have a focus on local trades and procurement as far as practicable.

- Surveyor.
- Piling/ excavation contractor.
- Concreter.
- Civil Contractors; haul roads, crane pads, bank stabilisation and scour protection works.
- Riggers/ dogmen; suspension bridge, balmoral approach installation and assembly.
- Crane operator; lifting.
- Traffic controllers; traffic and pedestrian management, appropriate traffic management plan and traffic control plans.
- Carpenters; finishing off decking to boardwalk, and handrail installation.
- Electricians; lighting works.
- Engineer; sign off works.
- Arborist; vegetation removal (if required).
- Landscape contractor; retaining wall and revegetation works.
- Spotter; qualified spotter for overhead power lines (if required).

2.3.7 Site Clean Up and Demobilisation

Upon completion of the bridge construction, the following steps would ensure full site restoration and compliance with project requirements.

Site Restoration

- The site would be fully restored, including rubbish removal and landscape rehabilitation.
- Any storage compounds used during construction would be cleared, ensuring minimal long-term impact.

Engineering Sign-Off

- A final engineering inspection would be conducted to confirm that all structures meet specified standards and regulatory requirements.

Council Site Walk and Practical Completion

- A final site walk would be carried out with Council representatives to assess the completed work.
- Upon approval, practical completion of the Activity would be formally confirmed.

2.3.8 Activity Objectives

The objectives of the proposed Activity are to:

- Provide an accessible, shared pedestrian/ cyclist bridge over the Richmond River with a high degree of flood immunity, connecting the Casino CBD to South Casino.
- Provide a pedestrian bridge that is consistent with the Queen Elizabeth Park Plan of Management.
- Construct and install the bridge in a considered manner that ensures there is minimal environmental risk.

2.3.9 Construction hours

The works would be undertaken during standard construction hours detailed below:

- Monday to Friday 7:00 am to 6:00 pm.
- Saturday 8:00 am to 1:00 pm.
- Sunday and Public Holidays No work.

2.3.10 Construction Duration

It is estimated that the works would take approximately eleven months to complete.

2.4 Ancillary Facilities

The proposed works would need to establish temporary ancillary facilities for the works within the site. These would include:

- Site compounds
- Site office
- Materials stockpile areas
- Concrete wash out bay
- Crane pads
- Access tracks

The locations of these ancillary facilities is shown on **Illustration 1.2** and in **Appendix A**.

The impact assessment and recommended mitigation measures in this REF would also be applicable to any ancillary facilities. Once determined, if the ancillary facilities were to affect a substantially different locality or notably departed from the scope of this assessment, a review of this component may be necessary.

2.5 Public Utilities

The Activity does not require any public utility adjustments. The bridge has been designed to avoid impacts to the existing powerlines that cross the Richmond River to the south-west of the proposed bridge location.

3. Statutory and Planning Framework

3.1 Planning Approval Pathway

The Activity involves the construction of a pedestrian/ cyclist suspension bridge, connecting the Casino CBD to South Casino. The works are required to provide improved access between the two sides of the town. The Activity would occur on land that is zoned R1 General Residential, C2 Environmental Conservation, W1 Natural Waterways and RE1 Public Recreation.

Section 4 of the *EP&A Act* states that if an environmental planning instrument (EPI) provides that development may be carried out without the need for development consent, a person may carry the development out, in accordance with the EPI, on land to which the provision applies. However, the environmental assessment of the development is required under Part 5 of the EP& Act and that development becomes defined as an 'Activity' for the purpose of Part 5, Division 5.1 of the EP&A Act.

State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&ISEPP) applies to the State and its purpose is to facilitate the effective delivery of infrastructure across NSW. The policy overrides other EPIs, including Local Environmental Plans (LEPs), and provides specific planning provisions and development controls.

Division 17 of the T&ISEPP outlines specific development controls for roads and traffic related development. Division 17, Section 2.109 states that development for the purpose of a road or road infrastructure facility may be carried out by or on behalf of a public authority without consent on any land. Division 17, Section 2.108 states that a road infrastructure facility includes pedestrian bridges.

The proposed Activity is consistent with the definition of a road infrastructure facility, and the works are being carried out by a public authority (Council). As such, the works are permissible without development consent and are defined as an Activity which can be assessed and determined under Part 5, Division 5.1 of the EP&A Act i.e., preparation of an REF for determination by Council.

3.2 Environmental Planning and Assessment Act 1979

Although the Activity does not require development consent Under Part 4 of the EP&A Act, Section 5.5 of the EP&A Act requires determining authorities, when assessing activities under Part 5 to examine and take into account, to the fullest extent possible, all matters affecting or likely to affect the environment by reason of that activity. The components of the Activity therefore require preparation of an environmental assessment (REF) for approval by the determining authority, Council. This also includes an assessment of the Activity's consistency with relevant EPIs including State Environmental Planning Policies (SEPPs) and Local Environmental Plans (LEPs) as follows.

3.3 State Environmental Planning Policies

3.3.1 State Environmental Planning Policy (Transport and Infrastructure) 2021

State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&ISEPP) aims to facilitate the effective delivery of infrastructure across the State. Division 17 relates to roads and traffic. Development consent is not required for the subject Activity by virtue of Section 2.109, as outlined in **Section 3.1**. Part 2.2 of the T&ISEPP contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. Consultation as required by T&ISEPP is discussed in **Section 4** of this REF.

3.3.2 State Environmental Planning Policy (Biodiversity and Conservation) 2021

State Environmental Planning Policy (Biodiversity and Conservation) 2021 came into force on 1 March 2022 and incorporated the repealed provisions of SEPP (Koala Habitat Protection) 2020, SEPP (Koala Habitat Protection) 2021, and the Vegetation in non-rural areas SEPP, amongst others.

Chapter 2 Vegetation in non-rural areas applies to land within several non-rural land zones.

Chapter 4, Koala Habitat Protection, applies to land within the Richmond Valley LGA; however, it only applies to development permitted with consent under Part 4 of the EP&A Act. As the proposal is an Activity under Part 5 of the EP&A Act, the chapter does not apply.

Assessment of ecological impacts of the Activity is provided in **Section 5.1**.

3.3.3 State Environmental Planning Policy (Resilience and Hazards) 2021

State Environmental Planning Policy (Resilience and Hazards) 2021 (RHSEPP) contains planning provisions:

- For land use planning within the coastal zone, in a manner consistent with the objects of the *Coastal Management Act 2016*.
- To manage hazardous and offensive development.
- Which provides a state-wide planning framework for the remediation of contaminated land and to minimise the risk of harm.

3.3.3.1 Chapter 2 – Coastal Management

Chapter 2 of the RHSEPP provides an integrated and coordinated approach to coastal land use planning. It defines the four coastal management areas through detailed mapping and specifies assessment criteria that are tailored for each coastal management area. Councils and other consent authorities must apply these criteria when assessing proposals for development that fall within one or more of the mapped areas. The Activity would not occur on land that is within any of the four coastal management areas and therefore no further assessment under Chapter 2 is required.

3.3.3.2 Chapter 3 – Hazardous and offensive development

The proposed Activity does not constitute a *potentially hazardous industry* or *potentially offensive industry* as defined in Section 3.2 of the RHSEPP.

3.3.3.3 Chapter 4 – Remediation of land

This chapter of the RHSEPP aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment by:

- specifying when consent is required, and when it is not required, for remediation work; and
- specifying certain considerations that are relevant in rezoning land and in determining development applications in general and development applications for consent to carry out remediation work in particular; and
- requiring that remediation work meets certain standards and notification requirements.

As the proposed development does not involve a development application, the provisions of Chapter 4 are not triggered. However, Council must still consider the potential for the land to be contaminated and make a determination of suitability of the land for its intended use. The site has been used as and was dedicated for the purposes of Public Recreation since at least 1884 and as such it is highly

unlikely that the site contains contaminated material from past last uses. In addition, there is no evidence to suggest that there is any contamination within the site. Details relating to the soil condition and any management measures required to be implemented during construction are provided in **Section 5.2**.

3.4 Local Environmental Plan

The Activity is located within the Richmond Valley Local Government Area (LGA). Planning controls within this LGA are set out in the Richmond Valley Local Environmental Plan 2012 (RVLEP 2012).

The site is zoned R1 General Residential, C2 Environmental Conservation, W1 Natural Waterways and RE1 Public Recreation under the RVLEP 2012. The objectives of these zones are:

R1 General Residential Zone

- *To provide for the housing needs of the community.*
- *To provide for a variety of housing types and densities.*
- *To enable other land uses that provide facilities or services to meet the day to day needs of residents.*
- *To ensure that housing densities are generally concentrated in locations accessible to public transport, employment, services and facilities.*
- *To minimise conflict between land uses within the zone and land uses within adjoining zones.*

C2 Environmental Conservation Zone:

- *To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values.*
- *To prevent development that could destroy, damage or otherwise have an adverse effect on those values.*

W1 Natural Waterways Zone:

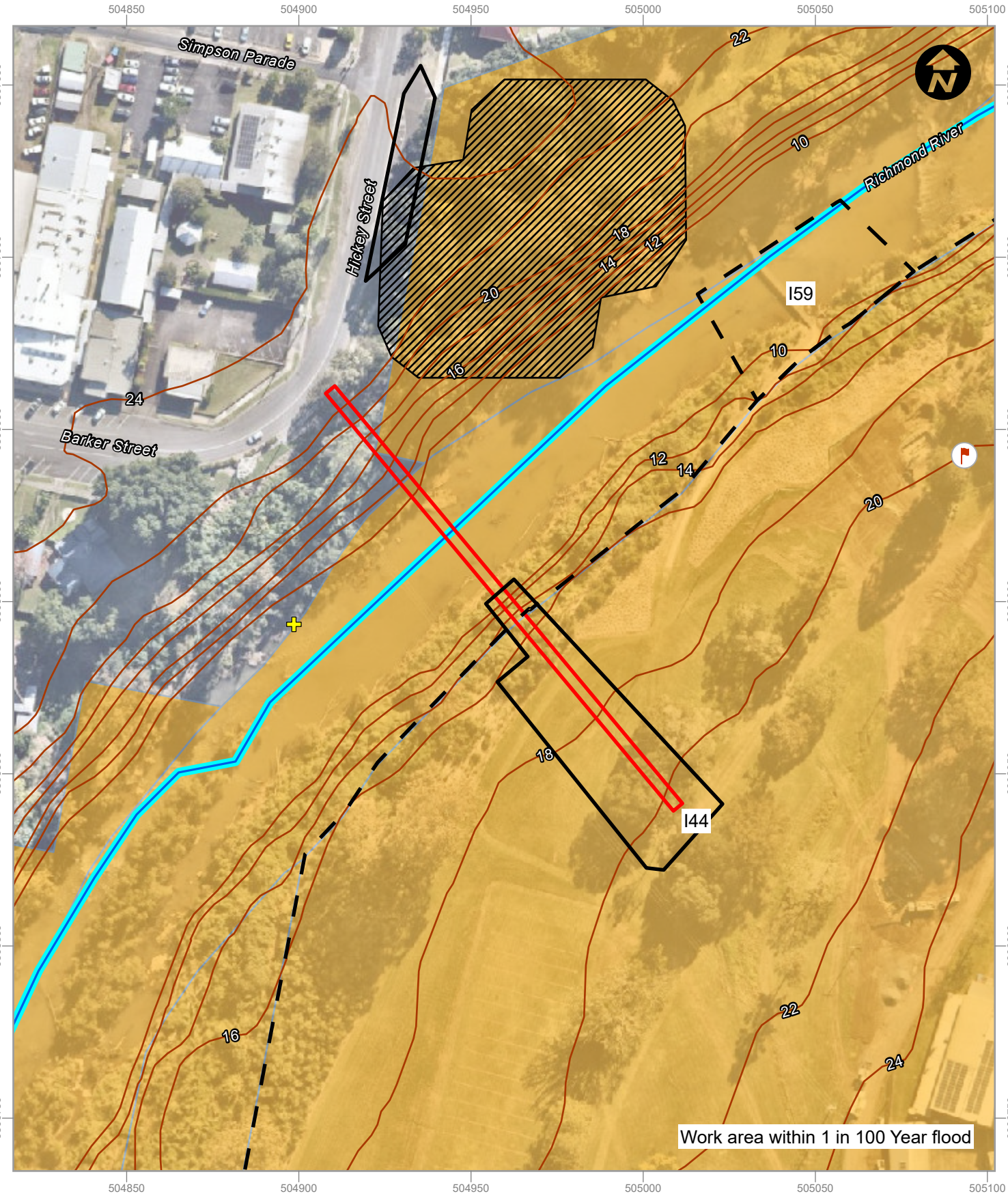
- *To protect the ecological and scenic values of natural waterways.*
- *To prevent development that would have an adverse effect on the natural values of waterways in this zone.*
- *To provide for sustainable fishing industries and recreational fishing.*

RE1 Public Recreation Zone:

- *To enable land to be used for public open space or recreational purposes.*
- *To provide a range of recreational settings and activities and compatible land uses.*
- *To protect and enhance the natural environment for recreational purposes.*

The Activity does not conflict with any of the above zoning objectives. The proposed bridge would improve residents and visitors' ability to use Queen Elizabeth Park whilst providing a necessary alternative pedestrian/ cyclist access connecting the Casino CBD to south Casino. It would also improve the ability for residents to visit family or friends living on the opposite side of the river, via walking or cycling.

Mitigation measures provided in this REF would ensure that any risk of environmental harm to the C2 Environmental conservation or W1 Natural Waterway zones is managed appropriately.



LEGEND

- Bridge and approach structure
- Temporary site compound
- Heritage item
- Landslide risk area
- Crown Land
- Contours at 2 m intervals
- Watercourse
- Key fish habitat
- AHIMS site Richmond River Grinding Grooves 01
- Heritage listed flag pole

0 30 Metres

Site Analysis - Illustration 3.1

Information shown is for illustrative purposes only
Drawn by: AB Checked by: RE Reviewed by: MES
Source of base data: Nearmap 18/06/2024
Spatial Reference: GDA2020 MGA Zone 56
Date: 7/08/2025

3.5 Other State and Commonwealth Legislation

3.5.1 Other NSW Legislation

Table 3.1 lists and describes other NSW State legislation and comments on its applicability in relation to the proposed Activity.

Table 3.1 NSW Legislation

Legislation	*Section(s)*	*Comment*
Biodiversity Conservation Act 2016	Schedules 1, 2 and 3	The Activity is unlikely to significantly affect habitat or negatively affect the long-term survival of Grey-headed Flying-fox, Koala or *Subtropical Coastal Floodplain Forest of the New South Wales North Coast* TEC in the locality. The Activity would incrementally contribute to the Key Threatening Processes (KTP): ■ *Anthropogenic Climate Change*, through the generation of carbon dioxide during operation of machinery and vehicles and associated fuel consumption. ■ *Clearing of native vegetation* associated with vegetation removal. The impact of the Activity on KTPs is not considered significant. No other KTPs would be noticeably contributed to by the Activity. The biodiversity impacts of the Activity are assessed in **Section 5.1**.
Biosecurity Act 2015		In NSW, the administration of noxious weed control is the responsibility of the Minister for Primary Industries under the *Biosecurity Act 2015.* The Act is implemented and enforced by the Local Control Authority for the area, usually local government, or NSW Agencies. Three listed priority weeds for the North Coast were recorded at the site being Climbing Asparagus Fern, Lantana and Giant Devil's Fig. All plant, equipment and personnel will be free of soil and potential weed propagules prior to being brought to the site.

Legislation	Section(s)	Comment
Crown Land Management Act 2016 and *Local Government Act 1993.*		The suspension bridge would be constructed within McAuliffe Park, within a Crown Waterway, and within Queen Elizabeth Park (Crown Reserve, classified as 'Community Land', managed by Council). **McAuliffe Park** McAuliffe Park is a Crown Reserve (R42402), managed by Council. It is classified as community Land. **Crown Waterway** The Richmond River is Crown land. As such, Council has obtained a Licence pursuant to the provisions of Section 2.18 of the *Crown Land Management Act 2916* for the proposed footbridge (Licence 645784). To review the Licence, refer to **Appendix D**. **Queen Elizabeth Park** Queen Elizabeth Park is a Crown Reserve (R540053 and R93378), managed by Council. It is classified as Community Land. In accordance with its obligations under the *Crown Land Management Act 2016* (CLM Act) and the *Local Government Act 1993* (LGA Act) Council has prepared a Plan of Management (POM) to provide direction as to the use and management of the park. Provision of a footbridge that connects the park to the CBD is a key improvement identified in the PoM. The footbridge was identified in the PoM as a key improvement; '*Formalised pedestrian/ cycle access extending from Harley Street in the south, through to the pedestrian bridge over the Richmond River*.' The provision of the bridge is also consistent with Table 5: *Objectives and performance targets, means of achieving them and assessing achievement for community land categorised as park*. Specifically, provision of the new bridge achieves the objective of improving access to and within the park for people with disabilities.
Environmental Planning and Assessment Act 1979 (as amended)	Section 1.7	Section 1.7 of the EP&A Act relates to the application of Part 7 of the *Biodiversity Conservation Act 2016 (BC Act)* and Part 7A of the *Fisheries Management Act 1994* (FM Act). Biodiversity has been assessed in **Section 5.1**. The activity involves the removal of up to 0.07 hectares of PCT 4070 Far North River Oak Wet Forest Vegetation Formation: Forested Wetlands, comprising trees, shrubs and ground cover. Removal of up to 0.02 hectares of PCT 3428 Northern Lowland Red Gum-Swamp Turpentine Grassy Forest, comprising remnant trees with bush generation throughout.
	Section 5.5	The determining authority in its consideration of an activity shall examine and take into account, to the fullest extent possible, all matters affecting or likely to affect the environment by reason of that activity. This REF fulfils this duty.
Environmental Planning and Assessment	Section 171(1)	The Department of Planning and Environment's guidelines for Division 5.1 Assessments (June 2022) have been considered to assess the likely impacts of the Activity on the natural and built

Legislation	Section(s)	Comment
Regulation 2021		environment (refer to **Section 7.1**). It is not expected that the Activity would result in a significant impact.
Fisheries Management Act 1994 (FM Act)	Section 199	A public authority (other than a local government authority) must, before it carries out or authorises the carrying out of dredging work or reclamation work – (a) give the Minister written notice of the proposed work, and (b) consider any matters concerning the proposed work that are raised by the Minister within 21 days after the giving of the notice. Construction of the suspension bridge would involve works that are defined as dredging work and reclamation work on land that is mapped Key Fish Habitat. In this instance, the dredge and reclamation works would be carried out within a Crown Waterway. As such, Council has obtained a Crown land licence to carry out the Activity. As part of that process NSW Crown Lands consulted with the NSW Department of Primary Industries – Fisheries (Fisheries), as per s.199 of the Act. The advice provided by Fisheries is provided at **Appendix L**.
	Sections 219-220	A permit is required when barriers to the movement of fish including water course crossings are to be constructed or modified. Construction of the Activity would occur without creating a barrier to the movement of fish.
	Section 205	This section regulates harm to marine vegetation. Any impact to marine vegetation, such as Mangroves, would require a Fisheries Permit. There would be no impact to marine vegetation as part of the proposal.
Heritage Act 1977		Searches of the State Heritage Register, State Heritage Inventory and LEP heritage listings were undertaken. There are no listed Aboriginal Places, World Heritage Sites or State Heritage Sites within the site. The site is not within a heritage conservation area. There are two heritage items listed in Schedule 5 of the LEP near the site. Queen Elizabeth Park contains a listed flag pole, signifying Queen Elizabeth's visit to the park in 1954 (I44 in Schedule 5 of the LEP). The original Casino foot bridge is also locally heritage listed (I59 in Schedule 5 of the LEP). These heritage sites would not be impacted by the Activity and no adverse impacts to heritage are expected. Refer to **Section 5.3** and **Section 5.4**.
National Parks and Wildlife Act 1974	Sections 87(1), 90	The provisions of the Act are unlikely to be triggered by the Activity. Works would cease if an artefact or place of significance is disturbed or encountered during the Activity. The Casino Local Aboriginal Land Council would be notified immediately. Aboriginal Cultural Heritage has been assessed in **Section 5.4** and no adverse impacts are expected.
Protection of the Environment Operations Act 1997		No Protection of the Environment Policies (PEPs) are relevant to the Activity. No licenses would be required pursuant to the *Protection of the Environment Operations Act 1997*. Council and/ or contractors working on behalf of Council are required to notify EPA when a 'pollution incident' occurs that is likely to impact upon the environment.

Legislation	Section(s)	Comment
	Section 115	It is an offence to negligently dispose of waste in a manner that harms the environment. Waste would be managed in accordance with the *Waste Avoidance and Resource Recovery Act 2001*. The Activity would aim to reduce the environmental impact of dumping waste and include mechanisms to recover resources and reduce the production of waste where possible.
	Section 120	It is an offence to pollute any waters of the State. This REF includes safeguards and mitigation measures to ensure that the Activity does not result in pollution of waters.
Roads Act 1993	Section 138	No works would occur within the public road.

3.5.2 Commonwealth Legislation

3.5.2.1 Environmental Protection and Biodiversity Conservation Act 1999

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), any action that has, or is likely to have, a significant impact on matters of national environmental significance or other aspects of the environment, such as on Commonwealth land, may progress only with approval of the Commonwealth Minister for the Department of Climate Change, Energy, the Environment and Water under Part 9 of the EPBC Act.

The assessment of significance (refer to **Appendix H**) concluded that proposed action is unlikely to have a significant effect on the Grey-headed Flying-fox or Koala.

3.5.2.2 Native Title Act 1993

The proposed Activity is not within the determination area of any Native Title Determination Area.

3.5.2.3 Aboriginal Land Rights Act 1983

There are three incomplete Aboriginal Land claims over part of Queen Elizabeth Park. Council considered those claims when preparing the Queen Elizabeth Park Plan of Management (2022).

Council has obtained a Crown Lands Licence for the proposed bridge. Clause 25 and Clause 26 of the licence states:

> *25. Licence Granted subject to Aboriginal Land Claim*
>
> *(a) The Holder is granted this licence subject to a possible Aboriginal Land Claim over this land provided in s36 of the* Aboriginal Land Rights Act 1983*.*
>
> *(b) Notwithstanding any other provision of this Licence, this Licence shall terminate or require alteration in the event that the Minister determines that the land is claimable Crown land or a Court determines that the land is claimable Crown Land.*

(c) Except as may be expressly provided for in this Licence the Holder acknowledges and agrees that the Holder will not be entitled to any compensation costs or damages in respect of the termination or alteration of this Licence by operation of this clause (6.029C).

26. Transfer upon grant of Aboriginal Land Agreement

(a) Despite anything else in this Licence, the Holder agrees to and approves of the transfer of this Licence as it applies to any or all of this Site (which for the purposes of this clause, includes any access routes associated with the use of the site) without any further notice if an Aboriginal Land Agreement (ALA) within the meaning of Section 36AA(1) of the Aboriginal Land Rights Act 1983, *affecting the Site or part thereof, provides for the transfer of this Licence as it applies to any or all of this Site.*

Council is aware of the provisions of its Crown Lands Licence.

3.6 Confirmation of Statutory Position

An assessment of the relevant statutory provisions and planning instruments has concluded that the proposed Activity can be carried out as development without consent under the T&ISEPP and can be assessed and determined under Part 5, Division 5.1 of the EP&A Act.

4. Stakeholder Consultation

4.1 Community Consultation

Council has been open and transparent about the proposal to construct a pedestrian suspension bridge in the proposed location via its website, newsletters and social media releases.

On 13th October 2023, Council advised via their website that $3.5 m had been granted to Council for a suspension bridge across the Richmond River in Casino, under the 2022 Community Assets Program, which is part of the Community Local Infrastructure Program, co-funded by the NSW and Australian governments to support communities impacted by the 2022 flood events. Council's website provides the ability to request further information regarding the project.

In early 2025, Council utilised their website to call for tenders for a suitably qualified and experienced organisation to design and construct the bridge. On 2nd April 2025 the webpage was updated to advise that Fleetwood Urban Pty Ltd (now FORGE) had been awarded the project.

Further consultation with directly affected stakeholders, including nearby residents and user groups of Queen Elizabeth Park would occur in the lead up to construction works commencing. Signage at the construction site would include contact details for the project's communications officer to enable affected stakeholders to discuss any issues.

Relevant warning signage would be displayed to inform motorists and pedestrians of the works and any changed conditions or access, as required.

4.2 T&ISEPP Consultation

Part 2.2 of the T&ISEPP contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development.

Consultation with councils and public authorities is required in certain instances in accordance with Section 2.10 to Section 2.17 of T&ISEPP (as applicable to proposals).

Pursuant to Section 2.17(1)(c) (exceptions) of T&ISEPP, Section 2.10 – Section 2.12 and Section 2.14 do not apply with respect to development to the extent that (as relevant), they would require notice to be given to a council or public authority that is carrying out the development or on whose behalf it is being carried out. Given the Activity is being carried out by or on behalf of Council, and Council is the determining authority, Section 2.10 – 2.12 and 2.14 (consultation with councils) do not apply.

Section 2.13 contains provisions requiring consultation with the NSW State Emergency Service (SES) for development with impacts on flood liable. The Activity is located within flood liable land and as such, a a letter advising of the project and requesting comment was provided to the NSW SES on 7 May 2025. A response was received on 28 May 2025 (refer to **Appendix K**) which listed several matters for consideration, described and addressed in **Table 4.1**.

Table 4.1 NSW SES Consultation

NSW SES Comment	*Response*
Support infrastructure upgrades that provide improved flood resilience. Any improvements that can be made to reduce flood risk will benefit the community.	Noted
Recommend considering the impact of flooding on the infrastructure and people using it up to and including the Probable Maximum Flood (PMF), along with the impact of climate change on the flood risks.	It is impractical to achieve immunity to the PMF in this location however the proposed design incorporates immunity from the 1% ARI flood event. The Casino CBD and Queen Elizabeth Park would be inundated in the PMF; hence the bridge is not expected to be utilised during flood situations.
Recommend ensuring that workers and people using the bridge during and after construction are aware of the flood risk, for example through site inductions and by using signage. **Recommend considering** closing the worksite and securing all materials and equipment prior to the start of the working day if there is a risk of riverine flooding, on receipt of advice from the Bureau of Meteorology (BoM), or when other evidence leads to an expectation of flooding. During site works, check the BoM website prior to start of the workday for any Flood Warnings.	A Flood Management Plan would be prepared which would be implemented to safeguard construction activities and infrastructure. This plan would address: ■ Design considerations to elevate critical infrastructure above the 1% flood level. ■ Emergency response measures in the event of flooding during construction. ■ Safe storage and securing of materials and equipment to prevent water damage. ■ Coordination with Council and emergency services for flood warnings and contingency planning. ■ Compliance with local floodplain development controls and Australian flood safety standards. Permanent signage highlighting flooding risks could be erected to inform users of ongoing flood risks following completion of works.
Recommend noting that the Casino River height gauge (located further west of the proposed work site) is an official gauge that the Bureau of Meteorology provides flood warning to enable the NSW SES to ensure safety of the surrounding at-risk communities. Therefore, in undertaking any proposed remediation works, it will be necessary to ensure that the river height gauge remains unaffected, or if it is, then the NSW SES and the Bureau of Meteorology should be provided with relevant information to understand what the impact on the river height gauge is.	Noted.

Section 2.15 contains provisions for consultation with public authorities other than councils (such as National Parks and Wildlife Service and Transport for NSW). None of the provisions in Section 2.15 apply to the Activity. Section 2.16 contains provisions requiring a public authority to consider *Planning for Bush Fire Protection* (PBP) before carrying out for certain development in an area that is bushfire prone. Whilst the site is bushfire prone land, the Activity is not a health services facility, correctional centre or residential accommodation and therefore consideration of PBP is not required.

4.3 DPI Fisheries Consultation

The Department of Primary Industries and Regional Development (Fisheries) were consulted in July 2024 regarding the Activity by NSW Crown Lands as part of their obligation in granting a Crown Land Licence to Council. At that time, the scope of works included removal of the existing footbridge.

Fisheries advised that it had no objection to the proposed works but that the matters raised within their notice must be considered. Those matters related to adequate erosion and sediment mitigation devices, stockpile locations away from water land and riparian vegetation, snags outside of the immediate works footprint are not removed, riparian and aquatic vegetation outside of the immediate works footprint are delineated as “No Go” areas, obligation to rehabilitate and stabilise the site post construction and to implement a fish kill protocol (refer to **Appendix L**).

4.4 Aboriginal Community Consultation

The proposed Activity is to take place within an area that has been moderately to highly disturbed and modified. An Aboriginal Heritage (Due Diligence) Assessment has been carried out by Heritage Management and Planning Pty Ltd (refer to **Appendix J**). The assessment found that consultation with the Aboriginal community is not required under point 5 (p.3) of the document *Due Diligence Code of practice for the protection of Aboriginal Objects 2010* (refer to **Section 5.4** for further details).

5. Environmental Assessment

5.1 Biodiversity

For the biodiversity assessment, the site refers to the suspension bridge and works footprint, while the study area refers to the whole area within which the ecological field inspection was undertaken (refer to **Illustration 5.1**).

5.1.1 Existing Environment

5.1.1.1 Desktop Review

BioNet Atlas Search

A search of the BioNet Atlas database was undertaken on 1 April 2025 to identify threatened species recorded within a 10 km x 10 km search area centred on the site. Results indicate ten threatened flora species, 39 threatened fauna species, and 16 threatened ecological communities (TECs) have been recorded within the search area (refer to **Appendix E**). Relevant species are included in the potential occurrence assessments in **Appendix F**.

EPBC Protected Matters Report

The Protected Matters Search Tool (PMST) was accessed on 1 April 2025. The PMST search identified 24 threatened flora species, 34 threatened fauna species and six TECs listed under the EPBC Act which may occur within 10 km of the site (refer to **Appendix E**). Relevant species are included in the potential occurrence assessments in **Appendix F**.

Areas of Outstanding Biodiversity Value

A search of the BC Act indicates that no Areas of Outstanding Biodiversity Value occur within or in close proximity to the site.

Wildlife Corridors

No mapped regional wildlife corridors occur within the site (Scotts, 2003).

Key Fish Habitat/ Fisheries NSW Spatial Data

The NSW DPI Fisheries Spatial Data Portal indicates Richmond River is mapped as Key Fish Habitat. However, the section that flows through the site is not mapped as any known threatened fish species habitat.

National Flying-fox Monitoring Viewer

The National Flying-fox monitoring viewer (DCCEEW, 2025) shows one nationally important flying-fox camp proximate to the site (refer to **Figure 5.1**). Past surveys recorded Grey-headed Flying-fox, Little Red Flying-fox and Black Flying-fox utilising this camp.



Figure 5.1 Flying-fox camp in vicinity of the site as per the National Flying-fox monitoring viewer

5.1.1.2 Casino flying-fox Camp Management Plan

The Casino Flying-fox Camp Management Plan (CFCMP) (Abor Ecological, 2015) pertains to a flying-fox camp at the site (refer to **Figure 5.2**). The CFCMP outlines the following in relation to the flying-fox camp:

- Location
  - "*Flying-foxes roost along the riverbanks of the Richmond River generally between the Irving Bridge and the Richmond River footbridge. The camp extent is generally limited by available riparian riverbank and riverbed trees which extend between McAuliffe Park and Webb Park on the northern bank and the length of Queen Elizabeth Park to Coronation Park on the southern bank.*
  - *The exact camp location shifts over time as flying-foxes move between roost trees upstream and downstream in the larger camp area and in response to numbers of flying-foxes occupying the camp and environmental conditions such as suitable roost tree availability, river height, temperature and humidity. The annual arrival of little red flying-foxes en-masse for generally eight to ten weeks from around mid-summer to early autumn causes the camp to swell and expand in all directions".*
- Camp composition
  - *"Three species of flying-fox occur in northern NSW and all three species occur at the Casino camp, i.e. the Black Flying-fox (Pteropus alecto), Grey-headed Flying-fox (Pteropus poliocephalus), and Little Red Flying-fox (Pteropus scapulatus)".*
- Camp category
  - "*The Casino camp is listed as a nationally important flying-fox camp, i.e. it has been occupied by more than 2,500 GHFFs permanently or seasonally every year for the last 10 years (DoE 2014)*".

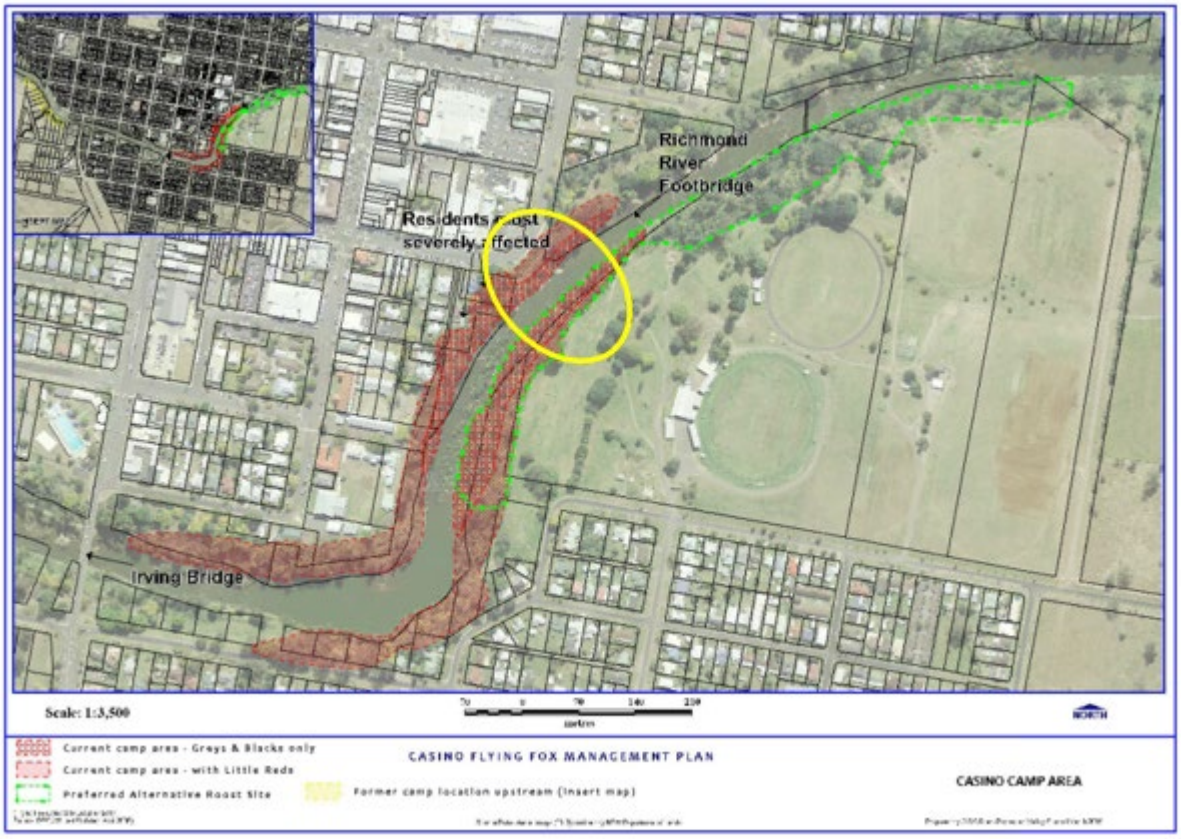


Figure 5.2 Flying-fox camp area in vicinity of the site (in yellow) (Abor Ecological, 2015)

5.1.1.3 Vegetation

Vegetation within the study area consists of Wet Riverine Forest within the riparian zone of Richmond River, Dry Sclerophyll Forest, managed parkland and road reserves.

Vegetation within the study area is described in **Table 5.1** and aligned with a Plant Community Type (PCT) in the BioNet Vegetation Classification system where applicable. Vegetation mapping can be found in **Illustration 5.1**. Refer to **Appendix G** for a full flora inventory recorded within the study area.

Table 5.1 Plant Community Types Within the Study Area

Plant Community Type	Comments	Photo
Native Vegetation		
PCT 4070: Far North River Oak Wet Forest **Vegetation Formation: Forested Wetlands** **Vegetation Class: Eastern Riverine Forests** Canopy comprises River Oak (*Casuarina cunninghamiana*), Red Cedar (*Toona ciliata*), Forest Red Gum (*Eucalyptus tereticornis*), Silky Oak (*Grevillea robusta*) and Brown Kurrajong (*Commersonia bartramia*). Midstorey comprises Weeping Bottlebrush (*Callistemon viminalis*), Castor Oil Plant (*Ricinus communis**), Bana Grass (*Pennisetum purpureum**), Wild Tobacco Bush (*Solanum mauritianum**), Cockspur Thorn (*Maclura cochinchinensis*), Creek Sandpaper Fig (*Ficus coronata*), Native Raspberry (*Rubus rosifolius*), Blue Morning Glory (*Ipomoea indica**), Monkey Rope (*Parsonsia straminea*), Lantana (*Lantana camara**) and Common Reed (*Phragmites australis*). Groundcover comprises Spiny-headed Mat-rush (*Lomandra longifolia*), Johnson Grass (*Sorghum halepense**), Blackberry Nightshade (*Solanum nigrum**), Common Couch (*Cynodon dactylon*), Blue Billygoat Weed (*Ageratum houstonianum**), Slender Flat-sedge (*Cyperus gracilis*), Pennywort (*Centella asiatica*) and Swamp Lily (*Crinum pedunculatum*).	Modified condition. Remnant patches along the riverbank features weed incursions throughout midstorey and groundcover.	 **Plate 5.1 View south-west of PCT 4070 within the study area**

Plant Community Type	Comments	Photo
PCT 3428: Northern Lowland Red Gum-Swamp Turpentine Grassy Forest **Vegetation Formation: Dry Sclerophyll Forests (shrub/ grass sub-formation)** **Vegetation Class: Clarence Dry Sclerophyll Forests** Canopy comprises occasional mature Forest Red Gum (*E. tereticornis*), generally spaced 20 – 50 m apart. Midstorey comprises planted and regrowth Blackwood (*Acacia melanoxylon*), Green Wattle (*Acacia irrorata subsp. irrorata*), Creek Sandpaper Fig (*F. coronata*), Broad-leaved Paperbark (*Melaleuca quinquenervia*), Swamp Oak (*Casuarina glauca*), Willow Bottlebrush (*Callistemon salignus*), Teatree (*Melaleuca alternifolia*), Native Olive (Olea paniculata) and Silky Oak (*G. robusta*). Groundcover comprises Spiny-headed Mat-rush (*L. longifolia*), Common Couch (*C. dactylon*), Pennywort (*C. asiatica*), Blue Billygoat Weed (*A. houstonianum**) and Rhodes Grass (*Chloris gayana**).	Modified condition. This PCT was severely impacted by recent flooding. Bush regeneration work is being undertaken to re-establish all strata (ground, midstorey and canopy) for the subject community (PCT 3428). Midstorey comprises bush regeneration of native trees and shrubs ranging from 2 to 4 m. Some weed incursions throughout groundcover.	 **Plate 5.2 View west of PCT 3428 within the study area**

Plant Community Type	Comments	Photo
PCT 3002: Lower Richmond Hills Dry-Subtropical Rainforest **Vegetation Formation: Rainforests** **Vegetation Class: Subtropical Rainforests** Comprises planted large fig trees within Queens Park comprising Moreton Bay Fig (*Ficus macrophylla*), Port Jackson Fig (*Ficus rubiginosa*), Small-leaved Fig (*Ficus obliqua*). Camphor Laurel (*Cinnamomum camphora**) also occurs.	Modified condition. Planted fig trees. This PCT is best-fit based on species present, IBRA subregion, lithology, rainfall and elevation.	 **Plate 5.3 View north-west of fig trees indicative of PCT 3002 within the study area**
Miscellanous Ecosystem – (does not comply with a PCT)		
Cleared Areas (managed parkland and road reserve): No PCT Managed areas comprise Bahia Grass (*Paspalum notatum**), Common Couch (*Cynodon dactylon*), Elastic Grass (*Eragrostis tenuifolia**), Hairy Commelina (*Commelina benghalensis**), Creeping Oxalis (*Oxalis corniculata**), Broadleaf Woodsorrel (*Oxalis latifolia**), Parramatta Grass (*Sporobolus africanus**), Dandelion (*Taraxacum officinale**) and Common Chickweed (*Stellaria media**).	Cleared areas subject to regular mowing and maintenance.	 **Plate 5.4 View north-west of managed parkland**

*Denotes exotic species

5.1.1.4 Threatened Flora

No BC Act or EPBC Act listed threatened flora species were recorded within the study area nor were considered likely to occur. Threatened flora were therefore not considered further as part of this assessment.

5.1.1.5 Threatened Ecological Communities

Biodiversity Conservation Act 2016

PCT 3428 within the study area is floristically and structurally indicative of the TEC *Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion* which is listed as Endangered under the BC Act (refer to **Table 5.2**).

Tests of significance ('five-part tests') under Section 7.3 of the BC Act have been completed for Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion and are provided in **Appendix H**.

Table 5.2 Correlation of PCT 3428 Against Scientific Determination Criteria for Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion

Final Determination Listing Criteria	PCT 3428
Location: *occurs within the NSW North Coast bioregion.*	**Yes** – the patch occurs within the Richmond Valley LGA within the NSW north coast bioregion.
Altitude: *generally occurs below 50 m but may occur on localised river flats up to 250 m elevation.*	**Yes** – patch occurred at approximately 25 m ASL
Topography and geology: *associated with clay-loams and sandy loams, on periodically inundated alluvial flats, drainage lines and river terraces associated with coastal floodplains.*	**Yes** – patch occurs on Quaternary alluvialvalley in-fill sediments, dominantly alluvial clay with minor sand and river gravels associated with the coastal floodplains.
Structure: *may vary from tall open forests to woodlands, although partial clearing may have reduced the canopy to scattered trees. It has a tall open tree layer of eucalypts, angophoras, melaleucas and bloodwoods.*	**Yes** – occurs as open forest with Forest Red Gum (*Eucalyptus tereticornis*) dominant canopy.
Floristic canopy composition: *typically dominated with a canopy of Eucalyptus tereticornis (Forest Red Gum), E. siderophloia (Grey Ironbark), Corymbia intermedia (Pink Bloodwood) and, north of the Macleay floodplain, Lophostemon suaveolens (Swamp Turpentine).* *It characterised by a mixed eucalypt canopy, often with Lophostemon suaveolens; the presence of rainforest elements as scattered trees or understorey plants; the relatively low abundance or sub-dominance of Casuarina and Melaleuca species; the relatively low abundance of Eucalyptus robusta; and the prominent groundcover of soft-leaved forbs and grasses. Species assemblage is outlined in paragraph 1 of the scientific determination.*	**Yes** – is floristically analogous with species outlined in paragraph 1 of the scientific determination. The patch has a dominance of *E. tereticornis.* The midstorey is regenerating, however it has a mix of *Casuarina glauca, Melaleuca quinquenervia, Melaleuca alternifolia, Callistemon salignus* species and *Lomandra longifolia*.
Meet TEC determination	**Yes, meets scientific determination**

PCT 3002 within the study area is floristically indicative of the TEC *Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion* which is listed as is listed as Endangered under the BC Act. However, the patch of PCT 3002 within the study area is lacking structure and floristic canopy composition and **does not** meet the all the criteria for Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion (refer to **Table 5.3**). Therefore, this TEC is not considered further as part of this assessment.

Table 5.3 Correlation of PCT 3002 Against Scientific Determination Criteria for Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion

Final Determination Listing Criteria	PCT 3002
Location: *occurs in the New South Wales North Coast bioregion*	**Yes** – the patch occurs within the Richmond Valley LGA within the NSW north coast bioregion.
Altitude, topography and soil: *generally occupies riverine corridors and alluvial flats with rich, moist silts often in sub catchments dominated by basic volcanic substrates.*	**Yes** – patch occurs within low lying floodplain on alluvial flats.
Structure*: a closed canopy forest characterised by high species richness and structural complexity*	**No** – patch is modified and occurs as scattered *Ficus* species, that were originally planted within Queen Elizabeth Park.
Floristic canopy composition: *Lowland Rainforest encompasses stands which fall principally within the alliances and suballiances of Floyd (1990). The major rainforest Suballiance within the nominated community is Suballiance 3. Elements of Suballiance 1, 2, 4, 5, 6, 23, 24, 25, 26 and 33 also occur.*	**No** – patch is modified and does not meet with any alliance and suballiance outlined by Floyd (1990).
Meet TEC determination	**No, patch does not meet scientific determination for this TEC.**

Environment Protection and Biodiversity Conservation Act 1999

PCT 3428 within the study area is indicative of the TEC *Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions* and is listed as Endangered under the EPBC Act. Determining this community is subject to meeting both the diagnostic characteristics and condition thresholds (refer to **Table 5.4** and **Figure 5.3**). Patch size regarding the assessment of this TEC includes areas of PCT 3428, estimated to be occurring outside of the study area along the Richmond River and would likely be conform with a large patch size (>2 ha). Areas of PCT 3428 within the study area **do not** meet the EPBC Act the all the key diagnostic characteristics. This is largely due to its the modified condition of this community and lacking a crown cover >20%. Therefore, this TEC is not considered further as part of this assessment.

Table 5.4 Subtropical Eucalypt Floodplain Forest and Woodland of the New South Wales North Coast and South East Queensland Bioregions Key Diagnostic Characteristic

Key Diagnostic Characteristic	PCT 3428
Location*: Occurs in the New South Wales North Coast (NNC) and South Eastern Queensland (SEQ) IBRA bioregions, and on Curtis Island in the Brigalow Belt North IBRA Bioregion (BBN).*	**Yes** – patch occurs within the SEQ IBRA Bioregion
Topography and geography: *Typically on alluvial landforms along the lower freshwater reaches in the catchments of the eastern watershed of the Great Dividing Range, at elevations up to 250 m ASL.*	**Yes** – patch occurs within low lying floodplain on alluvial flats.

Key Diagnostic Characteristic	PCT 3428
Structure: *Occurs as a tall closed-forest, tall open-forest, closed forest, open forest, tall woodland, or woodland. The canopy has a crown cover of at least 20%.*	**No** – patch composing scattered Forest Red Gum (*E. tereticornis*) and in the current modified state do not form a crown cover of 20%.
Floristics: *Canopy dominated by one or a combination of Angophora, Corymbia, Eucalyptus, Lophostemon and/or Syncarpia tree species, but NOT dominated by Eucalyptus robusta (swamp mahogany).*	**Partially** – patch is modified and comprises scattered Forest Red Gum (*E. tereticornis*).
Meet TEC criteria and condition threshold?	**No, patch does not meet all the key diagnostics for this TEC.**

Patch size thresholds → / Biotic thresholds ↓		**Large patch** Patch size ≥2 ha	**Small contiguous[4] patch** ≥ 0.5 ha, within a larger area of native vegetation ≥ 5 ha	**Small patch** Patch size ≥ 0.5 ha
Vegetation	**Arboreal mammals**			
HIGH CONDITION Ground cover richness[1] ≥ 10 native species per sample plot **AND** ≥ 20 large native trees[2] per ha. **AND** ≥ 80% of its total perennial understorey vegetation cover[3] comprises native species		**CLASS A1** Large or contiguous[4] patch, with high quality understorey and many large native trees		**CLASS B1** Small patch, with high quality understorey and many large native trees
GOOD CONDITION Ground cover richness[1] ≥ 6 native species per sample plot **AND** ≥ 10 large native trees[2] per ha. **AND** ≥ 50% of its total perennial understorey vegetation cover[3] comprises native species	**AND** ≥5 species of arboreal mammals[5] detected[6] in the patch.	**CLASS A2** Large or contiguous[4] patch, with good quality understorey, large native trees and evidence of many arboreal mammal species		**CLASS B2** Small patch, with good quality understorey, large native trees and evidence of arboreal mammals
		CLASS B3 Large or contiguous[4] patch, with good quality understorey and large native trees		**CLASS C1** Small patch, with good quality understorey and large native trees
MODERATE CONDITION Ground cover richness ≥ 4 native species per sample plot[1] **AND at least one of:** ≥ 6 very large native trees[7] per ha **AND/OR** ≥ 30% of its total perennial understorey vegetation cover[3] comprises native species		**CLASS C2** Large or contiguous[4] patch, with moderate quality understorey and/or some very large native trees		Not nationally protected

Notes

[1] Ground cover richness includes combined species richness of native grasses, forbs, ferns and sedges per 0.04 ha (20 x 20 m sample plot) on average.

[2] Large native trees are greater than 45 cm [diameter at breast height (dbh)]. This is used as a surrogate for tree hollows and other habitat values. These should be counted, and averaged across the patch as a whole. For larger patches, they can be counted in plots of at least 0.5 ha.

[3] Perennial understorey vegetation cover includes all vegetation below the canopy layer, from species with a life-cycle of more than two growing seasons. It includes herbs (graminoids and forbs), grasses, shrubs, shorter trees, juvenile canopy species, resprouting or suckering of the lower portions of canopy trees, and cryptograms; but it does not include annual plants, plant litter, or exposed soil.

[4] Contiguous means the patch is connected to, or in close proximity to (i.e., within 30 m of), one or more areas of native vegetation (i.e., an area where the total perennial vegetation cover is dominated (50% or more) by native plant species).

[5] For the purposes of this calculation, evidence of any number of micro-bat species (Microchiroptera) found in the patch counts as one species of arboreal mammal.

[6] Survey guidelines include DSEWPC (2011).

[7] Very large native trees are greater than 60 cm dbh. These should be counted, and averaged across the patch as a whole. For larger patches, they can be counted in plots of at least 0.5 ha (i.e., an average of 3 very large native trees per 0.5 ha plot).

Figure 5.3 Condition categories (classes) and thresholds for Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions

PCT 3002 within the study area is indicative of the TEC Lowland Rainforest of Subtropical Australia and is listed as Critically Endangered under the EPBC Act. Determining this community is subject to meeting both the key diagnostic characteristics and condition thresholds (refer to **Table 5.5** and **Figure 5.4**). Patch size regarding the assessment of this TEC includes nearby fig trees up to 30 m outside the study area, resulting in a patch size of approximately 0.24 ha. Areas of PCT 3002 within the study area **do not** meet the EPBC Act conditions thresholds under both the diagnostic characteristics and condition thresholds. This is largely due to the patch occurring in a modified condition and does not meet climate, structure and floristic composition characteristics. Therefore, this TEC is not considered further as part of this assessment.

Table 5.5 Lowland Rainforest of Subtropical Australia key diagnostic characteristics

Key Diagnostic Characteristics	PCT 3002
Location: *occurs within the NSW North Coast, South Eastern Queensland bioregions*.	**Yes** – the patch occurs within SE QLD bioregion.
Topography and geology: *soils derived from basalt or alluvium; or enriched rhyolitic soils; or basaltically enriched metasediments*	**Yes** – patch is on soils derived from alluvium material.
Altitude: *occurs at an altitude less than 300 m above sea level.*	**Yes** – patch occurs at approximately 25 m ASL.
Climate: *occurs in areas with high annual rainfall (>1300mm).*	**No** – patch occurs in Casino region with a mean annual rainfall of 1078.4 mm (as per Casino Airport AWS [BOM, 2025]).
Position: *typically more than 2 km inland from the coast.*	**Yes** – patch occurs > 2 km inland from coast.
Structure: *typically a tall (20 m–30 m) closed forest, often with multiple canopy layers.*	**No** – patch is modified and does not have a structure of multiple canopy layers.
Floristic composition: *patches of the ecological community typically have high species richness (at least 30 woody species from Appendix A)*	**No** – patch is highly modified and contains <30 woody species from Appendix A.
Meet EPBC Act diagnostics	**No, patch does not meet all the key diagnostics for this TEC.**

Condition thresholds:

The listed **Lowland Rainforest of Subtropical Australia** ecological community comprises those patches that meet the key diagnostic characteristics (above) and the **condition thresholds** (below).

Patch Type (evidence of remnant vegetation & regeneration status)	**A** Natural remnant evident by the persistence of mature residual trees from Appendix B. **AND**	**B** Some residual trees from Appendix B are present plus evidence of either; natural regeneration[*1] **AND/OR** regeneration with active management[*2] **AND**	**C** A non-remnant patch that has recovered through a) natural regeneration[*1] **AND/OR** b) supplementary planting that has stature and quality that is reflective of the 'Description' [*3] **AND**
Patch Size (excludes buffer zone)	≥ 0.1 ha **AND**	≥ 1 ha **AND**	≥ 2 ha **AND**
Canopy Cover (over entire patch)[*4]	Emergent/canopy/subcanopy[*4] cover is ≥ 70% **AND**		
Species Richness (over entire patch)	contains ≥ 40 native woody species[*5] from Appendix A **AND**	~~contains ≥ 30 native woody species[*5] from Appendix A **AND**~~	
Percent of total vegetation cover that is native [*6] (use sample plot)	≥70% of vegetation [*6] is native	≥50% of vegetation [*6] is native	

Notes:

[*1] Evidence of natural regeneration is shown by the presence of seedlings of a range of native species that did not originate through deliberate plantings.

[*2] A patch that is **actively managed** has regular (e.g. every 1–2 years) on the ground human regenerative activity such as weed control or supplementary plantings.

[*3] Closed canopy, 20–30 m tall, of representative species (e.g. white booyong, hoop pine, figs, brush box, yellow carabeen, red cedar, rosewood, white beech)

[*4] Canopy cover (projective foliage cover) is estimated over the entire patch. When assessing the ecological community, the canopy includes the emergents and subcanopy (everything above 10 m tall). Canopy/sub-canopy includes all trees and vines (native and non-native).

[*5] Woody species are trees, shrubs or vines that contain wood or wood fibres that consist mainly of hard lignified tissues. Excluded from woody species are graminoids, other herbs and non-woody vines.

[*6] Total vegetation cover includes emergents/canopy/subcanopy and understorey and ground layers.

Figure 5.4 Condition thresholds for EPBC Act listed Lowland Rainforest of Subtropical Australia

5.1.1.6 Biosecurity Act 2015 Listed Priority Weeds

Three *Biosecurity Act 2015* listed priority weeds for the North Coast were recorded at the site. Priority weeds and associated species-specific duties are listed in **Table 5.6**. The general biosecurity duty that applies to all of these species' states:

All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.

Table 5.6 Biosecurity Act 2015 Listed Priority Weeds at the Site

Weed	Measure	Duty
Climbing Asparagus Fern (*Asparagus plumosus**)	Prohibition on certain dealings.	Must not be imported into the state, sold, bartered, exchanged or offered for sale.
Lantana (*Lantana camara**)	Prohibition on certain dealings.	Must not be imported into the state, sold, bartered, exchanged or offered for sale.
Giant Devil's Fig (*Solanum chrysotrichum**)	Regional recommended measure.	Core infestation (containment) zone (includes Richmond Valley LGA).

5.1.1.7 Casino Flying-fox Camp

A nationally important flying-fox camp is mapped as occurring across the site (refer to **Figure 5.1** and **Figure 5.2**). During the site assessment however, no flying-fox were observed roosting in vegetation within the study area. Additional surveys were undertaken 500 m upstream and 500 m downstream from the study area along the Richmond River, with no flying-fox observed. The current camp location is west of Irving Bridge (pers obs. V. Silver).

Vegetation (predominantly PCT 3428) within the study area (previously used by flying-fox) was severely impacted by flooding in 2022, decimating the understorey, mid-storey and parts of the canopy. Isolated mature Forest Red Gum remain, however are generally spaced 20 – 50m apart, hence canopy connectivity is absent. Bush regeneration work is being undertaken to re-establish all strata (ground, midstorey and canopy). The mid-storey comprises native trees and shrubs ranging from 2 to 4 m. In its current state, PCT 3428 and the adjoining vegetation (PCT 4070 and PCT 3002) on site lack structural elements required to support a nationally important flying-fox camp. Mature Forest Red Gum continue to provide foraging resources; however, given the degraded state of the PCT at the time of writing, it is considered unlikely that flying-fox would utilise this vegetation for roosting and breeding purposes in the short term (ie. during the proposed construction period).

The CFFMP (Abor Ecological, 2015) highlights that flying-foxes are highly mobile, and their camp has had a history of shifting through Richmond River riverbank vegetation, particularly from west to east. Additionally, in 2014, groups of flying-foxes were roosting west of Irving Bridge (to the south-west of site (Abor Ecological, 2015).

During winter, flying-foxes migrate to areas to the north of coastal northern NSW and South-east Queensland in search of winter flowering species and other opportune foraging resources (DAWE, 2021). There is a gap between reproductive cycles for Black Flying-fox and Grey-headed Flying-fox during cooler months of May to July (refer to **Figure 5.5**) (DPIE, 2019).

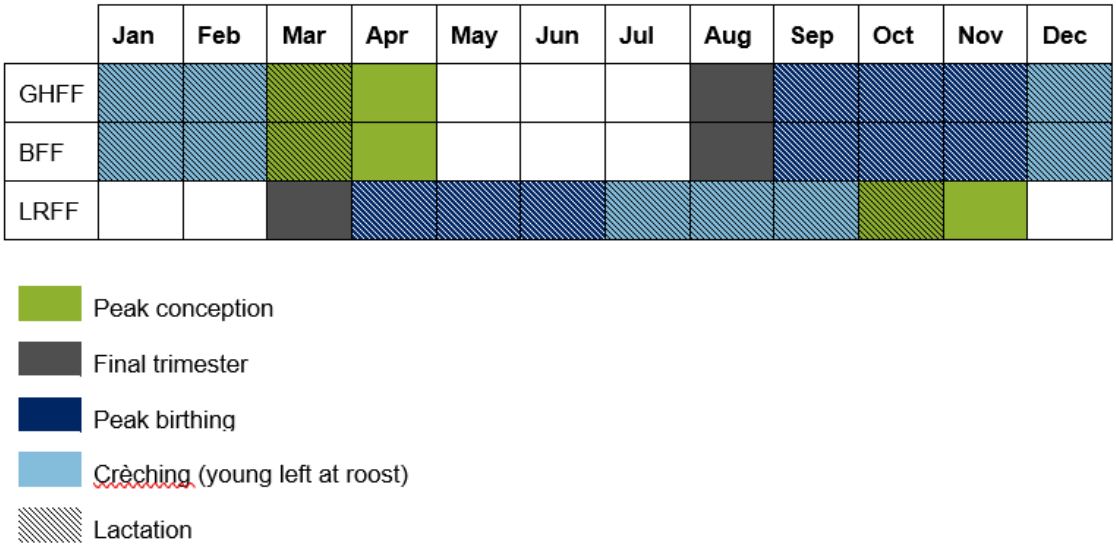
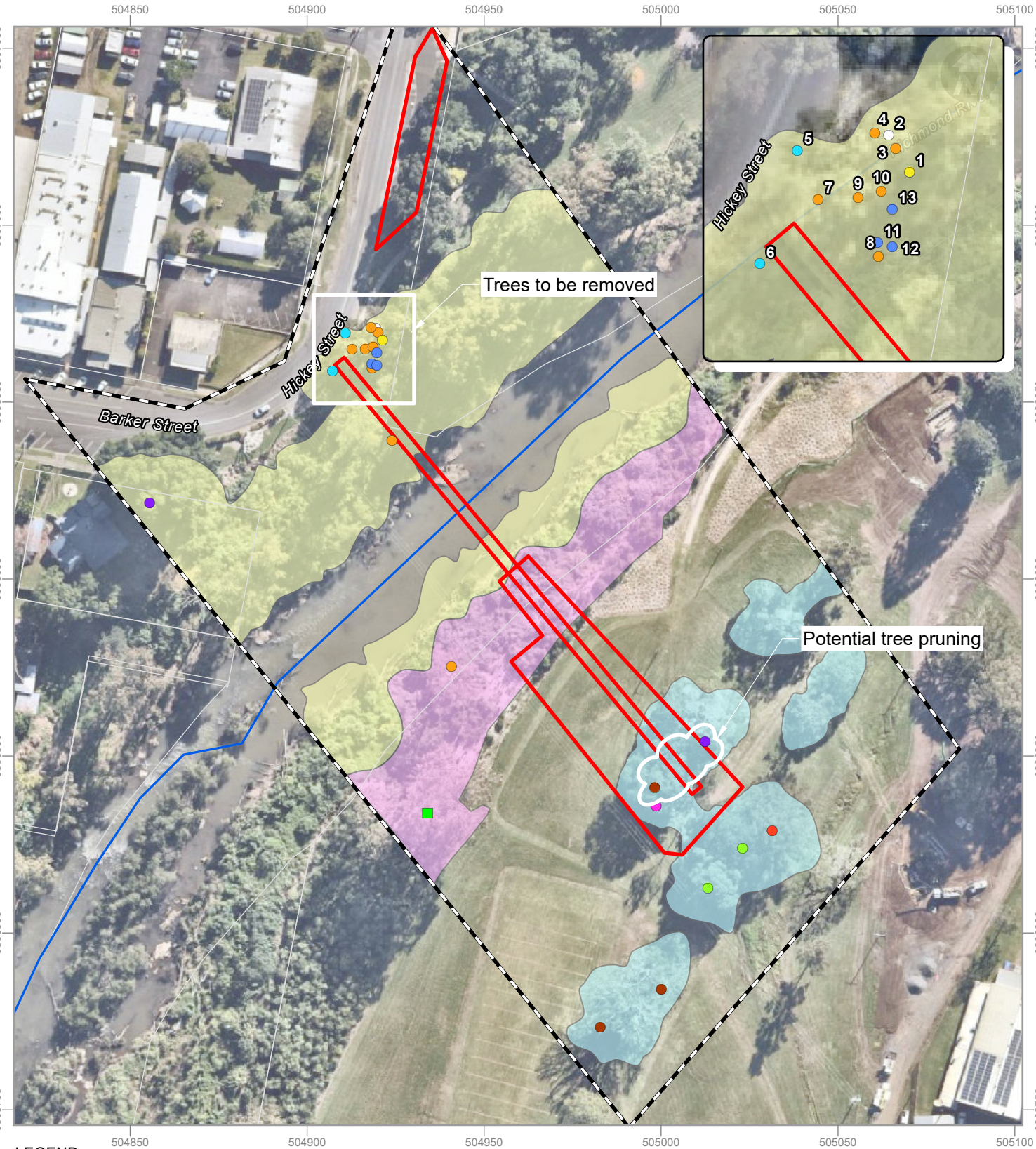


Figure 5.5 Indicative Flying-fox Reproduction Cycle (GHFF = Grey-headed Flying-fox; BFF = Black Flying-fox; LRFF = Little Red Flying-fox) Source: State of NSW and DPIE, 2019

Note: LRFF rarely birth and rear young in New South Wales. The breeding season of all species is variable between years and location, and expert assessment is required to accurately determine phases in the breeding cycle and inform appropriate management timing.



LEGEND

- Bridge, compound and approach structure
- Cadastre
- Study area
- PCT: 3002 Lower Richmond Hills Dry-Subtropical Rainforest
- PCT: 3428 Northern Lowland Red Gum-Swamp Turpentine Grassy Forest Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion TEC
- PCT: 4070 Far North River Oak Wet Forest
- Watercourse
- Hollow-bearing tree

- Brown Kurrajong
- Camphor Laurel
- Forest Red Gum
- Hoop Pine
- Moreton Bay Fig
- Port Jackson Fig
- Red Cedar
- River Oak
- Small-leaved Fig
- Spotted Gum

0 30 Metres

Vegetation Mapping - Illustration 5.1

GeoLINK environment | engineering | planning | design

Review of Environmental Factors – Casino Suspension Bridge
5300-1005

Information shown is for illustrative purposes only
Drawn by: AB Checked by: RE Reviewed by: MES
Source of base data: Nearmap 18/06/2024
Spatial Reference: GDA2020 MGA Zone 56
Date: 7/08/2025

5.1.1.8 Threatened Fauna

A Spot Assessment Technique (SAT) survey undertaken during the site inspection detected no Koala scats within the study area. Scattered Forest Red Gum, a preferred Koala food tree occurs throughout the study area.

One hollow-bearing tree occurs within the study area; however, it is distant from the works footprint and would be retained (refer to **Illustration 5.1**).

Based on the desktop analysis and habitat present, five-part tests of significance were prepared in accordance with Section 7.3 of the BC Act for those species assessed as having a moderate or higher likelihood of occurrence within the site (refer to **Table 5.7**, **Appendix F** and **Appendix H**).

For threatened species listed under the EPBC Act, significance assessments have been completed in accordance with the EPBC Act *Policy Statement 1.1 Significant Impact Guidelines* (Department of Environment, 2013) (refer to **Appendix H**).

Several other threatened fauna species may use parts of the site for foraging, or on an opportunistic or seasonal basis. However, these species would complete much of their life cycle off-site and be sufficiently mobile to avoid any short-term construction impacts. A range of common fauna species were detected during the site assessment (refer to **Appendix G**).

Table 5.7 Threatened Fauna Assessed as Moderate or Higher Likelihood of Occurrence

Scientific Name	Common Name	BC Act	EPBC Act	Likelihood of Occurrence
Mammals				
Phascolarctos cinereus	Koala	E	E	**Moderate –** Potential foraging habitat associated with the site. BioNet records in the locality.
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	**Known –** Known camp location and foraging habitat associated with the site. BioNet records in the locality.

V = Vulnerable; E = Endangered

5.1.2 General Biodiversity Impacts

The Activity would utilise cleared areas for laydown, stockpiles and access (vehicle and plant). This would comprise areas of cleared parkland or the road reserve. The footings of the suspension bridge, and ramps on both sides of the Richmond River would require vegetation and tree removal as described below.

Scheduling of works is proposed as follows:

- September to October: excavation/ piling and concrete works (at the time of preparation of this REF a methodology was being developed with contractors).
- November: Installation of approach ramps using smaller cranes on the eastern side of the river.
- December to February - Council have instructed contractors that no works are permitted on site (possible GHFF and BFF créching season).
- March to May 2026: all manufacturing and assembly of the components would take place off site and are programmed to be installed with cranes.

General biodiversity impacts (refer to **Section 5.1.3** for impacts specific to the Casino flying-fox camp) from the Activity include:

- Removal of up to 0.02 ha of PCT 3428 comprising small trees and shrubs approximately 5 m tall or less and groundcover with bush regeneration throughout.

- Disturbance to 0.35 ha of cleared areas comprising managed parkland and road reserve (note: this is a conservative estimate and is likely to be less).
- Removal of up to 0.07 ha of PCT 4070 Far North River Oak Wet Forest, comprising 13 mature trees (refer to **Table 5.8** and **Illustration 5.1**), shrubs and ground cover.
- Removal of up to 0.02 ha of PCT 3428 comprising small trees and shrubs approximately 5 m tall or less and groundcover with bush regeneration throughout. Areas of PCT 3428 are indicative of the TEC *Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion*.
- Potential pruning of branches from one Moreton Bay Fig and one Small-leaved Fig (these trees are indicative of PCT 3002) (refer to **Illustration 5.1**).
- Direct mortality or injury to fauna during vegetation clearing.
- Potential disturbance and removal of other fauna features, such as fallen timber and leaf litter.
- Potential habitat degradation of adjacent habitats due to erosion, sediment and/ or chemical spills.
- Minor short-term disturbance to fauna during all parts of the proposed works (noise, vibration, and dust).

Table 5.8 Tree Removal Inventory

ID	Scientific Name	Common Name	DBH (cm)
1	*Araucaria cunninghamii*	Hoop Pine	50
2	*Commersonia bartramia*	Brown Kurrajong	20
3	*Eucalyptus tereticornis*	Forest Red Gum	25
4	*Eucalyptus tereticornis*	Forest Red Gum	30
5	*Toona ciliata*	Red Cedar	40
6	*Toona ciliata*	Red Cedar	50
7	*Eucalyptus tereticornis*	Forest Red Gum	45
8	*Eucalyptus tereticornis*	Forest Red Gum	30
9	*Eucalyptus tereticornis*	Forest Red Gum	30
10	*Eucalyptus tereticornis*	Forest Red Gum	30
11	*Casuarina cunninghamiana*	River Oak	15
12	*Casuarina cunninghamiana*	River Oak	15
13	*Casuarina cunninghamiana*	River Oak	15

5.1.3 Casino Flying-fox Camp Impacts

5.1.3.1 Construction Phase

Impacts specific to the Casino flying-fox Camp (including Grey-headed Flying-fox) from the Activity include:

- Removal of 0.09 ha of native vegetation (comprising 0.07 ha of PCT 4070 and 0.02 ha of PCT 3428) which:
  - Contains species contributing to the nectar and pollen to the diet of GHFF, LRFF and BFF.
  - Forms part of mapped foraging and roosting habitat for GHFF, LRFF and BFF.
- Potential pruning of branches from one Moreton Bay Fig and one Small-leaved Fig which contribute to the fruit diet of flying-foxes.
- Potential displacement and stress of flying-fox in the vicinity (within 100 m of the Activity) associated with ongoing and temporary noise, vibration, dust and movements during construction.

- The population of GHFF and BFF that utilise the Casino camp are unlikely to be present on site (or proximate to site [within 100 m]) during the works period, given the current poor condition of the previously utilised vegetation.

5.1.3.2 Operational Phase

- Following regeneration of the vegetation, flying-fox may inhabit the area again for roosting and breeding purposes. They may therefore experience potential displacement and stress during the operational phase of the Activity associated with pedestrian disturbance and lighting.

5.1.4 General Biodiversity Safeguards and Mitigation Measures

The following safeguards would be implemented in order to prevent adverse impacts relating to biodiversity:

1. A suitably qualified ecologist will be in attendance during the works to inspect any trees for fauna prior to clearing.
2. If a Koala or threatened fauna is found to be occupying a tree at the site, a flagged exclusion zone will be established (minimum 50 m) in which works will not proceed until the individual has moved from the site.
3. Erosion and sediment control measures will be implemented (in accordance with Managing Urban Stormwater; Soils and Construction Guidelines [the Blue Book]) and maintained to prevent sediment moving off-site.
4. A spill containment kit, including equipment to address spills, will be kept on-site at all times during the proposed works. Staff will also be trained in the effective deployment of the spill containment kit.
5. Vegetation clearing will be limited to the immediate Activity footprint only.
6. Ground disturbance outside of that required to undertake the proposed works will be minimised.
7. Damage to trees outside of those that require clearing will be avoided at all times.
8. Stockpiling will not occur under the crown of existing native trees (i.e. the crown comprises the full width of the branches).
9. Stockpiling will not occur near drainage lines or on overland flow paths, and where necessary will be bunded or covered to reduce sediment runoff.
10. Trees will be felled in a way that minimises disturbance to adjacent retained native vegetation.
11. Works will be completed sensitively to ensure minimal disturbance occurs.
12. All vegetation removed will be chipped and removed from the site; no vegetation waste will be burnt.
13. Any materials to be removed from the site will be taken to a licensed waste facility for disposal or recycling.
14. All plant, equipment and personnel will be free of soil and potential weed propagules prior to being brought to the site, as per '*Arrive Clean, Leave Clean'* (DotE, 2015).
15. Should injured fauna be found on the site, local wildlife care groups and/ or local veterinarians will be contacted immediately, and arrangements made for the immediate welfare of the animal. The phone number of the local WIRES group (Ph: 02 6628 1898) will be known to the project manager
16. Environmental safeguards will be communicated to all construction personnel as part of an Environmental Site Induction and repeated where appropriate at toolbox sessions prior to commencement of relevant work components.

5.1.5 Flying-fox Safeguards and Mitigation Measures

The following safeguards would be implemented in order to prevent adverse impacts relating to the Casino flying-fox camp:

17. A suitably qualified ecologist will inspect all trees proposed for removal two weeks prior to clearing to determine if any flying-fox are utilising the subject vegetation.
18. A suitably qualified ecologist will be in attendance during the works to inspect any trees for flying-fox prior to clearing.
19. Any works undertaken between September – February would be subject to a weekly inspection for flying-fox within a buffer zone of 100 m of the Activity. The inspection must be undertaken by a Council representative or ecologist.
20. If flying-fox are identified within the buffer zone during the works period, an adaptive flying-fox management plan must developed by an ecologist with flying-fox experience.
21. If lights are proposed for the footbridge, the potential for light spill affecting nocturnal fauna must be minimised through light selection whereby lights are of low intensity and light spill is reduced using visors and glare shields. Glare control visors allow for precise light distribution, aiding in the control of light spill and helping reduce light pollution.
22. Consider maintenance of vegetation within 20 m of the footbridge to remove any existing trees above 10 m or any trees with the potential to grow 10 m or higher. This would assist in negating future interactions with pedestrians and flying-fox.

5.2 Soils, Water Quality and Flooding

5.2.1 Existing Environment

The site includes the riparian corridor of the Richmond River which bisects the large rural town of Casino. The north-western side contains the Casino CBD and the south-eastern side contains parklands.

The 1:250,000 Tweed Heads Geological Series Sheet (SH56-3) indicates that the site is underlain by Quaternary alluvial. The profile generally comprises fill and alluvial soils overlying weathered sandstone from 11 m and 9.7 m on the western and eastern abutments respectively. The rock was typically highly to moderately weathered, very low to high strength.

The region is characterised by broad flat to gently undulating alluvial flood plains. The terrain transitions to gently to moderately sloping residual slopes to the south. The Richmond River cuts through the alluvial terrain with the river level approximately 8 m to 15 m below the surrounding topography. The river flows in a general west to east direction. The bridge location is situated on a sweeping bend in the river with the western abutment on the outside bend and the eastern abutment on the inside end. There is an abrupt change in direction of the river to the south where residual terrain is situated.

The riverbanks are variable with slopes generally between 5 to 30 degrees. Material exposed in the riverbanks include alluvial sands and clay with weathered sandstone exposed in the bed of the river and at the toe of the riverbanks. The sandstone was assessed to be medium to high strength.

Mapping prepared as part of the Richmond Valley Floodplain Risk Management Study and Plan (BMT, 2023) indicates that the site is flood prone. The prescribed flood planning level (the 1% AEP event with climate change plus 500 mm freeboard allowance) at the site is 24.4 – 24.5 m AHD. Due to the extent of flood inundation in and around Casino it is not practical to keep the entire structure out of or above the 1% AEP flood level. The main structure, being the most critical infrastructure, has been designed to be flood free in the 1% AEP flood event.

The height of the bridge varies across the structure. At the location of the northern and southern columns the finished level is 24.6 mAHD. In the centre of the bridge the finished level is 25.59 mAHD, which would achieve a freeboard of 600 mm above the 1% AEP event, which is as prescribed in AS5100, plus an additional 185 mm clearance for climate change.

The boardwalks on the southeastern bank then traverse down to ground. To mitigate against flood impacts, the entire structure has been kept to the northern side of the existing powerlines, which places it further away from the river bend, thus reducing the flood hazard due to reduced water flow and likelihood of debris impact.

In the location of the proposed new bridge, the Richmond River is mapped as a Key Fish Habitat area. The site is not mapped as containing threatened freshwater fish species.

The EPA Contaminated Land database and the DPI Cattle Dip Site Locator were searched on 14 May 2025 (refer to **Appendix I**). The searches did not identify any registered contamination items/ places within or adjacent to the work areas.

5.2.2 Potential Impacts

5.2.2.1 Soil Disturbance and Water Quality

Construction of the bridge would disturb soils on the riverbank, having the potential to cause sediment runoff into the Richmond River and negatively impact water quality.

Given the site context, potential impacts to water quality, soils and erosion that could arise from the Activity include:

- Erosion and sediment disturbance.
- Pollution of local water quality (both ground and surface water) from pollutants off machinery and construction materials and spills.
- A variety of dispersible liquid materials would be used which pose a potential pollutant threat to local water quality. These liquids include, but are not limited to, diesel, unleaded petrol, machinery oils and lubricants. The nature of these liquids and their ability to disperse away from the work site means that they could have a negative impact on ground or surface water on or adjacent to the site, especially during rain.
- Periods of high rainfall or flood could exacerbate potential water quality impacts if works are in progress during such an event.

Whilst the works could pose risk, such risks can be suitably minimised and managed by implementing appropriate safeguards and mitigation measures.

5.2.2.2 Flooding

The Activity is within the flood planning area and as such, there are potential impacts during construction and once the bridge is operational. During construction, there is risk that flooding could damage the works and have environmental impacts if items or disturbed soils are washed off site. There is also the risk of delay to the construction period.

There is no significant risk of the bridge causing an increase in flood levels, due to the minimalist design of the structure. The bridge approach boardwalks would utilise a girder design, seamlessly tying into the existing levels on either side of the river, without requiring fill or concrete paths.

Once operational there is risk of damage to the structure from flooding. This risk has been mitigated by designing the bridge in accordance with the Geotechnical Report prepared by Regional

Geotechnical Solution (refer to **Appendix C**) and in accordance with all relevant Australian Standards, including AS 5100 Bridge Design, AS2156.1 – Walking track classification and AS1170.2 – Wind Loads. The design would undergo engineering review, inspections and certifications by qualified professionals with specialised expertise in bridge construction. A comprehensive Safety in Design Report would be prepared in accordance with the *Work Health and Safety Act 2011*, covering the entire lifecycle of the bridge structures.

5.2.3 Safeguards and Mitigation Measures

The following measures will be implemented in order to prevent adverse impacts relating to water quality and to mitigate the impact of flooding:

23. Where possible, avoid works during forecast high rainfall events and plan works to occur during periods of no or low flow.
24. Erosion and sediment controls will be implemented in accordance with the Landcom/ Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines (the Blue Book).
25. Works will only commence once all erosion and sediment controls have been established. The controls would be maintained in place until the works are complete, and all exposed erodible materials are stabilised.
26. Only clean equipment and vehicles will be used, with equipment being cleaned down before being brought to the site.
27. A spill containment kit will be available at all times. All personnel will be made aware of the location of the kit and trained in its effective deployment.
28. Any required fuels and other liquids will be stored in self-safe chemical storage containers.
29. All equipment will be maintained in good working order and operated according to manufacturer's specification.
30. No waste and/ or wastewater will be discharged directly or indirectly in drains or watercourses.
31. An unexpected, contaminated land find procedure will be developed for the works. In the event contaminated materials are encountered the EPA will be notified immediately in response to incidents causing or threatening actual or potential harm to the environment in accordance with section 148 of the PoEO Act (via EPA Environment Line on 131 555).

5.3 Non-Aboriginal (European) Heritage

5.3.1 Existing Environment

European settlement of Casino commenced in the 1840's with the primary industries being cattle grazing, farming and forestry. The town's growth accelerated with the establishment of the Casino railway station in 1903, which facilitated further trade and travel. Within the CBD and surrounds, there are many historic buildings that reflect the history of the town. To protect the historic buildings of the town, Richmond Valley Council has adopted a conservation area covering the central sections of Barker and Walker Streets. The north-western bridge approach is set within the Casino Town Centre but is just outside of the conservation zone.

The bridge would be constructed on properties within the vicinity of two heritage places, listed in the RVLEP 2012. The original Casino foot bridge is identified as I59 in Schedule 5 of the RVLEP 2012. The State Heritage Inventory Statement of Significance states the following:

> *The Casino footbridge is historically significant providing access across the Richmond River between Casino and South Casino for many years. It provides easy access to Queen Elizabeth Park (formerly Carrington Park) and the new Junbung walkway. The footbridge is located in an aesthetically pleasing section of the river.*

The heritage listing states that the original bridge was constructed in 1888 and was a simple pedestrian timber plank bridge in the style of a boardwalk. The pathway is supported by cement piers and there are no handrails. The physical condition of the bridge is described as well maintained, but subject to extreme wear and tear from vandalism, flood inundation and heavy usage.

The heritage listing describes the following modifications and dates:

> *The bridge has had numerous modifications due to damage usually caused by flooding. The alignment of western end of the bridge (Barker Street end) has been altered, this being evident from a bend in the bridge and presence of footings immediately adjoining (upstream). Newspaper articles from 1932 indicated that the Council were going to replace the bridge in the same location. It is not known whether the minor realignment took place at this time.*
>
> *The most recent repairs were in undertaken in 2015 to replace the entire timber deck with perforated plastic floor grating. The new deck should provide a more durable, and even surface that provides for lower maintenance.*

The listing has not been updated to reflect that the bridge was significantly damaged in the 2022 floods and is currently closed.

Queen Elizabeth Park contains a locally heritage listed flagpole, signifying Queen Elizabeth's visit to the park in 1954 (I44 in Schedule 5 of the RVLEP 2012). This flagpole is historically significant marking the site of the dais where Queen Elizabeth and Prince Phillip addressed the Casino and District community on 10th February 1954. It was reported that this occasion saw the biggest crowd ever assembled in Casino. The location of the flagpole is shown on **Illustration 3.1**.

5.3.2 Potential Impacts

The existing footbridge would not be impacted by the Activity. The scope of work does not involve removing the existing bridge and the disturbance area during construction of the new bridge would remain at a sufficient distance from the existing bridge to ensure there would be no impact.

The flagpole is over 150 m away from the site, to the north-east. The construction activities would not impact on the flagpole.

Overall, the provision of the new high quality footbridge linking Casino CBD to Queen Elizabeth Park would allow more people to see and appreciate the heritage listed items, which would have a positive impact. The new footbridge has been designed to a high architectural standard and would not detract from the heritage significance of the two listed items or the town as a whole.

Safeguards are provided to ensure any heritage items uncovered during the Activity are not significantly affected.

5.3.3 Safeguards and Mitigation Measures

The following safeguards and management measures would be implemented in order to prevent adverse impacts to any items of non-indigenous or indigenous heritage:

32. Should non-Indigenous heritage items be uncovered during works, the stop work provision should be applied, in line with the requirements of the NSW *Heritage Act 1977* if any unexpected archaeological items are found or exposed during construction of the new footpath and associated works. An appropriate qualified heritage professional and an archaeologist should be engaged to assess the finds and advise on their management.

5.4 Aboriginal Heritage

5.4.1 Existing Environment

The traditional custodians of the land of the Casino area, or Djanangmum as it is known to Aboriginal people, are Galibal. The area known today as the Northern Rivers was occupied by the Bundjalung-speaking peoples, made up of an estimated 20 different language groups. The area has been occupied by Bundjalung-speaking people for thousands of years and the Bundjalung Nation recognises their continuing cultural connection to the land.

The Aboriginal Heritage Information Management System (AHIMS) provides a list of previously recorded Aboriginal sites in NSW. A search of the AHIMS database is a condition of compliance with the Due Diligence Code of Practice and provides information on the types of sites which would likely be located within and around the site.

A search of AHIMS was undertaken on 26 May 2025 for the site and surrounds which returned two previously recorded Aboriginal sites. One of these sites is located at the northern end of Grays Lane, at the Richmond River, approximately 760 m away from the site, to the north-east. The other is located quite close to the site, on the south-western side of the powerlines that cross the Richmond River, approximately 40 m away from the proposed disturbance area. This site is identified by the AHIMS as 04-4-0354 Richmond River Grinding Grooves 01. It is a grinding groove, which is a rock overhang that likely served as a grinding surface for processing seeds, potentially for making damper, or ochre for painting or ceremonies. The location of the site is shown on **Illustration 3.1** and the AHIMS records are located at **Appendix J**.

5.4.2 Potential Impacts

Heritage Management & Planning Pty Ltd has been commissioned by Council to undertake an Aboriginal cultural heritage (Due Diligence) assessment to support the proposed Activity. This Due Diligence assessment meets the investigation and reporting requirements of the *NSW National Parks and Wildlife Act (NSW) 1974* for activities which are approved under Part 5 of the EP&A Act and establishes a defense against prosecution under Section 87(2) of the NPW Act in the event of an allegation of harm to Aboriginal objects. To review of Due Diligence assessment, refer to **Appendix J**.

Table 5.9 Generic Due Diligence

Generic Due Diligence Process		Proposed Activity
1	Will the activity disturb the ground surface? Disturbed land is defined under the code as: *Land is disturbed if it has been the subject of a human activity that has changed the land's surface, being changes that remain clear and observable.*	Yes. The Activity includes a single span elevated suspension footbridge across the Richmond River between Barker/ Hickey Street and Queen Elizabeth Park, including footpaths to access the bridge. The suspension footbridge includes bridge pylons above the Richmond River on the steep bank and abutments above the bank which would be connected via footpaths.
2a	AHIMS Search	A search of AHIMS was undertaken on 26 May 2025 (#1007988) for the area "Lat, Long To: - 28.8667, 153.0483 Lat, Long To: -28.8644, 153.0521," which returned one previously recorded Aboriginal site, being the 'Richmond River Grinding Grooves 01 (#04-4-0354). The site record form locates the grinding grooves on the lower bank of the

Generic Due Diligence Process		Proposed Activity
		northern side of the river, south of Barker Street and Hickey Street. Based on the plan provided in the site record form, the grooves are located upstream (south) of the powerline Crossing; the Aboriginal site is therefore not within the proposed Activity site.
b	Environmental Context Is the activity: - within 200 m of waters. - located within a sand dune system. - located on a ridge top, ridge line or headland. - located within 200 m below or above a cliff face. - within 20 m of or in a cave, rock shelter, or a cave mouth. - is on land that is not disturbed land. If after completing steps 2a and 2b it is reasonable to conclude that there are no known Aboriginal objects or a low probability of objects occurring in the area of the proposed activity, you can proceed with caution without applying for an AHIP	Within 200 m of waters: Yes (the Richmond River). Located within a sand dune system: No Located on a ridge top, ridge line or headland: No Located within 200 m below or above a cliff face: No Within 20 m of or in a cave, rock shelter, or a cave mouth: No
2c	Disturbance History	Based on the available aerial photos and plans, it is reasonable to proceed with the assessment on the basis that the site has been disturbed in a manner which has resulted in clear and observable modification of the ground surface; this includes clearing of native vegetation, construction of roads and paths, maintenance of Queen Elizabeth Park and accumulation/ erosion of soils during flooding events. The history of ground disturbance would be clear and observable and would either remove Aboriginal objects or displace them in a manner whereby standard archaeological investigation/ sampling strategies would be compromised by the ground disturbance.
3	Can you avoid harm to the object or disturbance of the landscape feature	The following statements summarise the outcomes of the desktop assessment: ■ The Richmond River Grinding Grooves 01 site is a discrete group of grinding grooves on the sandstone rock shelf upstream of the subject site. Grinding groove sites are uncommon in the Richmond Valley and occur on moderately soft sandstone outcrops near the water line of the Richmond River. ■ The design of the suspension footbridge would completely avoid impacts to the immediate riverbed and rocky shelves along the lower riverbank. ■ The moderate-steep riverbank has been subject to flood erosion and disturbance from the construction and maintenance of

Generic Due Diligence Process		Proposed Activity
		both the footpath and Queen Elizabeth Park; the site is disturbed in a manner which is clear and observable. ■ The suspension bridge has an overall limited footprint, being four pylons located on the upper riverbank. In the event of an unexpected find, the footbridge design can be amended to avoid harm to Aboriginal objects. Based on the outcomes of the desktop assessment, additional investigations are not required to comply with the Code of Practice.
4	Desktop assessment and visual inspection	Not required
5	Further investigations and impact assessment If after a detailed investigation and impact assessment has been undertaken and that harm would occur to Aboriginal objects then an AHIP application must be made.	Not required

Having consideration for the desktop assessment, the suspension footbridge is permissible under the Due Diligence approval pathway (NWP Act Section 87(2)). The results of the desktop assessment are within the range of 'normal' for archaeological investigations on the NSW north coast where the ability to identify sites closely correlates with landforms, the amount of grass cover and the extent of disturbance to topsoils. Archaeological test excavation in the Casino and upper Richmond Valley have demonstrated that topsoils do contain Aboriginal artefacts which are consistent with the manufacture and maintenance of hunting tools. However, with the nature of the landform being steep-moderate slopes and alluvial soils associated with the Richmond River and the history of ground disturbance from the existing paths and flooding means that there is not a 'high probability' that the Activity would impact Aboriginal archaeological sites. Stone artefacts, if they occurred, would typically be classified as 'isolated artefacts' and result from the discard of tools and waste material in an ad hoc manner during hunting activities. This pattern of archaeological discard is difficult to identify and interpret using standard archaeological investigation and sampling strategies.

Additionally, in northern NSW, sites which are considered to have 'conservation value' include, for example, bora/ stone arrangement sites, modified trees, rock art, historic sites associated with former Aboriginal reserves and missions and Aboriginal burials. Stone artefact scatters are relatively common and would not be considered to be of high conservation value. In the unlikely event that these sites did occur within the site, the nature of the Activity means it would be easy to redesign around the finds.

As such an Aboriginal Heritage Impact Permit is not required and the Due Diligence approval pathway (NPW Act Section 87 (2)) is the default defence against prosecution for the Activity (see below):

> *87 Defences (2) It is a defence to a prosecution for an offence under section 86 (2) if the defendant shows that the defendant exercised due diligence to determine whether the act or omission constituting the alleged offence would harm an Aboriginal object and reasonably determined that no Aboriginal object would be harmed.*

5.4.3 Safeguards and Mitigation Measures

33. Aboriginal Objects Find Procedure
    a. Work in the surrounding area is to stop immediately, and records are made of the finds via project incident reporting procedures

b. a temporary fence is to be erected around the site and appropriate controls put in place to ensure that no additional ground disturbance happens in the vicinity of the find;
c. an appropriately qualified archaeological consultant and a representative of the Casino Boolangle Local Aboriginal Land Council are to be engaged to identify the material and provide an initial assessment of the significance of the object and the likely nature and extent of any associated archaeological sites;
d. if the material is found to be of Aboriginal origin, the find must be reported on the AHIMS database;
e. In the event that the Aboriginal objects are considered to have been damaged or disturbed, the incident must be reported through the NSW Enviro Hotline; and
f. works may only recommence after advice from Heritage NSW on the requirement for an AHIP or where design, engineer or construction measures are identified to mitigate further damage to the Aboriginal site.

34. Aboriginal Human Remains: Although it is unlikely that Human Remains will be located within the Subject Site, should this event arise it is required that all works must halt in the immediate area to prevent any further impacts to the remains. The site should be cordoned off and the remains themselves should be left untouched. The nearest Police Local Area Command (Casino), Casino Boolangle Local Aboriginal Land Council and the Heritage NSW (Parramatta) are all to be notified as soon as possible. If the remains are found to be of Aboriginal origin and the police do not wish to investigate the site for criminal activities, the Aboriginal community and the Heritage NSW should be consulted as to how the remains should be dealt with. Work may only resume after agreement is reached between all parties, provided it is in accordance with all parties' statutory obligations.
35. Aboriginal site 04-4-0354 Richmond River Grinding Grooves 01 (Zone 56 Easting 504898 Northing 6806892) will be flagged off and will not be disturbed by the Activity.
36. All personnel working on site will be inducted and receive information on the required process, should a potential heritage item be found.
37. Human remains – should skeletal material be exposed during ground disturbance, work will cease immediately, and contact made with NSW Police. The police then make the decision whether the remains are European, Aboriginal or something else. If deemed to be Aboriginal, then Heritage NSW and CBLALC is to be contacted.
38. Notifying Heritage NSW – it is a legislative requirement that cultural heritage materials uncovered as a result of the Activity are registered as Aboriginal sites with the Heritage NSW on the AHIMS database within the required timeframe.

5.5 Visual Impact

5.5.1 Existing Environment

The proposed Activity would occur in a scenic area of Casino, featuring views down and along the Richmond River and to the opposite side of the riverbank. On the northern bank, Council has undertaken landscaping works including the construction of a river viewing platform, pedestrian pathways and informative signage. These works have been undertaken to achieve the objectives of the Casino Riverbank Access Plan (Richmond Valley Council, 2020) (refer to **Plate 5.5**).

On the southern side of the river, the buildings in Queen Elizabeth Park are not historic and do not hold any architectural value. The landscape in the location of the southern bridge boardwalk is mown grass and scattered mature trees. The area is typical of a regional parkland environment (refer to **Plate 5.6-Plate 5.8**).



Plate 5.5 Existing views to the east from the northern bank



Plate 5.6 Existing views of the Richmond River from the northern bank



Plate 5.7 Existing views of Queen Elizabeth Park



Plate 5.8 Casino footbridge, prior to damage in 2022

5.5.2 Potential Impacts

The visual impact of the construction works is expected to last up to one year. During that time, there would be significant changes to the visual environment, including views of construction machinery, temporary fencing, site offices and other items associated with an active construction zone.

Upon completion of the works, there would be a significant change to the visual environment. The new bridge features a 70 m clear-span suspension bridge. The approach boardwalks utilise a girder design, tying into existing levels on either side of the Richmond River without requiring fill or concrete paths. To maintain the visual integrity of the natural trail setting, the bridge design follows a minimalist aesthetic, ensuring it blends with the landscape while providing functional and durable infrastructure.

The new bridge has been designed by a renowned designer of outdoor structures including bridges, sculptures, playground equipment. Bridge designer FORGE has partnered many times with local governments throughout Australia to provide high quality public infrastructure, including pedestrian/ cyclist bridges in Shepparton, Victoria, Narrabeen Lagoon, Dobroyd Head Walking Track and the Aura Brook Bridges in Queensland.



Plate 5.9 Render of the proposed suspension bridge

5.5.3 Safeguards and Mitigation Measures

The following measures will be implemented to prevent and/ or minimise adverse impacts relating to visual amenity:

39. All working areas will be maintained, kept free of rubbish, and cleaned up at the end of each working day.
40. Soil disturbance will be minimised where possible and disturbed areas at risk of erosion stabilised progressively.
41. Vegetation removal will be minimised and limited to the extent necessary to achieve the design requirements of the works.
42. Upon completion of the works, any works areas will be restored to an acceptable visual state.

5.6 Bushfire

The site is identified as bushfire prone land. However, the Planning for Bushfire Protection Guidelines are not applicable, as the proposed Activity is non-habitable and would not function as a place of assembly. The proposed footbridge would be constructed of non-flammable materials and does not increase risk in the event of a bushfire.

5.7 Noise and Vibration

5.7.1 Existing Environment

The proposed Activity is located in a mixed environment with regard to existing noise. The north-west landing of the bridge is within the CBD, though is in a quieter location. Land uses in the immediate vicinity of the north-west bridge landing include the Cassino Gallery, a few residences and McAuliffe Park. The dwelling at 157 – 159 Barker Street is just over 50 m from the site. The dwelling at 1 – 5 Carrington Avenue is over 80 m away from the site. The dwelling at 37 Hickey Street is approximately 125 m away.

The south-east landing of the bridge is Queen Elizabeth Park, in the informal parkland area. Noise here would be generated by activities occurring at the greyhound track but would generally be fairly quiet.

5.7.2 Potential Impacts

Noise or vibration from the Activity would be associated with the temporary construction phase and would not continue post construction. The noise and vibration expected would be typical of that associated with construction works and would result from the work personnel and the use of machinery, equipment, and vehicles. This would result in noise and possible vibration emissions within the immediate area and has potential to affect nearby sensitive receivers, including wildlife, local residences, and users of the parklands.

Noisy construction activities would include:

- Use of chainsaws and chipper during tree clearing
- Excavation works
- Drilling and installation of piles
- Crane works.

Overall, it is possible for noise and vibration to adversely affect close receivers if high noise and vibration generating works occur in proximity. However, the works are temporary and each of the noise generating activities would occur for short durations, and only during standard construction hours. Noise impacts would be manageable through the implementation of safeguards and mitigation measures.

The overall construction timeframe for the project is 11 months, with the noisy activities spread across that time period. The impact of noise and vibration on nearby sensitive receivers would be addressed in the construction contractors Environmental Management Plan which would include adequate safeguards to avoid or minimise potential noise and vibration.

There may also be a minor increase in noise during the operational phase as the new bridge would be expected to attract more users than currently visit the river. Furthermore, if flying-foxes were to return to the site post construction, disturbance to the flying-fox camp as a result of pedestrians using the bridge may cause roosting flying-fox to take flight and vocalising.

5.7.3 Safeguards and Mitigation Measures

The following mitigation measures would be implemented in order to address adverse impacts relating to noise and vibration:

43. The Environmental Management Plan will include measures for the management of noise and vibration impacts.

44. Construction activities will be restricted to the following times where possible:

Monday to Friday	7:00 am to 6:00 pm.
Saturday	8:00 am to 1:00 pm.
Sundays or public holidays	No work.

45. Notification or liaising by the site supervisor of adjacent residents will occur including the anticipated duration of such works at least two weeks prior to undertaking the works. All notified receivers will be provided with a contact telephone number for any complaints/ updates associated with the proposed works.
46. Extensive periods of continuous operation of noisy machinery will be avoided where possible.
47. Noise complaints will be recorded, including suitable identification/ description of the noise source (e.g., continual/ impulsive) and general location of the complaint. Any noise complaints will be investigated and actioned as required.
48. All works will be in accordance and best practices of the EPA guidelines: Interim Construction Noise Guideline.

5.8 Traffic and Access

5.8.1 Existing Environment

The site is not a high traffic environment. While the northern side of the bridge is within the CBD, it is not in one of the highly trafficked streets. The southern side is a fairly quiet residential and parkland environment with minimal traffic.

Access to the northern side of the site is straightforward; the site would be accessed via the Bruxner Highway and then a 650 m long stretch of Hickey Street. However, the site is quite small, steep and constrained.

On the southern side, the site would be accessed via the Bruxner Highway and then 1,200 m of travel along Hare Street and Adam Street to Queen Elizabeth Park. The site is large and not too steep, however there are some large trees to avoid.

5.8.2 Potential Impacts

Due to the small area and steepness on the northern side, it would be necessary to temporarily close the intersection of Barker and Hickey Streets. A temporary full road closure would be put in place for two to three days for a concrete pour to set up a boom pump. Another temporary full road closure would be put in place for one week when the crane is installing towers, the bridge approach and hangers. These closures would not prevent access to any of the nearby dwellings or the Cassino Gallery.

Access to the southern section of McAuliffe Park would be restricted during the construction period as there would be a site compound set up in this location. The site compound would be set up for footing works and then demobilised. It would be set up again for the main installation works. This compound would contain site parking, storage of materials, amenities and laydown areas. There would be temporary single lane closures with traffic control in place to manage the transportation of machinery and materials between the compound and the construction site.

On the southern side, access is less constrained. There is ample space to construct the bridge and continue utilising the park for all of the existing sporting activities. A temporary site compound would be set up for footing works and then demobilised until it is required again for the main installation

works. The compound would be used for site parking, materials storage, amenities and laydown areas.

Upon completion of the bridge, it is expected that more residents would utilise the pedestrian bridge to gain access to both sides of the river. The new bridge would be wheelchair accessible and would be more appealing to use than the previous footbridge (before being closed due to damage in 2022).

5.8.3 Safeguards and Mitigation Measures

The following mitigation measures would be implemented in order to prevent adverse impacts relating to traffic and access:

49. A Traffic Management Plan (TMP) will be implemented to ensure the safe movement of vehicles, equipment, and personnel. The TMP will cover:

    - Construction vehicle access and egress routes
    - Traffic control measures, including signage, barriers, and speed restrictions
    - Coordination with local authorities for temporary road closures or detours, if required
    - Strategies to minimise disruptions to public access, local businesses, and residents
    - Compliance with Austroads Guide to Traffic
    - Management and local council regulations.

50. Temporary fencing will be erected around the various works areas and site compounds (if necessary) to delineate the works zone from the public use areas.
51. Where road closure or altered road access is proposed, sufficient and appropriate notification will be provided to the affected traffic users.
52. Regard to public safety will always be maintained.

5.9 Air Quality

5.9.1 Existing Environment

The site is located within a rural locality with relatively good air quality, impacted predominantly from farming practices and vehicle emissions.

5.9.2 Potential Impacts

The Activity may temporarily affect air quality through exhaust emissions from machinery and associated transportation. There may also be dust generated during earthworks. There is potential that emissions and dust generated from the works may result in air quality impacts to adjacent sensitive receivers. However, given the temporary duration of the works and nature of the Activity, the level of potential impact is not considered significant and can be managed or minimised through implementation of safeguards and management measures.

The Activity would contribute to greenhouse gas emissions to a minor extent via the emissions from construction equipment and traffic, as well as the consumption of materials requiring carbon emissions. Given the scale of the works however, the influence on greenhouse gas emissions would be negligible. However, it is appropriate to implement measures that can reduce or minimise such effects.

5.9.3 Safeguards and Mitigation Measures

The following mitigation measures would be implemented in order to prevent adverse impacts relating to air quality:

53. No materials will be burnt on site.
54. Construction works will not be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely.
55. Vehicles transporting waste or other materials that may produce dust will be covered during transportation.
56. Vehicles, machinery, and equipment will be maintained in accordance with manufacturer's specifications in order to meet the requirements of the *PoEO Act 1997* and associated regulations.
57. Machinery and vehicles not in use during construction will be turned off and not left unnecessarily run idle.

5.10 Socio Economic

5.10.1 Existing Environment

Pedestrian and cyclist access from the Casino town centre to south Casino and Queen Elizabeth Park is important to the local community and has been a feature of the town since 1888. The existing footbridge has been closed since 2022, forcing pedestrians and cyclists to utilise Irving Bridge which runs alongside the Bruxner Highway. This route would generally take longer and would be less appealing due to the presence of heavy volumes of traffic including large trucks also utilising the bridge.

The existing bridge, prior to its closure in 2022, would have been difficult for less mobile people to use due to the sloping approaches down to the bridge and uneven surfaces. It was also unreliable as a travel route due to its susceptibility to flood inundation.

5.10.2 Potential Impacts

Construction of a new suspension bridge in this location would have great socio-economic benefits to the local community. The new bridge has been designed to have immunity from the 1% ARI flood event, allowing it to be utilised in all but the most extreme flood events. The new bridge would allow for an increased ability for residents to utilise active transport i.e. walking or cycling to travel between north and south Casino. It also provides a usable route for people using mobility scooters.

The new bridge would be safer to use than the former bridge, as the elevated structure provides a far greater level of visibility. Crime Prevention Through Environmental Design (CPTED) principles can be used to enhance safety and security on the bridge, including:

1. Natural surveillance:
    a. Clear sightlines

    Ensure unobstructed views of the bridge and surrounding areas to allow for easy observation by pedestrians and potential observers.

    b. Adequate lighting

    Install sufficient and even lighting to illuminate the bridge and pathways, discouraging shadows and creating a sense of security.
2. Access control:
    a. Controlled access points:

Design access points to be clearly defined and monitored, limited unauthorised access.

b. Physical barriers

Use physical barriers (like railings or fencing) to prevent access to certain areas or routes, and to create a sense of boundary.

c. Wayfinding

Provide clear signage and directional cues to guide pedestrians and discourage unwanted movements.

3. Territorial reinforcement:

a. Clear boundaries

Define the boundaries of the bridge clearly through landscaping, fencing, or other design elements to create a sense of ownership and guardianship.

b. Maintenance

Maintain the bridge and surrounding areas to ensure a clean and well-maintained appearance, discouraging potential criminals.

c. Activity support

Promote activities and events on the bridge to foster a sense of community and discourage unsupervised use.

4. Space management:

a. Destination points

Design the bridge with clear destination points and pathways to encourage pedestrian flow and discourage lingering or loitering.

b. Avoid entrapment

Ensure that the bridge's design does not create blind spots or entrapment areas where people could be hidden or isolated.

c. Alternate Routes

Provide alternate pathways and exit points to allow for flexibility and reduce the risk of being trapped.

Where possible, these principles can be implemented to improve safety outcomes for the bridge.

The Activity is unlikely to cause any negative socio-economic impacts. There is unlikely to be any significant disruption to businesses, traffic, or access during construction. No significant noise and vibration impacts are expected during the works, as discussed previously.

Works staff would need to wear appropriate PPE and undertake the works appropriately to ensure a safe work site and no negative impacts to the health of the public.

Given the nature of the Activity, the site context and temporary construction period, no adverse long-term socio-economic impacts are anticipated.

5.10.3 Safeguards and Mitigation Measures

The following safeguards and management measures would be implemented to prevent adverse social impacts:

58. Temporary signage will be erected to indicate the duration of works and alternative location of amenities.
59. Complaints received will be recorded and attended to promptly, and any potentially impacted parties or landholders will be notified/ consulted prior to construction with a goal of minimising or eliminating any adverse impacts.

60. In accordance with the *Work Health and Safety Act 2011*, workers will be provided with appropriate safety clothing and equipment. Supervisory staff and any visitors to the work area will also be required to wear protective clothing. Works personnel will be provided with or expected to have protective equipment and appropriate training.
61. Contractors/ workers will be mindful of the needs of the local community.
62. Prior to undertaking any excavation works all underground services will need to be clearly located. Any potential services interruptions will be communicated to the relevant services authorities to enable flow on notifications to any affected services customers.
63. Any changes to the public or private roads as a result of the Activity will be reinstated to an acceptable standard upon completion of the works.

5.11 Waste

5.11.1 Existing Environment

The proposed Activity would be located within parkland and riverine environment. Waste located within this area would include general litter generated from recreational users and tourists.

5.11.2 Potential Impacts

The Activity would be undertaken to ensure minimal impacts are generated from waste produced on-site by ensuring that all waste is managed appropriately. Waste generated from the Activity may include, but is not limited to:

- Scrap timber.
- Scrap metal.
- Concrete waste.
- Packaging materials.
- General site rubbish.
- Oils and grease from machinery.
- Soil spoils.

The Contractor's Environmental Management Plan (CEMP) for the Activity would include guidelines for minimising environmental impacts, including from waste. The CEMP would include waste management strategies, including recycling and disposal protocols.

5.11.3 Safeguards and Mitigation Measures

The following safeguards and management measures would be implemented in order to prevent adverse impacts in relation to waste generated by the Activity:

64. Concreting activities onsite will require use of bunded concrete washout facilities, and no excess concrete waste will be left onsite at the completion of works.
65. Working areas will be maintained, kept free of rubbish, and cleaned up at the end of each day.
66. Waste material will not be left on-site once the works have been completed.
67. Ensure the responsible environmental management of wastes that cannot be avoided and promote opportunities for the re-use of waste products where appropriate.
68. Waste will be disposed of at a licensed waste or recycling facility as appropriate.

5.12 Cumulative Impacts

Under the Department of Planning and Environment's guidelines for Division 5.1 Assessments (June 2022), any cumulative environmental effect with other existing or likely future activities must be considered when assessing the impact of an activity for the purposes of Part 5 of the EP&A Act.

The Activity is minor in scale and nature. It is not expected contribute to any notable cumulative impacts. A review of Council's DA tracker carried out in May 2025 identified no recently submitted, or approved development applications in the Casino area that have the potential, when combined with the proposed activity, to have a significant cumulative impact on the locality.

5.13 Ecologically Sustainable Development

5.13.1 Precautionary Principle

Section 193 of the Environmental Planning and Assessment Regulation 2021 states *that "the 'precautionary principle', namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In applying the precautionary principle, public and private decisions should be guided by:*

- *careful evaluation to avoid, wherever practicable, serious, or irreversible damage to the environment; and,*
- *an assessment of the risk-weighted consequences of various options".*

To satisfy the precautionary principle, this REF has conducted a thorough analysis of potential environmental, economic, and social concerns. This assessment has identified and examined potential impacts and developed appropriate mitigation measures and safeguards to help avoid and/ or minimise any impacts and safeguard the environment. Considering this assessment's findings, the Activity is unlikely to impose significant and/ or long-term adverse impacts on the environment, economy, or community. The mitigation measures and safeguards outlined in this REF would be implemented to ensure sound environmental outcomes in all aspects of the Activity.

5.13.2 Inter-generational Equity

The EP&A Regulation 2021 defines the inter-generational equity as the following:

> *That the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.*

The Activity would not significantly affect the viability of threatened species, or any TECs or other environmental resources including water, soil, and air. Therefore, local environmental values would not be substantially adversely affected by the Activity and would be maintained for future generations. The Activity would have positive socio-economic effects in relation to maintenance of access and existing road infrastructure.

5.13.3 Conservation of Biological Diversity and Ecological Integrity

The EP&A Regulation 2021 defines the conservation of biological diversity and ecological integrity as the following:

> *That conservation of biological diversity and ecological integrity should be a fundamental consideration.*

The impacts to ecological integrity and conservation of biological diversity at the site have been assessed as part of this REF. No threatened species, endangered populations or TECs are likely to be significantly affected by the Activity. No populations of native species are likely to be made locally rare or unviable as a result of the Activity. Consequently, the ecological integrity and biological diversity would be maintained locally.

5.13.4 Improved Valuation, Pricing, and Incentive Mechanisms

The EP&A Regulation 2021 defines improved valuation, pricing, and incentive mechanisms as the following:

> *That environmental factors should be included in the valuation of assets and services.*

It is difficult, however, to assign a monetary value to the environment of a locality or to environmental resources not considered for commercial use. The Proponent has taken an approach to manage the potential environmental impacts of the Activity by identifying appropriate measures and safeguards to avoid or mitigate adverse environmental effects. This would ensure that the integrity of the environment is not degraded, is managed and where possible enhanced.

6. Environmental Management

6.1 Summary of Safeguards and Management Measures

Environmental safeguards outlined in this document aim to minimise any potential adverse impacts arising from the Activity on the surrounding environment. The safeguards and management measures are summarised in **Table 6.1.**

Table 6.1 Summary of Site-Specific Environmental Safeguards

Environmental Attribute	*Safeguards/ Mitigation Measures*
Biodiversity	1. A suitably qualified ecologist will be in attendance during the works to inspect any trees for fauna prior to clearing. 2. If a Koala or threatened fauna is found to be occupying a tree at the site, a flagged exclusion zone will be established (minimum 50 m) in which works will not proceed until the individual has moved from the site. 3. Erosion and sediment control measures will be implemented (in accordance with Managing Urban Stormwater; Soils and Construction Guidelines [the Blue Book]) and maintained to prevent sediment moving off-site. 4. A spill containment kit, including equipment to address spills, will be kept on-site at all times during the proposed works. Staff will also be trained in the effective deployment of the spill containment kit. 5. Vegetation clearing will be minimised to the immediate Activity footprint only. 6. Ground disturbance outside of that required to undertake the proposed works will be minimised. 7. Damage to trees outside of those that require clearing will be avoided at all times. 8. Stockpiling will not occur under the crown of existing native trees (i.e. the crown comprises the full width of the branches). 9. Stockpiling will not occur near drainage lines or on overland flow paths, and where necessary will be bunded or covered to reduce sediment runoff. 10. Trees will be felled in a way that minimises disturbance to adjacent retained native vegetation. 11. Works will be completed sensitively to ensure minimal disturbance occurs. 12. All vegetation removed will be chipped and removed from the site; no vegetation waste will be burnt. 13. Any materials to be removed from the site will be taken to a licensed waste facility for disposal or recycling. 14. All plant, equipment and personnel will be free of soil and potential weed propagules prior to being brought to the site, as per 'Arrive Clean, Leave Clean' (DotE, 2015). 15. Should injured fauna be found on the site, local wildlife care groups and/ or local veterinarians will be contacted immediately, and arrangements made for the immediate welfare of the animal. The phone number of the local WIRES group (Ph: 02 6628 1898) will be known to the project manager. 16. Environmental safeguards will be communicated to all construction personnel as part of an Environmental Site Induction and repeated where appropriate at toolbox sessions prior to commencement of relevant work components.
Flying-fox	17. A suitably qualified ecologist will inspect all trees proposed for removal two weeks prior to clearing to determine if any flying-fox are utilising the subject vegetation. 18. A suitably qualified ecologist will be in attendance during the works to inspect any trees for flying-fox prior to clearing.

Environmental Attribute	*Safeguards/ Mitigation Measures*
	19. Any works undertaken between July – February would be subject to a weekly inspection for flying-fox within a buffer zone (100 m) of the Activity. The inspection must be undertaken by a Council representative or ecologist. 20. If flying-fox are identified within the buffer zone during the works period an adaptive flying-fox management plan must developed. 21. If lights are proposed for the footbridge, the potential for light spill affecting nocturnal fauna must be minimised through light selection whereby lights are of low intensity and light spill is reduced using visors and glare shields. Glare control visors allow for precise light distribution, aiding in the control of light spill and helping reduce light pollution. 22. Consider modification of vegetation within a 20 m buffer of the footbridge to remove any existing trees above 10 m or any trees with the potential to grow 10 m or higher. This would assist in negating future interactions with pedestrians and flying fox.
Soils, Water Quality and Flooding	23. Where possible, avoid works during forecast high rainfall events and plan works to occur during periods of no or low flow. 24. Erosion and sediment controls will be implemented in accordance with the Landcom/ Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines (the Blue Book). 25. Works will only commence once all erosion and sediment controls have been established. The controls would be maintained in place until the works are complete, and all exposed erodible materials are stabilised. 26. Only clean equipment and vehicles will be used, with equipment being cleaned down before being brought to the site. 27. A spill containment kit will be available at all times. All personnel will be made aware of the location of the kit and trained in its effective deployment. 28. Any required fuels and other liquids will be stored in self-safe chemical storage containers. 29. All equipment will be maintained in good working order and operated according to manufacturer's specification. 30. No waste and/ or wastewater will be discharged directly or indirectly in drains or watercourses. 31. An unexpected, contaminated land find procedure will be developed for the works. In the event contaminated materials are encountered the EPA will be notified immediately in response to incidents causing or threatening actual or potential harm to the environment in accordance with section 148 of the PoEO Act (via EPA Environment Line on 131 555).
Non-Aboriginal (European) Heritage	32. Should non-Indigenous heritage items be uncovered during works, the stop work provision should be applied, in line with the requirements of the NSW *Heritage Act 1977* if any unexpected archaeological items are found or exposed during construction of the new footpath and associated works. An appropriate qualified heritage professional and an archaeologist should be engaged to assess the finds and advise on their management.
Aboriginal Heritage	33. Aboriginal Objects Find Procedure a. work in the surrounding area is to stop immediately, and records are made of the finds via project incident reporting procedures; b. a temporary fence is to be erected around the site and appropriate controls put in place to ensure that no additional ground disturbance happens in the vicinity of the find; c. an appropriately qualified archaeological consultant and a representative of the Casino Boolangle Local Aboriginal Land Council are to be engaged to identify the material and provide an initial assessment of the significance of the object and the likely nature and extent of any associated archaeological sites; d. if the material is found to be of Aboriginal origin, the find must be reported on the AHIMS database;

Environmental Attribute	Safeguards/ Mitigation Measures
	e. In the event that the Aboriginal objects are considered to have been damaged or disturbed, the incident must be reported through the NSW Enviro Hotline; and f. works may only recommence after advice from Heritage NSW on the requirement for an AHIP or where design, engineer or construction measures are identified to mitigate further damage to the Aboriginal site. 34. Aboriginal Human Remains: Although it is unlikely that Human Remains will be located within the Subject Site, should this event arise it is required that all works must halt in the immediate area to prevent any further impacts to the remains. The site should be cordoned off and the remains themselves should be left untouched. The nearest Police Local Area Command (Casino), Casino Boolangle Local Aboriginal Land Council and the Heritage NSW (Parramatta) are all to be notified as soon as possible. If the remains are found to be of Aboriginal origin and the police do not wish to investigate the site for criminal activities, the Aboriginal community and the Heritage NSW should be consulted as to how the remains should be dealt with. Work may only resume after agreement is reached between all parties, provided it is in accordance with all parties' statutory obligations. 35. Aboriginal site 04-4-0354 Richmond River Grinding Grooves 01 (Zone 56 Easting 504898 Northing 6806892) will be flagged off and will not be disturbed by the Activity. 36. All personnel working on site will be inducted and receive information on the required process, should a potential heritage item be found. 37. Human remains – should skeletal material be exposed during ground disturbance, work will cease immediately, and contact made with NSW Police. The police then make the decision whether the remains are European, Aboriginal or something else. If deemed to be Aboriginal, then Heritage NSW and CBLALC is to be contacted. 38. Notifying Heritage NSW – it is a legislative requirement that cultural heritage materials uncovered as a result of the Activity are registered as Aboriginal sites with the Heritage NSW on the AHIMS database within the required timeframe.
Visual	39. All working areas will be maintained, kept free of rubbish, and cleaned up at the end of each working day. 40. Soil disturbance will be minimised where possible and disturbed areas at risk of erosion stabilised progressively. 41. Vegetation removal will be minimised and limited to the extent necessary to achieve the design requirements of the works. 42. Upon completion of the works, any works areas will be restored to an acceptable visual state.
Noise and vibration	43. The Environmental Management Plan will include measures for the management of noise and vibration impacts. 44. Construction activities will be restricted to the following times where possible: Monday to Friday 7:00 am to 6:00 pm. Saturday 8:00 am to 1:00 pm. Sundays or public holidays No work. 45. Notification or liaising by the site supervisor of adjacent residents will occur including the anticipated duration of such works at least two weeks prior to undertaking the works. All notified receivers will be provided with a contact telephone number for any complaints/ updates associated with the proposed works. 46. Extensive periods of continuous operation of noisy machinery will be avoided where possible. 47. Noise complaints will be recorded, including suitable identification/ description of the noise source (e.g., continual/ impulsive) and general location of the complaint. Any noise complaints will be investigated and actioned as required.

Environmental Attribute	Safeguards/ Mitigation Measures
	48. All works will be in accordance and best practices of the EPA guidelines: Interim Construction Noise Guideline.
Traffic and access	49. A Traffic Management Plan (TMP) will be implemented to ensure the safe movement of vehicles, equipment, and personnel. The TMP will cover: ■ Construction vehicle access and egress routes ■ Traffic control measures, including signage, barriers, and speed restrictions ■ Coordination with local authorities for temporary road closures or detours, if required ■ Strategies to minimise disruptions to public access, local businesses, and residents ■ Compliance with Austroads Guide to Traffic ■ Management and local council regulations. 50. Temporary fencing will be erected around the various works areas and site compounds (if necessary) to delineate the works zone from the public use areas. 51. Where road closure or altered road access is proposed, sufficient and appropriate notification will be provided to the affected traffic users. 52. Regard to public safety will always be maintained.
Air quality	53. No materials will be burnt on site. 54. Construction works will not be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely. 55. Vehicles transporting waste or other materials that may produce dust will be covered during transportation. 56. Vehicles, machinery, and equipment will be maintained in accordance with manufacturer's specifications in order to meet the requirements of the POEO Act 1997 and associated regulations. 57. Machinery and vehicles not in use during construction will be turned off and not left unnecessarily run idle.
Socio-economic	58. Temporary signage will be erected to indicate the duration of works and alternative location of amenities. 59. Complaints received will be recorded and attended to promptly, and any potentially impacted parties or landholders will be notified/ consulted prior to construction with a goal of minimising or eliminating any adverse impacts. 60. In accordance with the Work Health and Safety Act 2011, workers will be provided with appropriate safety clothing and equipment. Supervisory staff and any visitors to the work area will also be required to wear protective clothing. Works personnel will be provided with or expected to have protective equipment and appropriate training. 61. Contractors/ workers will be mindful of the needs of the local community. 62. Prior to undertaking any excavation works all underground services will need to be clearly located. Any potential services interruptions will be communicated to the relevant services authorities to enable flow on notifications to any affected services customers. 63. Any changes to the public or private roads as a result of the Activity will be reinstated to an acceptable standard upon completion of the works.
Waste	64. Concreting activities onsite will require use of bunded concrete washout facilities, and no excess concrete waste will be left onsite at the completion of works. 65. Working areas will be maintained, kept free of rubbish, and cleaned up at the end of each day. 66. Waste material will not be left on-site once the works have been completed. 67. Ensure the responsible environmental management of wastes that cannot be avoided and promote opportunities for the re-use of waste products where appropriate.

Environmental Attribute	Safeguards/ Mitigation Measures
	68. Waste will be disposed of at a licensed waste or recycling facility as appropriate.

6.2 Licensing and Approvals

A Crown Lands License was obtained for the proposed bridge on 14 April 2025.

No other licences or approvals are required.

7. Summary of Consideration of Environmental Factors

7.1 Guidelines for Division 5.1 Assessments

As part of its obligation under Section 5.5 of the EP&A Act, the determining authority is required to consider, to the fullest extent possible, all matters likely to affect the environment. The determining authority is required by Section 171 of the Environmental Planning and Assessment Regulation 2021 to take into account the environmental factors specified in the guidelines that apply to the Activity. The Department of Planning and Environment's Guidelines for Division 5.1 Assessments is the relevant guideline. **Table 7.1** provides a summary of the key issues relevant to each factor and the key mitigation measures proposed.

Table 7.1 Section 171 Checklist (NSW Legislation)

	Factor	Impact
a	**Any Environmental Impact on a Community**	
	The community would be positively impacted by the Activity. The Activity would not result in any declines in the local environment. Mitigation measures have been designed to reduce environmental impacts on the community to negligible levels.	Long term positive Short term minor
b	**Any Transformation of a Locality**	
	The Activity would result in a significant change to the locality as the proposed suspension bridge would be visually prominent from Queen Elizabeth Park and from Barker and Hickey Streets. The visual transformation would be a positive one and in keeping with the recreation setting.	Positive
c	**Any Environmental Impact on the Ecosystems of the Locality**	
	The Activity would utilise cleared areas for laydown, stockpiles and access (vehicle and plant). This would disturb areas of cleared parkland or the road reserve. The footings of the suspension bridge, and ramps on both sides of the Richmond River would require some vegetation and tree removal, having a minor impact on the ecosystem of the locality.	Minor negative
d	**Any Reduction of the Aesthetic, Recreational, Scientific or Other Environmental Quality or Value of a Locality**	
	The Activity would result in an improvement to the aesthetic and recreational quality of the locality in the long term. The current footbridge has been closed since 2022, and the provision of the new footbridge would replace this bridge and enhance the recreational value of the locality as it greatly improves accessibility and flood immunity. The bridge would also allow for the appreciation of the area's natural values. No reduction in the quality of the environment would occur due to the mitigation measures detailed in this REF.	Nil
e	**Any Effect on A Locality, Place or Building Having Aesthetic, Anthropological, Archaeological, Architectural, Cultural, Historical, Scientific or Social Significance or Other Special Value for Present or Future Generations**	
	The Activity would occur in proximity to two historic heritage items and one Aboriginal heritage item. These would be protected via the mitigation measures set out in this REF. As such, there would be no significant	Nil

	Factor	Impact
	impacts to heritage, visual amenity, or social significance and as such impacts are therefore considered to be negligible.	
f	**Any Impact on the Habitat of Protected Fauna (Within the Meaning of the National Parks and Wildlife Act 1974)**	
	With effective implementation of the safeguards provided in this REF, the Activity is not considered likely to have a significant negative impact on the habitat of any other protected fauna.	Negligible
g	**Any Endangering of any Species of Animal, Plant or Other Form of Life Whether Living on Land, in Water or in the Air**	
	With effective implementation of the safeguards provided in this REF, the Activity is not considered likely to endanger any species of animal, plant or other form of life whether living on land, in water or in the air.	Negligible, safeguards in place to avoid/ minimise risk.
h	**Any Long-Term Effects on the Environment**	
	No negative long-term impacts would occur in the locality given the implementation of the proposed safeguards and measures in this REF.	Nil
i	**Any Degradation of the Quality of the Environment**	
	Degradation of the quality of the environment is not expected. Given the safeguards in this REF, any impacts are considered unlikely.	Nil
j	**Any Risk to the Safety of the Environment**	
	The Activity is unlikely to pose any significant risk to the safety of the environmental attributes outlined in **Section 5**. Any possible impacts would be minimised with the implementation of the safeguards in **Section 5** of this REF.	Negligible, safeguards in place to avoid/ minimise risk.
k	**Any Reduction in the Range of Beneficial Uses of the Environment**	
	The Activity would allow for an increase I the range of beneficial uses of the environment.	Nil
l	**Any Pollution of the Environment**	
	Waste materials, fuel spills and particulate matter have the potential to cause pollution to the environment. However, given the proposed safeguards detailed in this REF and all waste being disposed within an appropriate/ approved waste disposal facility, pollution to the environment would not occur.	Minor and temporary, safeguards available to avoid and reduce risk.
m	**Any Environmental Problems Associated with the Disposal of Waste**	
	All waste would be disposed of in a manner which would not damage or disturb any native flora or fauna or the physical environment. The disposal of such waste would be within a waste management facility in accordance with EPA approved methods of waste disposal. Safeguards detailed in this REF would protect the environment from problems associated with waste disposal.	Nil
n	**Any Increased Demands on Resources (Natural or Otherwise) that are likely to Become in Short Supply**	
	The Activity does not create any demand for resources that are in short supply nor is it likely to result in an increased demand on any natural resources that are likely to become in short supply.	Nil
o	**Any Cumulative Environmental Effect with Other Existing or Likely Future Activities**	
	The Activity would have minor cumulative impacts (e.g., resource consumption; greenhouse gas emissions; vegetation loss) but is unlikely to significantly contribute to any cumulative impacts.	Negligible negative

	Factor	Impact
p	**Any impact on coastal processes and coastal hazards, including those under projected climate change conditions**	
	The Activity is not located in a coastal environment.	Negligible
q	**Any applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Ac, Division 3.1**	
	The North Coast Regional Plan 2041 and the Queen Elizabeth Park Plan of Management (2022) apply to the site. Carrying out improvements to infrastructure is consistent with both of these strategic planning documents.	Positive
r	**Other relevant environmental factors**	
	All relevant environmental factors have been considered in this REF.	Nil

7.2 EPBC Act 1999 (Commonwealth Legislation)

The EPBC Act protects/ regulates matters of national environmental significance (MNES), including:

- World Heritage;
- National heritage places;
- Wetlands of international importance;
- Nationally threatened species and ecological communities;
- Migratory species;
- Commonwealth marine areas;
- The Great Barrier Reef Marine Park;
- Nuclear actions (including uranium mining);
- A water resource, in relation to coal seam gas development and large coal mining development.

Under the EPBC Act, a referral is required to the Australian Government for proposed 'actions that have the potential to significantly impact on matters of national environmental significance or the environment of Commonwealth land'. A database search was completed on 1/04/2025 encompassing a 10 km radius search area from the centre of the site (refer to **Appendix E**). Search results following the site assessment are considered in **Table 7.2**.

As a nationally important flying-fox camp occurs within the vicinity of the site, and habitat within the study area and site has historically constituted roosting habitat for Grey-headed Flying-fox on a seasonal basis, the EPBC Act referral process for Grey-headed Flying-fox has been undertaken (refer to Error! Reference source not found.).

This assessment concluded that an EPBC Act referral is not required for the proposed action regarding the nationally important flying-fox camp for the following reasons:

- It is considered unlikely that Grey-headed Flying-fox would utilise vegetation on site for roosting and breeding purposes given its current depleted state.
- The population of GHFF that utilise the Casino camp are unlikely to be present on site (or proximate to site [within 100 m]) during the works period, given the poor condition of the previously utilised vegetation.
- The Activity represents a negligible reduction of foraging resources utilised by Grey-headed Flying-fox.
- Potential lighting impacts to Grey-headed Flying-fox would be managed through appropriate light selection (minimal light spill).

- Potential ongoing pedestrian disturbance would be minimised by creating a 20 m buffer between the footbridge and any potential roosting habitat by removing any existing trees above 10 m or any trees with the potential to grow 10 m or higher.
- Flying-fox Safeguards and Mitigation Measures have been developed for the Activity to mitigate against potential impacts.

Table 7.2 EPBC Act Considerations

Matter	*Impact*
Any impact on a World Heritage property?	
No World Heritage properties occur within 10 km of the site.	Nil
Any impact on a National Heritage place?	
No National Heritage places occur within 10 km of the site.	Nil
Any impact on a wetland of international importance?	
No wetlands of international importance occur within 10 km of the site.	Nil
Any impact on nationally threatened species and ecological communities?	
Habitat for six TECs, 24 threatened flora species and 34 threatened fauna species were identified within 10 km of the site. **TEC** No EPBCA listed TECs occur within the study area or the site. **Flora** No EPBC Act listed flora species were recorded within the study area or the site. **Fauna** Potentially occurring EPBC Act listed threatened fauna species include Grey-headed Flying-fox and Koala (refer to **Appendix F**). The proposed Activity is unlikely to have a significant impact on any EPBC Act listed TEC or threatened species (refer to **Appendix H**). No referral process for National Important Fly-fox camp within the site is required (refer to Error! Reference source not found.).	Negligible
Any impact on a Nationally Important Wetland?	
No nationally important wetlands occur within 10 km of the site. Nationally Important Wetlands are not likely to be significantly affected by the Activity.	Nil
Any impact on Migratory species?	
Based on the minor nature of the works, no listed migratory species are likely to be significantly affected by the Activity (refer to **Section 5.1**).	Nil
Any impact on a Commonwealth marine area?	
No Commonwealth marine areas occur within 10 km of the site.	Nil
Any impact on the Great Barrier Reef Marine Park?	
The Great Barrier Reef Marine Park is distant from the site.	Nil
Does the Proposal involve a nuclear action (including uranium mining)?	
The Activity does not involve a nuclear action.	Nil
Any impact on a water resource, in relation to coal seam gas development and large coal mining development?	
The Activity does not involve any impact on a water resource, in relation to coal seam gas development and large mining development.	Nil
Additionally, any impact (direct or indirect) on Commonwealth land?	
The Activity is not expected to impact upon such land.	Nil

8. Conclusion

The Activity involves the construction of a pedestrian suspension bridge in Casino, connecting the CBD at Barker and Hickey Streets to Queen Elizabeth Park. The new bridge would restore the pedestrian connection between the two sides of the Richmond River in this location. The existing bridge, which is set down at water level, was damaged in the 2022 flood and has been closed since that time. The Activity would provide a vastly improved piece of infrastructure for the Casino community, which would encourage active travel between the sides. The new suspension bridge would also provide a significantly improved travel route for those residents who utilise mobility scooters for transportation.

The works are permitted without development consent under State Environmental Planning Policy (Transport and Infrastructure) 2021 and are defined as an Activity and subject to environmental assessment under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This Review of Environmental Factors has examined and considered, to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the proposed Activity, satisfying the requirements of the EP&A Act.

The Activity may result in some short term environmental, amenity and socio-economic impacts; however, these would be minor and temporary and can be effectively minimised and managed through the implementation of the safeguards and mitigation measures provided in this Review of Environmental Factors. The Activity would have positive impacts for Casino residents and visitors.

The environmental impacts of the Activity are not likely to be significant and therefore it is not necessary for an Environmental Impact Statement to be prepared and approval to be sought for the Activity from the Minister for Planning under Division 5.1 of the EP&A Act. The Activity is unlikely to affect threatened species, populations or ecological communities or their habitats, within the meaning of the *Biodiversity Act 2016* or *Fisheries Management Act 1994* and therefore a Species Impact Statement is not required. The Activity is also unlikely to affect Commonwealth land or have an impact on any matters of national environmental significance.

9. Decision

9.1 Person who Prepared this REF

I certify to the best of my knowledge that:

I have completed this REF, and

The assessment meets the requirements of sections 5.5 to 5.7 of the EP&A Act, Section 171 of the EP&A Regulation and other relevant legislation and guidelines, and

The information contained in this REF is not materially misleading, and

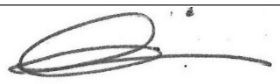
My assessment has been adequately completed, and

My conclusion as to the likely environmental and community impact of the project is reasonable, and is likely to be ☐ LOW ☒ MODERATE ☐ HIGH (check one), and

I am satisfied that, subject to the inclusion of the safeguards included in this REF, the project will not have a significant impact on the environment during both the construction and operation phases, and

An Environmental Impact Statement is not required, and

A Species Impact Statement is not required.

Signature:		
Name (print):	Megan Smith	Sam Smith
Position:	Environmental Planner	Ecologist
Reviewed by		
Signature:		
Name (print):	Denique Murphy	Grant McLean
Position:	Senior Environmental Planner	Senior Ecologist
Date	08/08/2025	08/08/2025

10. QA and Sign Off

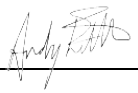
10.1 Determining Officer (Public Authority)-who verifies this REF

I certify to the best of my knowledge and on behalf of Richmond Valley Council that:

☒ Based on the completed REF and my knowledge of the project, the assessment has been adequately completed, the project has minor and predictable impacts, the conclusion as to the likely environmental impact of the project is reasonable and the project can proceed subject to the relevant control measures and conditions in this REF, any approval, license or permit.

☐ The project requires additional environmental assessment.

NOTE: A site visit may be required depending on the level of confidence and risk to the environment.

Reviewed by:			
Signature:		***Date:***	12/09/2025
Name (print):	ANDY EDWARDS		
Position:	MANAGER DEVELOPMENT & CERTIFICATION		
Agency:	RICHMOND VALLEY COUNCIL		
Determined by:			
Signature:		***Date:***	15/09/2025
Name (print):	Daniel Rowlands		
Position:	Manager Asset Delivery & Projects		
Agency:	Richmond Valley Council		

References

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Appendix A

Concept Plans

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Sheet No.	Sheet Name
001	COVER
002	RENDER
003	GENERAL NOTES
101	SITE PLAN
102	GENERAL ARRANGEMENT PLAN
103	BRIDGE PLAN & ELEVATION
201	CONCRETE PLAN
202	CONCRETE PLAN
203	CONCRETE DETAILS
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301	BRIDGE SUPERSTRUCTURE PLAN
302	BRIDGE & COLUMN SECTION
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401	EAST BOARDWALK PLAN & ELEVATION
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403	BOARDWALK STRUCTURE PLAN
404	BOARDWALK SECTIONS
405	BOARDWALK COLUMN SECTIONS
406	BOARDWALK DETAILS
501	BALUSTRADE ELEVATION & DETAILS



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CASINO
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CONSTRUCTION DOCUMENTATION

Project No: 13586

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RENDER

PAGE SIZE
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PROJECT NUMBER
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PAGE NUMBER
002

REV
A

GENERAL

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT.
2. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT AND CURRENT AUSTRALIAN STANDARDS AND WITH THE BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES EXCEPT WHERE VARIED BY THE PROJECT SPECIFICATION.
3. ALL DIMENSIONS SHOWN SHALL BE VERIFIED BY THE CONTRACTOR ON SITE. ENGINEERS' DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS.
4. UNLESS NOTED OTHERWISE ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES.
5. THE STRUCTURAL COMPONENTS DETAILED ON THESE DRAWINGS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS AND LOCAL GOVERNMENT ORDINANCES FOR THE FOLLOWING LOADINGS:

FLOOR USAGE	LIVE LOAD kPa
GENERAL	N/A

WIND LOADS ARE IN ACCORDANCE w/ AS 1170 AS FOLLOWS	
BASIC WIND VELOCITY (Vu)	41m/s
REGION	A
TERRAIN CATEGORY	2.5 (CROSS WIND)
	3.5 (CROSS WIND)

TO BE CONFIRMED

6. DURING CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERLOADED. TEMPORARY BRACING SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR IN ORDER TO KEEP THE WORKS AND EXCAVATIONS STABLE AT ALL TIMES.

SITE PREPARATION

1. THE UTILITY SERVICES ARE SHOWN INDICATIVELY ON THE DRAWINGS AND POT HOLING TO BE UNDERTAKEN PRIOR TO ANY EXCAVATION WORK.
2. ALL FOUNDATIONS ARE TO BE FREE OF ALL STANDING WATER AND LOOSE MATERIAL AT THE TIME OF POURING.
3. ALL SOFT SPOTS SHALL BE REMOVED AND BACKFILLED WITH SUITABLE MATERIAL.
4. ALL EXCAVATIONS SHALL BE TEMPORARILY SUPPORTED WHERE MORE THAN 1m OF EARTH REQUIRED RETENTION.
5. MINIMUM FACTORED ULTIMATE BEARING CAPACITY OF BEDDING MATERIAL SHALL BE : 150 kPa

PILING

1. PILES DESIGNED IN ACCORDANCE WITH AS 2159
2. FOOTING LEVELS ARE ASSUMED AND SHALL BE ADJUSTED FOR THE ACTUAL LEVEL AT WHICH THE REQUIRED PILE CAPACITY IS ACHIEVED.
3. IF OPEN BORED PILES ARE USED THE PILE BASE MUST BE CLEANED USING A SUITABLE CLEANING TOOL TO REMOVE ALL LOOSE, SOFTENED OR DISTURBED MATERIAL PRIOR TO POURING CONCRETE. PILES SHOULD EITHER BE DEWATERED PRIOR TO POURING CONCRETE OR A TREMIE MIX AND TREMIE POURING METHOD USED.

FORMWORK

1. THE DESIGN, CERTIFICATION, CONSTRUCTION, INSPECTION AND PERFORMANCE OF THE FORMWORK AND FALSE WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, EXCEPT TO THE EXTENT THAT FORMWORK DESIGN IS SHOWN ON THE STRUCTURAL DRAWINGS.
2. DESIGN AND CONSTRUCTION AND STRIPPING TIMES SHALL COMPLY WITH AS 3610 AND AS 3600 UNLESS OTHERWISE APPROVED BY THE ENGINEER.

FOOTINGS

1. BACKFILL SHALL BE COMPACTED TO 95% STANDARD MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT +/- 2% U.N.O. (ENSURE FREE DRAINING BACKFILL AND DRAINAGE IS IN PLACE). FOOTINGS SHALL BE LOCATED CENTRALLY UNDER WALLS AND COLUMNS UNLESS NOTED OTHERWISE.
2. DO NOT EXCEED A RISE OF 1 IN A RUN OF 2 FOR THE LINE OF SLOPE BETWEEN ADJACENT FOOTINGS OR EXCAVATIONS.
3. FOOTING LEVELS, WHERE SHOWN ARE ESTIMATES ONLY AND WILL BE ESTABLISHED DURING SITE INSPECTION OF WORKS IN PROGRESS.
4. UNLESS OTHERWISE APPROVED BY THE ENGINEER / SUPERINTENDENT, THE LIMITS OF EXCAVATIONS NEAR FOOTINGS SHALL BE AS SET OUT IN THE DETAIL BELOW.

PRIOR TO ANY EXCAVATION NEAR EXISTING FOOTINGS, THE CONTRACTOR SHALL DETERMINE THE DEPTH OF FOUNDING OF EXISTING FOOTINGS BY LOCAL INVESTIGATORY EXCAVATION. GENERAL EXCAVATION SHALL NOT PROCEED BELOW A LEVEL 150mm ABOVE THE UNDERSIDE OF EXISTING FOOTINGS UNTIL INSTRUCTION IS OBTAINED FROM THE ENGINEER ON PROCEDURES AND PRECAUTIONS TO BE TAKEN.

5. SUBGRADE: UNLESS OTHERWISE SPECIFIED THE SUBGRADE BELOW BASECOURSES FOR SLABS SHALL BE APPROVED MATERIAL COMPACTED TO 98% STANDARD MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT +/- 2%.
6. BASE COURSE: BASE COURSE SHALL BE FINE CRUSHED ROCK (DGB20) OR OTHER MATERIAL APPROVED BY THE ENGINEER SPREAD IN LAYERS NOT EXCEEDING 200mm DEPTH AND COMPACTED TO 98% STANDARD MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT +/- 2%.
7. TOPSOIL, GRASS ROOT ETC REMOVED FROM AREA ON WHICH THE FOOTING IS TO REST.

CONCRETE

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3600, AS 1379 AND AS 3610 CURRENT EDITIONS WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
2. NO ADMIXTURES OTHER THAN LOW RANGE WRA SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING.
3. CONCRETE SIZES SHOWN DO NOT INCLUDE THICKNESSES OF APPLIED FINISHES. NO FINISH WHICH DECREASES COVER IS ALLOWED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.
4. CONSTRUCTION JOINTS THAT WERE NOT SHOWN SHALL BE LOCATED TO THE APPROVAL OF THE ENGINEER.
5. THE FINISHED CONCRETE SHALL BE MECHANICALLY VIBRATED TO ACHIEVE A DENSE HOMOGENEOUS MASS, COMPLETELY FILLING THE FORMWORK, THOROUGHLY EMBEDDING THE REINFORCEMENT AND BEING FREE OF STONE POCKETS. ALL CONCRETE INCLUDING SLABS ON GROUND AND FOOTINGS SHALL BE COMPACTED WITH MECHANICAL VIBRATORS.
6. REPAIRS TO CONCRETE SHALL NOT BE ATTEMPTED WITHOUT THE PERMISSION OF THE ENGINEER.
7. CAST-IN FIXINGS, BOLTS ETC SHALL NOT BE ALTERED WITHOUT THE PERMISSION OF THE ENGINEER.

REINFORCEMENT

1. ALL REINFORCING BARS SHALL BE GRADE D500N TO AS 4671 UNLESS NOTED OTHERWISE. ALL MESH SHALL BE GRADE 500L TO AS 4671 AND SHALL BE SUPPLIED IN FLAT SHEETS. REINFORCEMENT NOTATION SHALL BE AS FOLLOWS, IN THE FOLLOWING ORDER.

SPLICE SCHEDULE	
BAR DIA.	BAR DIA.
N10	N40
N12	
N16	
N20	
N24	
N28	
N32	
N36	

2. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY IN TRUE PROJECTION.
3. SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN POSITIONS SHOWN OR OTHERWISE APPROVED IN WRITING BY THE ENGINEER. LAPS SHALL BE IN ACCORDANCE WITH AS 3600 AND NOT LESS THAT THE DEVELOPMENT LENGTH FOR EACH BAR AS SHOWN IN THE TABLE BELOW.

FABRIC LAP DIAGRAM

4. SITE WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE ENGINEER.
5. FABRIC SHALL BE LAPPED TWO TRANSVERSE WIRES PLUS 25mm. BUNDLED BARS SHALL BE TIED TOGETHER AT 30 BAR DIAMETER CENTRES WITH 3 WRAPS OF THE WIRE.
6. ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON MILD STEEL PLASTIC TIPPED CHAIRS, PLASTIC CHAIRS OR CONCRETE CHAIRS AT NO GREATER THAN 1 METRE CENTRES BOTH WAYS AND 800mm EACH WAY FOR FABRIC. PLASTIC TIPPED STEEL CHAIRS SHALL NOT BE USED ON EXPOSED FACES IN EXPOSURE CLASSIFICATION B1, B2 AND C, USE ONLY PLASTIC OR CONCRETE CHAIRS.
7. SITE BENDING OF REINFORCEMENT SHALL BE AVOIDED IF POSSIBLE. WHERE SITE BENDING IS UNAVOIDABLE IT SHALL BE CARRIED OUT COLD, WITHOUT THE APPLICATION OF HEAT, AND IN ACCORDANCE WITH THE PRACTICE NOTE RPN1 OF THE STEEL REINFORCEMENT INSTITUTE OF AUSTRALIA.
8. THE FOLLOWING ABBREVIATIONS APPLY TO THE LOCATION OF REINFORCEMENT.

EW - EACH WAY. T – TOP BARS LAID FIRST.
EF – EACH FACE. TT – TOP BARS LAID SECOND.
NF – NEAR FACE. B – BOTTOM BARS LAID SECOND.
FF – FAR FACE. BB – BOTTOM BARS LAID FIRST.

TIMBER

1. ALL TIMBER DESIGN, MATERIAL AND CONSTRUCTION SHALL BE TO AS 1720.1 AND AS 1720.2.
2. WASHERS UNDER BOLT HEADS AND NUTS TO BE A MINIMUM 2.5 TIMES THE BOLT DIAMETER. ALL BOLTS AND SCREWS ARE TO BE HIP DIP GALVANISED.
3. ALL TIMBER JOINTS AND NOTCHES ARE TO BE 100mm MINIMUM AWAY FROM LOOSE KNOTS, SEVERE SLOPING GRAIN, GUM VEINS OR OTHER MINOR DEFECTS.
4. TIMBER TOLERANCES ON THE FINISHED WIDTH AND THICKNESS TO BE IN ACCORDANCE WITH AS 2082, AS 1748 AND AS 3519
5. END GRAINS TO RECEIVE A COAT OF 'TIMBER SEAL' WAX EMULSION.
6. TIMBER TREATMENT TO AS 1604.

STRUCTURAL STEEL

1. UNLESS NOTED OTHERWISE, ALL STEEL SHALL BE OF THE FOLLOWING GRADE IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARD.

STEEL TYPE	GRADE
UNIVERSAL BEAMS AND COLUMNS, PARALLEL FLANGE CHANNELS, LARGE ANGLES TO AS 3679.1	300+
FLATS, SMALL ANGLES, TAPER FLANGE BEAMS AND COLUMNS TO AS 3679.1	250
WELDED SECTIONS TO AS 3679.2	300
HOT ROLLED PLATES, FLOOR PLATES AND SLABS TO AS 3679	250
HOLLOW SECTIONS TO AS 1163	-
CHS <265mm OD	C250
SETIONS OTHER THAN PREVIOUS	C350

2. ALL BEAMS AND RAFTERS SHALL BE FABRICATED AND ERECTED WITH NATURAL CAMBER UP. REFER TO DRAWINGS FOR OTHER CAMBER REQUIREMENTS.
3. ELECTRICALLY ISOLATE STAINLESS STEEL COMPONENTS AND DIS-SIMILAR METALS USING NYLON OR PTFE SPACERS AND SLEEVES WHERE USED FOR PRIMARY STRUCTURAL MEMBERS.
4. BOLTING

BOLTING CATEGORIES ARE IDENTIFIED ON THE STRUCTURAL DRAWINGS IN THE FOLLOWING MANNER.
BOLT CATEGORY COMMENTS.
4.6/S COMMERCIAL BOLTS OF GRADE 4.6 TO AS 1111 SNUG TIGHTENED.
8.8/S HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS 1252 SNUG TIGHTENED.
8.8/TB HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS 1252 FULLY TENSIONED TO AS 4100 AS A BEARING TYPE JOINT.
8.8/TF HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS 1252 FULLY TENSIONED TO AS 4100 AS A FRICTION TYPE JOINT WITH FAYING SURFACES LEFT UNCOATED U.N.O.

6. /TB AND /TF BOLT CATEGORIES SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 15 OF AS 4100 USING EITHER THE PART-TURN METHOD OR THE DIRECT-TENSION INDICATOR METHOD.
8. ALL BOLTS SHALL BE SUFFICIENT LENGTH TO PROVIDE A MINIMUM OF TWO (2) FULL THREADS BEYOND THE TIGHTENED NUT.
9. WELDING

ALL WELDING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 1554.1. ELECTRODES SHALL BE EITHER TO AS 1553, AS 1858, AS 2203 OR AS 2717 AS APPROPRIATE UNLESS NOTED OTHERWISE. ALL FILLET WELDS SHALL BE 6mm CONTINUOUS CATEGORY SP USING E49XX ELECTRODES OR EQUIVALENT. ALL BUTT WELDS SHALL BE COMPLETE PENETRATION BUTT WELDS CATEGORY SP TO AS 1554.1 U.N.O.

10. GROUT ALL STEEL BASES BY DRY PACKING USING GROUT WHICH IS NON-SHRINK AND HAS A MINIMUM COMPRESSIVE STRENGTH AT 7 DAYS OF 40 MPa.
11. ALL GALVANISING OF STRUCTURAL STEELWORK SHALL BE TO AS 4630. THE CONTINUOUS AVERAGE ZINC COATING MASS SHALL BE 600g/m2 (550g/m2 MINIMUM).
12. PROVIDE SEAL PLATE TO THE ENDS OF ALL HOLLOW SECTIONS. PROVIDE VENT HOLES TO HOLLOW MEMBERS AND DRAIN HOLES TO ALL MEMBERS TO BE HOT DIP GALVANISED.

MATERIAL SPECIFICATION.

STEEL.
MILD STEEL PROTECTED AS BELOW.
STEEL COATING.
ALL: HOT DIP GALVANISED.
FASTENERS.
ALL: STAINLESS STEEL. UNO.

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PROJECT **CASINO**

PRODUCT **BINGARA™ SUSPENSION BRIDGE**

PAGE NAME **GENERAL NOTES**

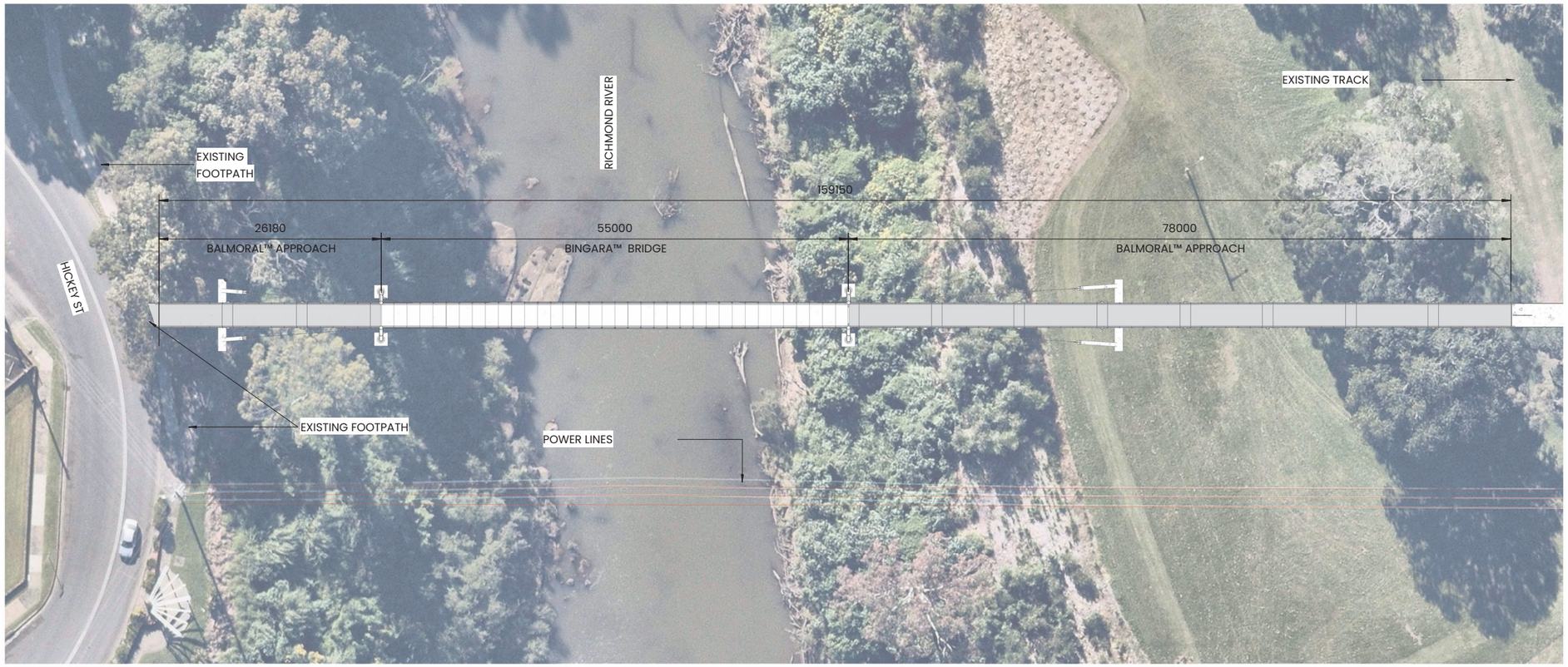
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PROJECT NUMBER **13586**
PAGE NUMBER **003**
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DESIGN NOTES
- DESIGN STANDARD AS 2156
- 3kPa LIVE LOAD
- ASSUMED 1 IN 100 LEVEL AT 23.70 (TBC IN DETAILED DESIGN)
- 600 FREEBOARD



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SITE PLAN

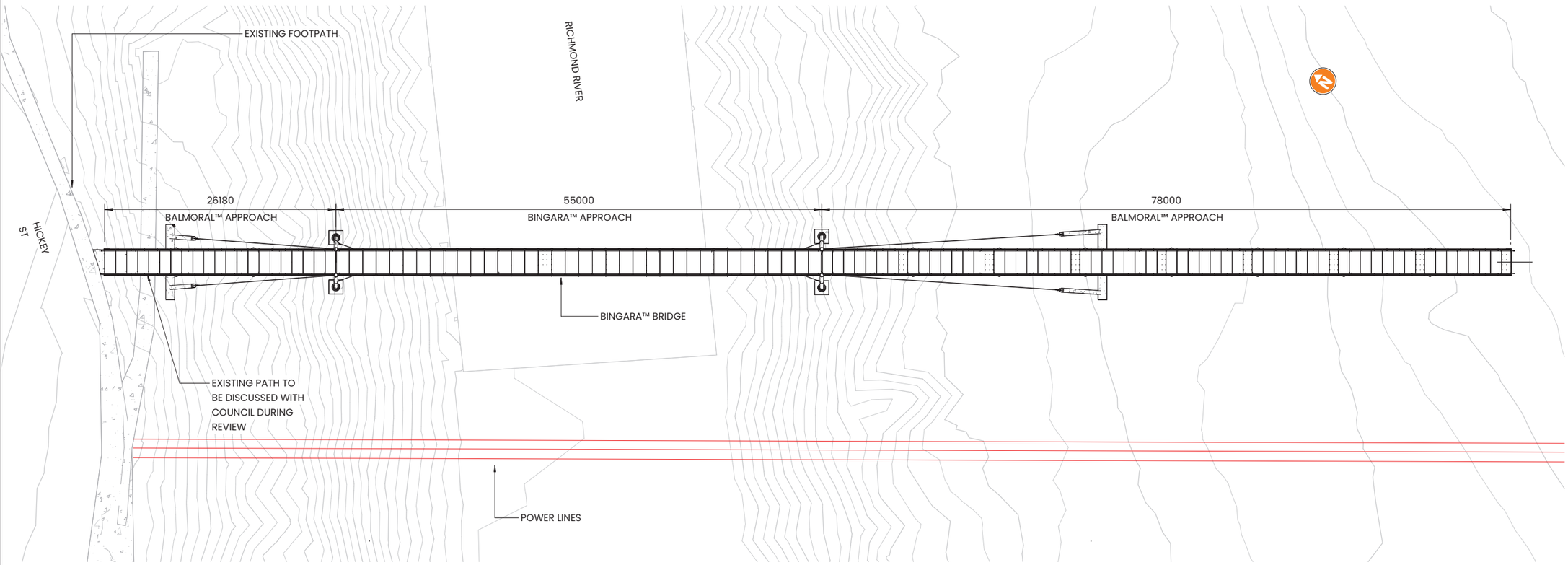
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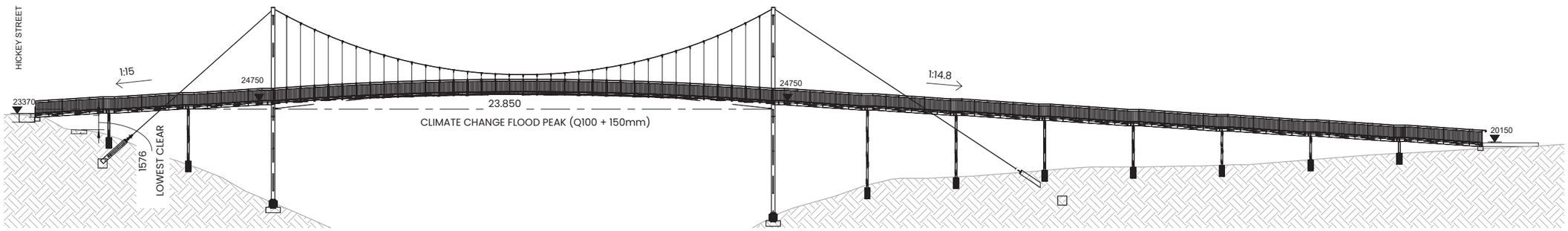
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GENERAL ARRANGEMENT PLAN 1
SCALE 1 : 250



GENERAL ELEVATION 2
SCALE 1 : 250

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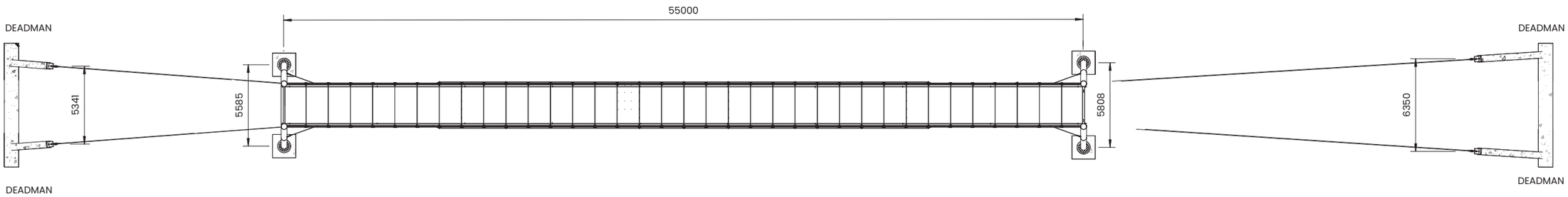
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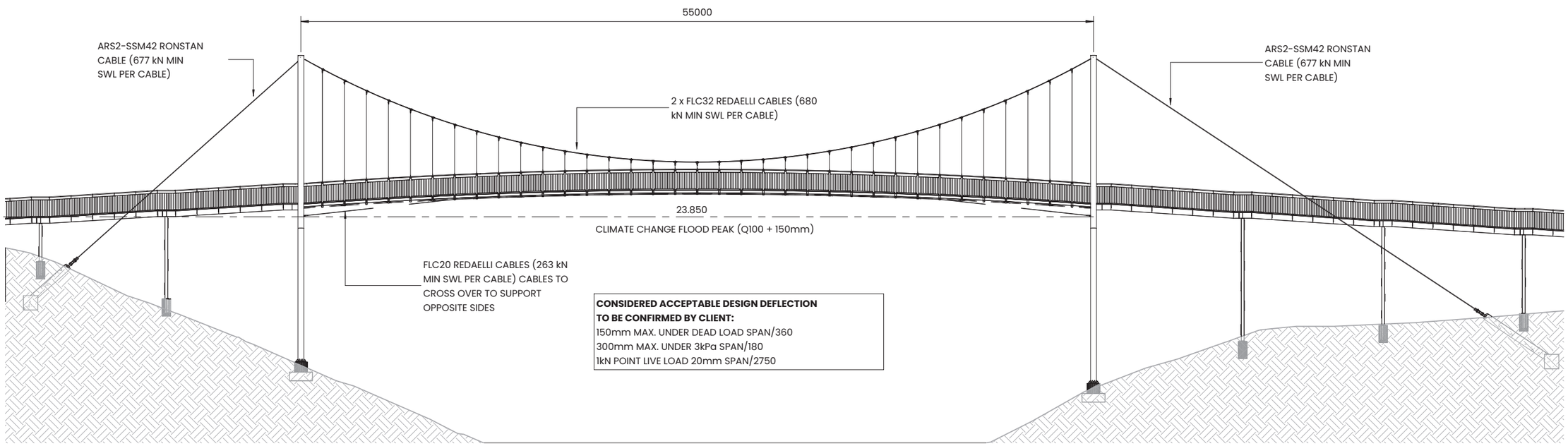
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BRIDGE PLAN 2
SCALE 1 : 150



BRIDGE ELEVATION 1
SCALE 1 : 150

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BRIDGE PLAN & ELEVATION

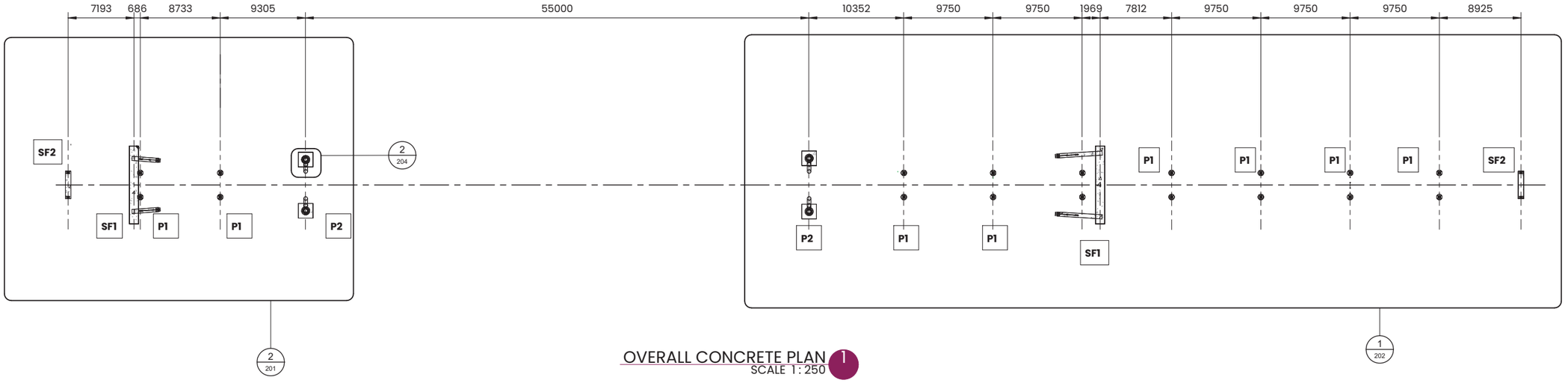
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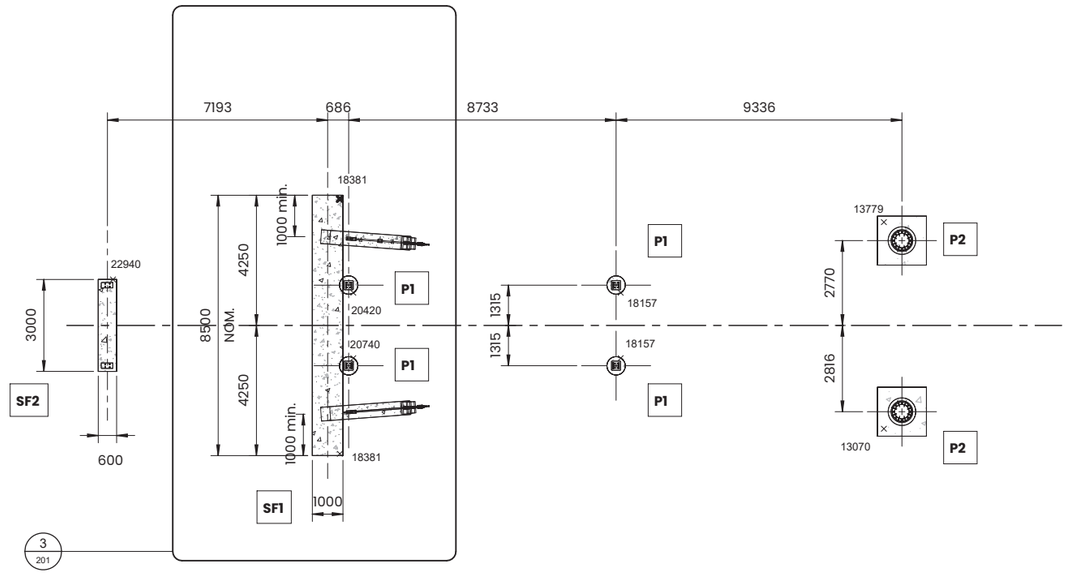
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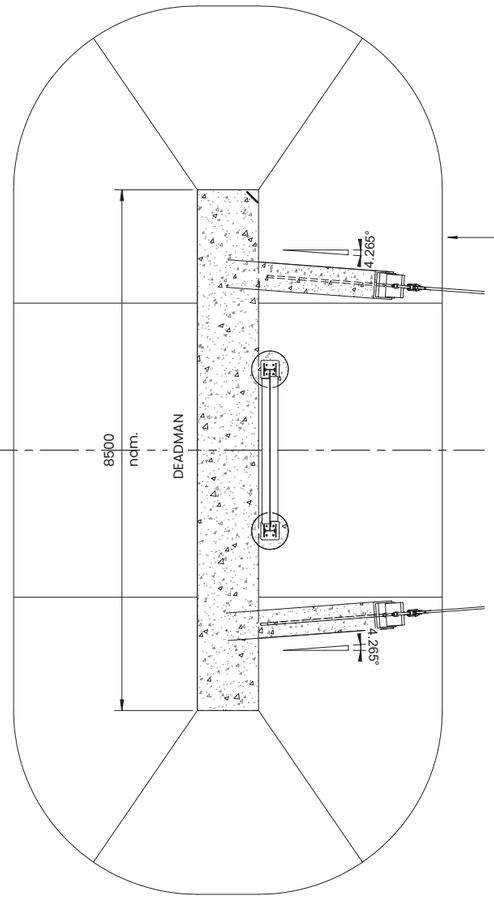
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OVERALL CONCRETE PLAN 1
SCALE 1 : 250



WEST CONCRETE PLAN 2 201
SCALE 1 : 100



DEADMAN EXCAVATION ZONE WEST 3 201
SCALE 1 : 50

APPROX TEMPORARY BATTER LINE FOR DEEP EXCAVATION (2H:1V). GEOTECHNICAL ENGINEER TO ADVISE AND/OR INSPECT BATTER TO ENSURE SAFE EXCAVATION.

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NOTES:

FOOTING SCHEDULE		
LABEL	DIMENSIONS	REMARKS
P1	600 DIA CONCRETE FOOTING	
P2	1600x1600x600 DEEP FOUNDATION PAD WITH Ø900 x 700 HIGH PLINTH. F'c = 40MPa	
SF1	1000x1000x8500 MASS CONCRETE DEADMAN 4N24 TOP AND BOTTOM, 600mm COG EACH END TYPICAL ADDITIONAL 2N24 SIDE FACE, 500mm COG EACH END N12-900 'U' BARS TOP AND BOTTOM	
SF2	3000x600x400 CONCRETE FOOTING	

REV	DESCRIPTION	DATE
A	REVIEW	4/06/24

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PROJECT **CASINO**

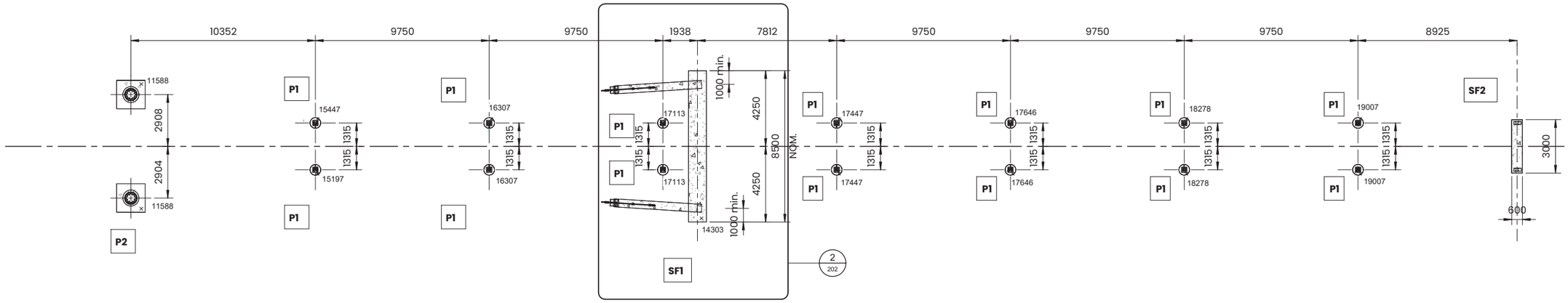
PRODUCT **BINGARA™ SUSPENSION BRIDGE**

PAGE NAME **CONCRETE PLAN**

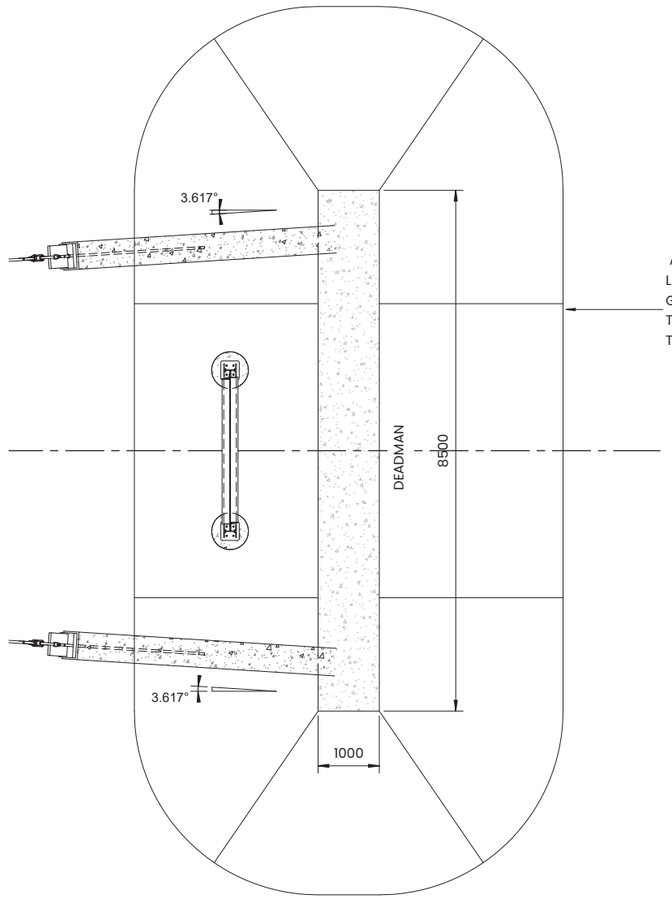
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PROJECT NUMBER **13586**
PAGE NUMBER **201**
REV **A**

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EAST CONCRETE PLAN 1 201
SCALE 1 : 125



APPROX TEMPORARY BATTER LINE FOR DEEP EXCAVATION (2H:1V). GEOTECHNICAL ENGINEER TO ADVISE AND/OR INSPECT BATTER TO ENSURE SAFE EXCAVATION.

DEADMAN EXCAVTION ZONE EAST 2 202
SCALE 1 : 50

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SF1	1000x1000x8500 MASS CONCRETE DEADMAN 4N24 TOP AND BOTTOM, 600mm COG EACH END TYPICAL ADDITIONAL 2N24 SIDE FACE, 500mm COG EACH END N12-900 'U' BARS TOP AND BOTTOM	
SF2	3000x600x400 CONCRETE FOOTING	

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PROJECT **CASINO**

PRODUCT **BINGARA™ SUSPENSION BRIDGE**

PAGE NAME **CONCRETE PLAN**

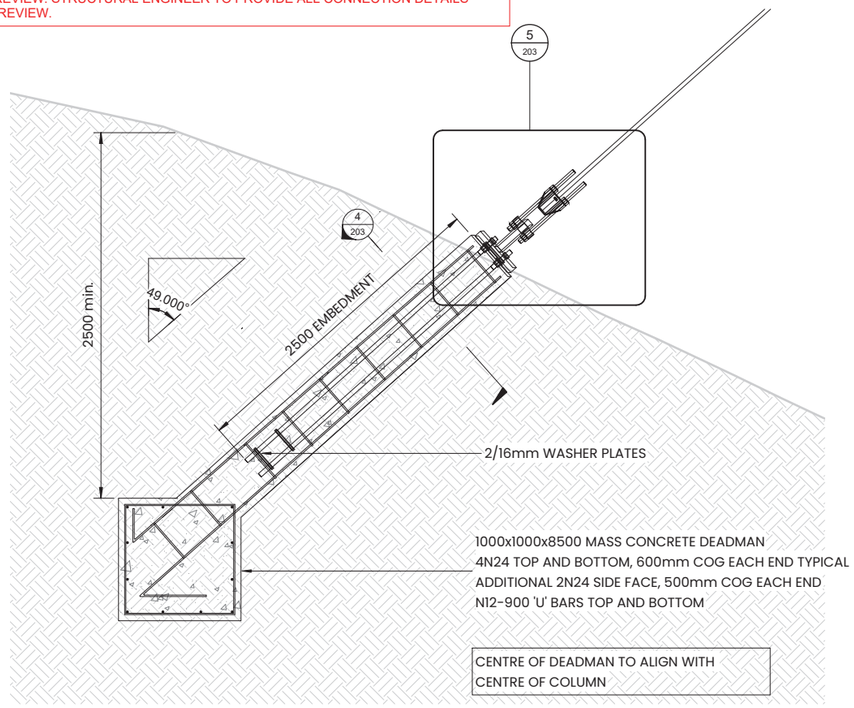
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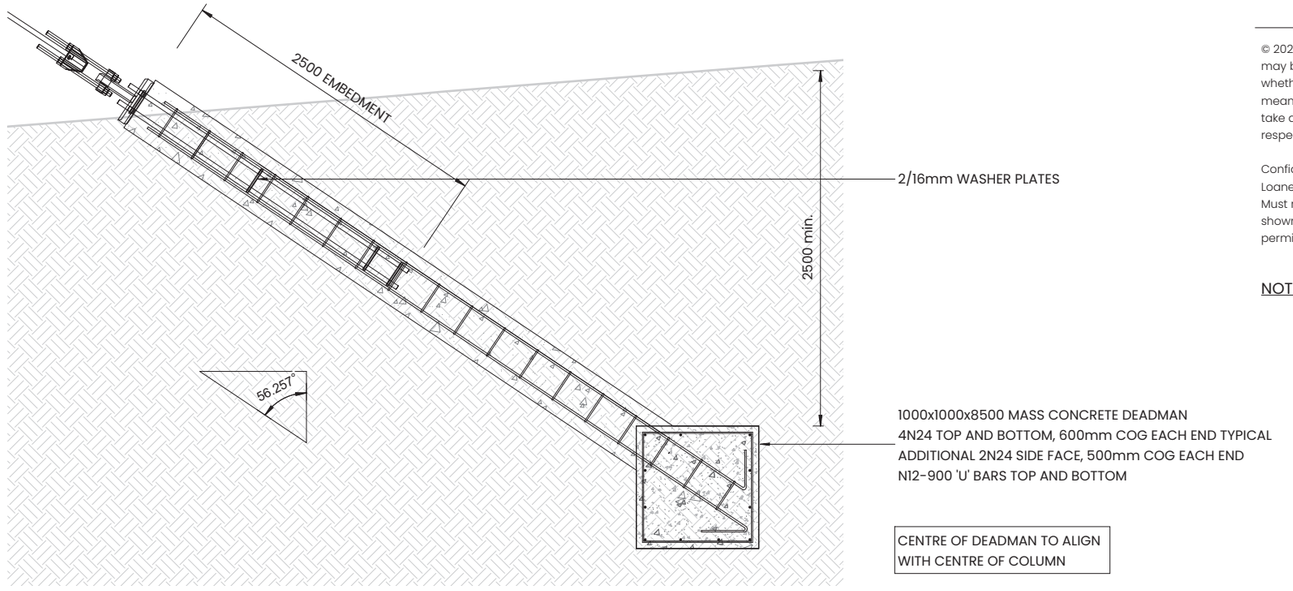
PAGE NUMBER 202

REV A

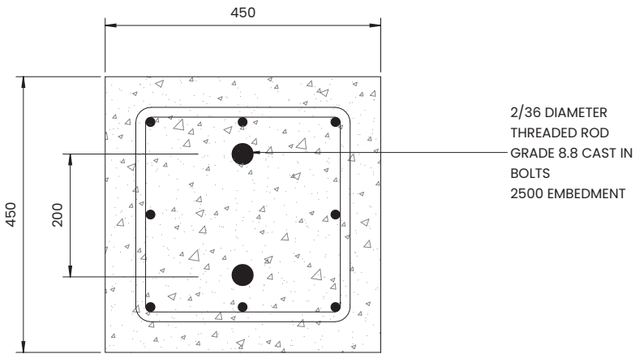
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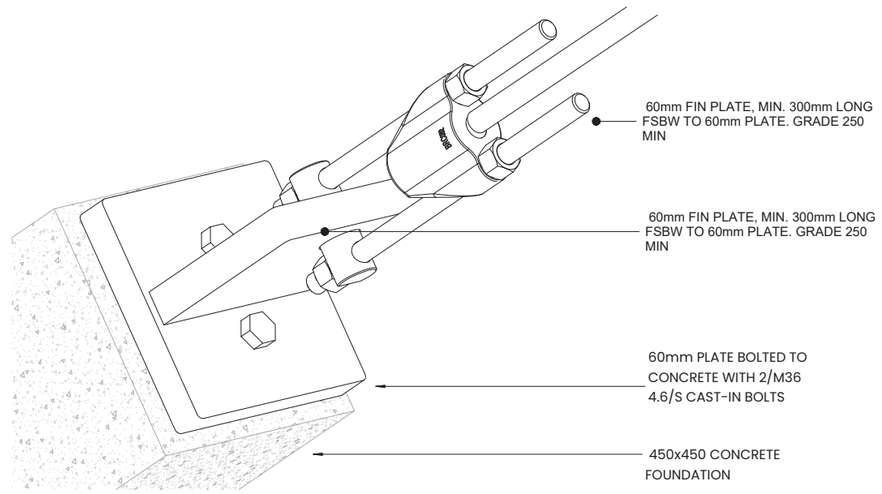
DEADMAN DETAIL WEST 1
SCALE 1 : 25



DEADMAN DETAIL EAST 2
SCALE 1 : 25



CONCRETE DETAIL 4 203
SCALE 1 : 5



CABLE TERMINATION 3D VIEW 6
SCALE

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PROJECT **CASINO**

PRODUCT **BINGARA™ SUSPENSION BRIDGE**

PAGE NAME **CONCRETE DETAILS**

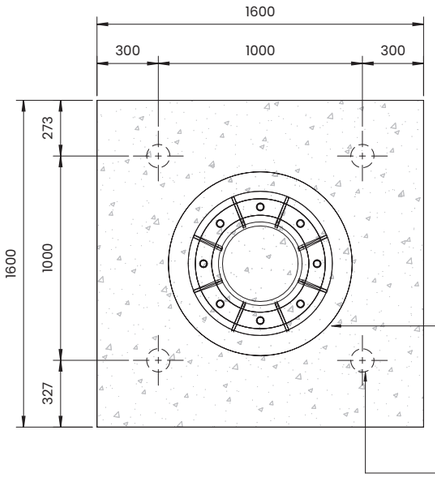
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REV **A**

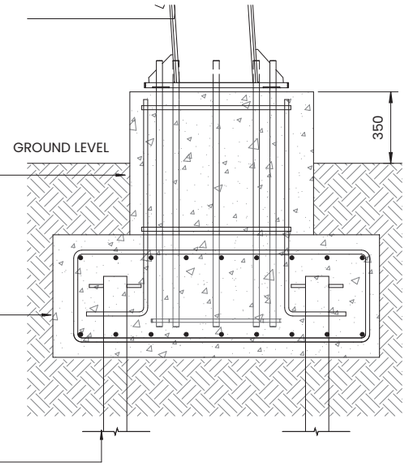
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900 DIAMETER CONCRETE PLINTH
15N24 VERTICAL BARS,
N12-300 LIGS

406.4x12.7CHS COLUMN
25mm BASE PLATE
8/12 THICK STIFFENERS
8/M30 4.6/S CAST-IN BOLTS
WITH 16mm CAST-IN RING PLATE
800mm MIN. EMBEDMENT

4x SCREW IN PILES, MINIMUM 114mm SHAFT DIAMETER DESIGNED FOR:
MINIMUM 170kN WORKING VERT LOAD,
MINIMUM 80kN WORKING TENSION LOAD,
MINIMUM 10kN WORKING HORIZONTAL LOAD PER PILE



P2 PLAN DETAIL 2 201
SCALE 1 : 15

P2 SECTION DETAIL 1
SCALE 1 : 15

SCREW PILE NOTES
1. SCREW PILES TO BE INSTALLED BY AN APPROVED CONTRACTOR. SCREW PILES ARE TO BE DESIGNED AND CERTIFIED BY THE PILING CONTRACTOR.
2. MACHINERY TO BE CALIBRATED THROUGH EITHER DRIVING RESISTANCE OR PREDETERMINED SET TO ENSURE PILES WILL BE ACHIEVE THEIR NOMINATED SAFE WORKING CAPACITY.
PILING LOGS TO BE RETAINED AND COPIES FORWARDED TO THE STRUCTURAL ENGINEER.
3. SCREW PILE LOCATIONS SHOWN ON PLAN INDICATIVELY ONLY AND SPACED AT MAXIMUM CENTRES NOTED ON PLAN AND MEMBER SCHEDULE.
4. PROVIDE ADDITIONAL SCREW PILE UNDER CONCENTRATED COLUMN LOCATIONS AS PILE DESIGNER TO CONFIRM SPACING OF PILES ACCEPTABLE FOR LOADING (INCLUDING TENSION) PRIOR TO CONSTRUCTION
5. PILE DESIGNER TO SUBMIT CALCULATIONS FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION

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PAGE NAME
CONCRETE DETAILS

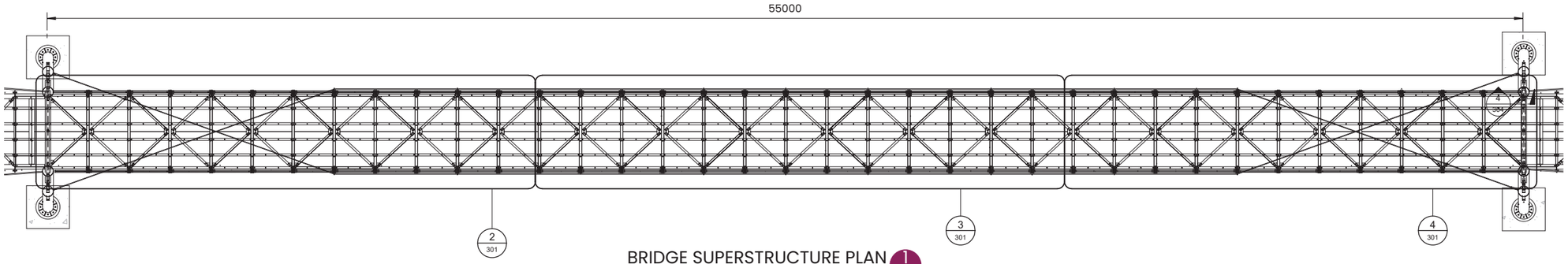
PAGE SIZE
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PROJECT NUMBER
13586

PAGE NUMBER
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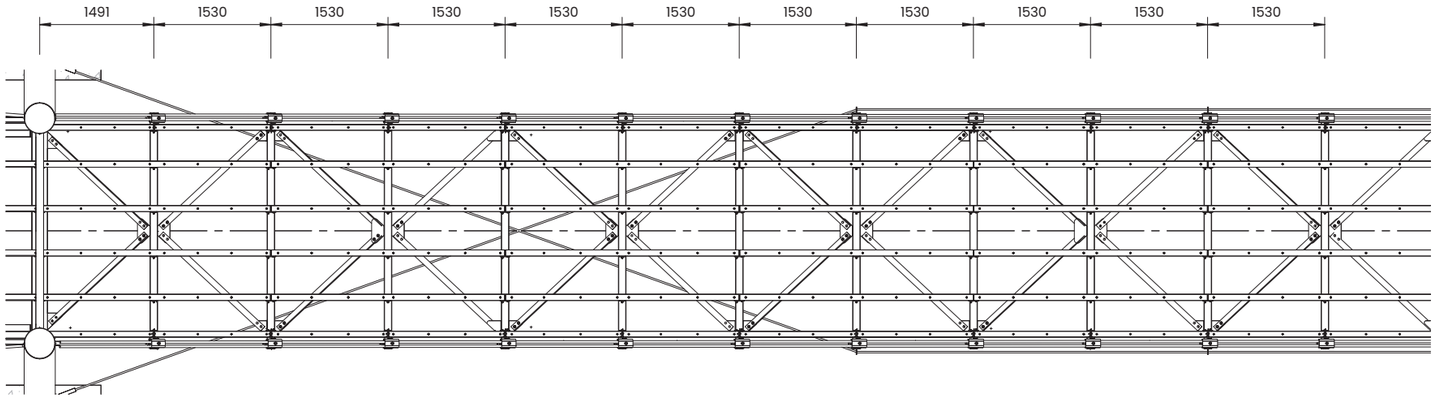
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A

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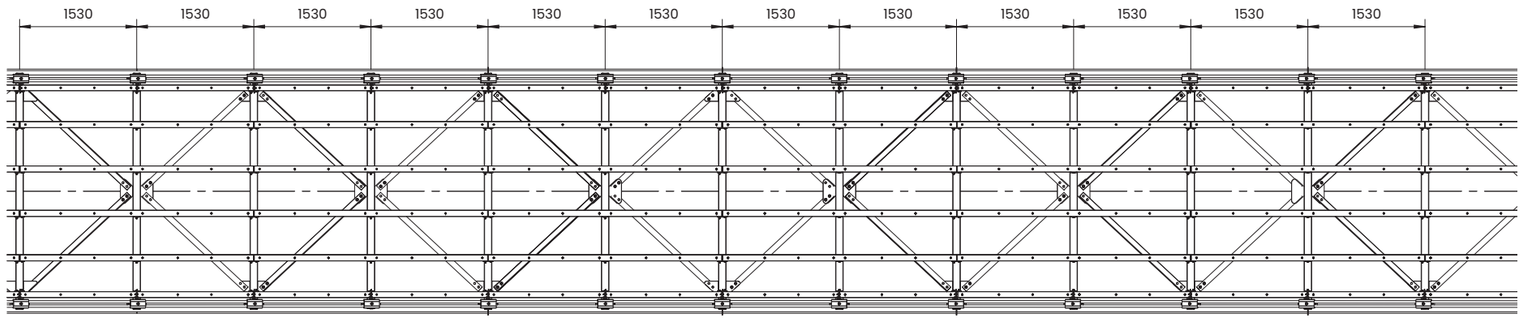
BRIDGE SUPERSTRUCTURE PLAN 1
SCALE 1 : 90

TYPICAL FRAME



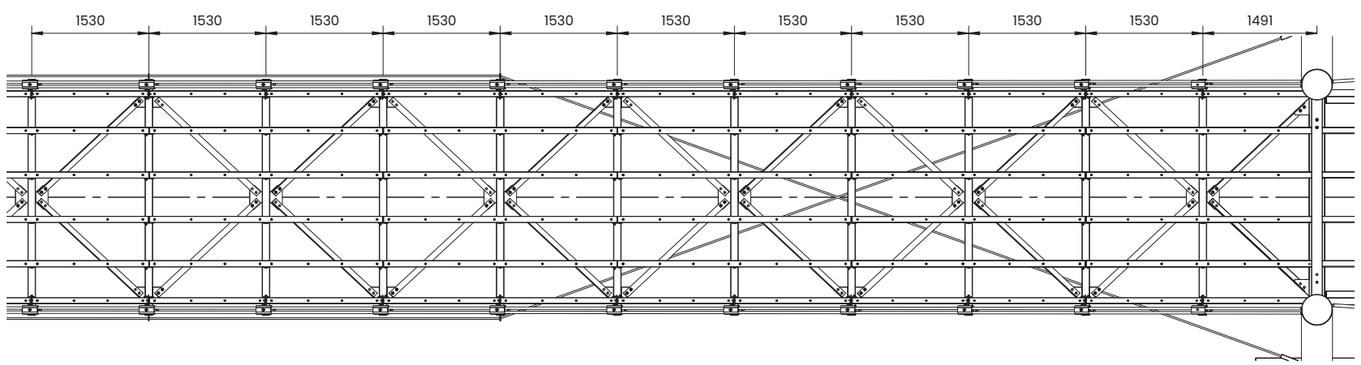
SUPERSTRUCTURE PLAN 1 2 301
SCALE 1 : 40

TYPICAL FRAME

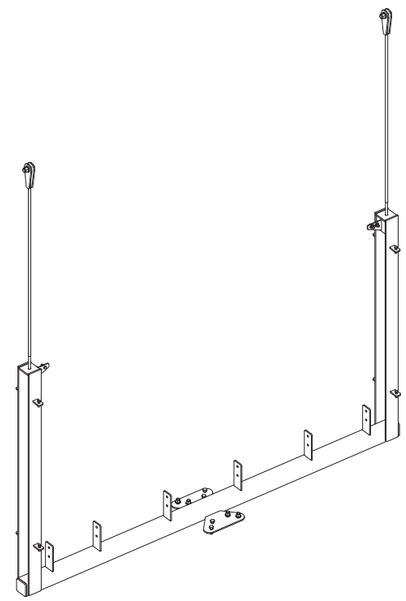


SUPERSTRUCTURE PLAN 2 3 301
SCALE 1 : 40

TYPICAL FRAME



SUPERSTRUCTURE PLAN 3 4 301
SCALE 1 : 40



TYPICAL FRAME 5
SCALE

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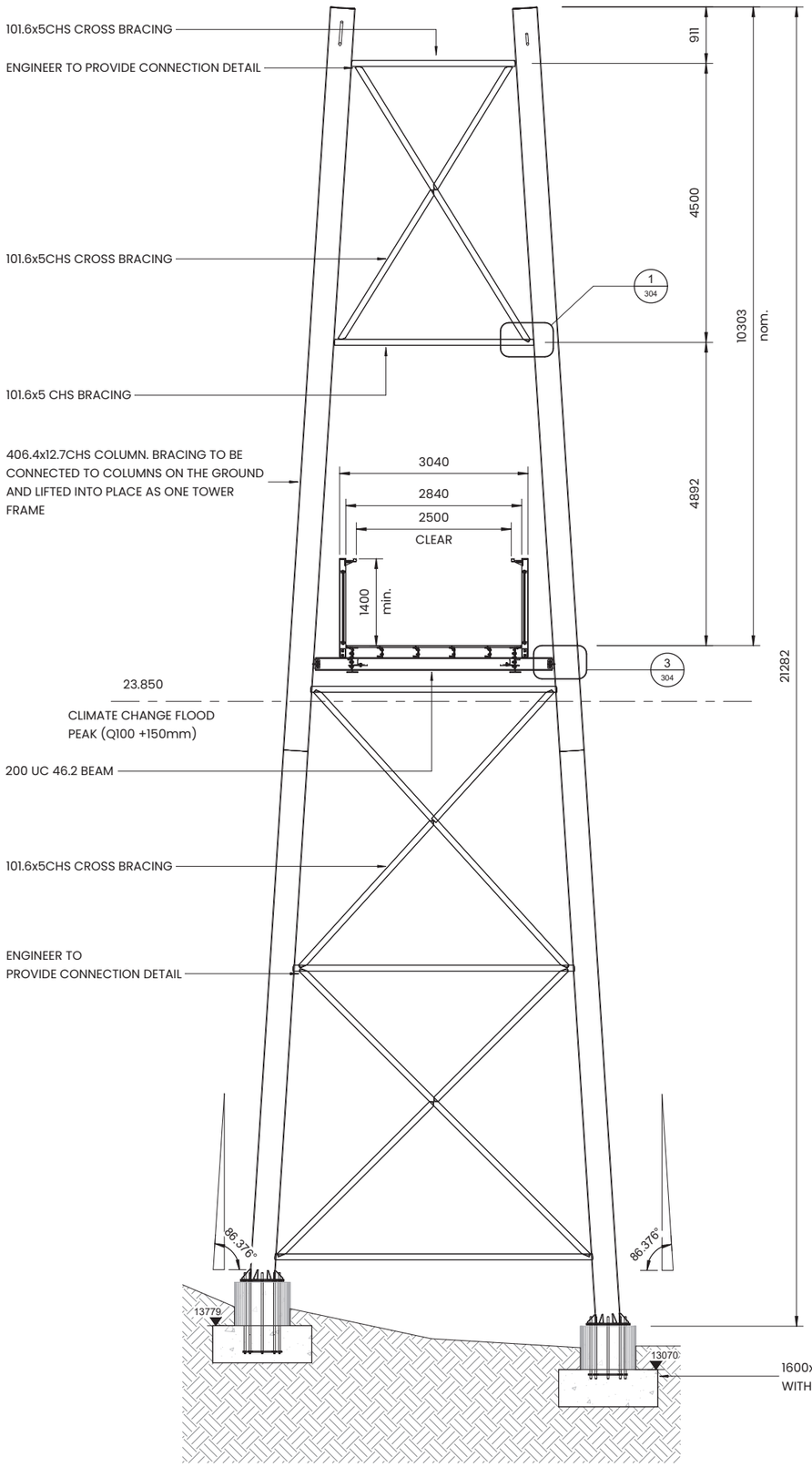
PRODUCT
BINGARA™ SUSPENSION BRIDGE

PAGE NAME
BRIDGE SUPERSTRUCTURE PLAN

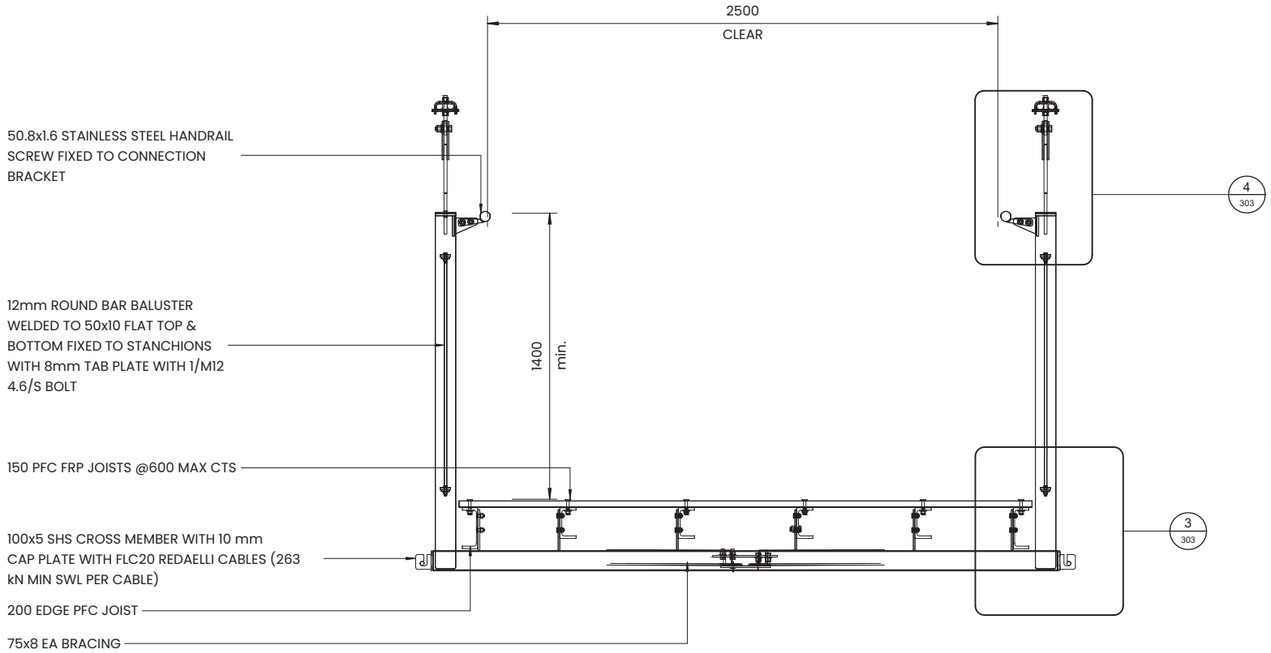
PAGE SIZE
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PROJECT NUMBER	PAGE NUMBER	REV
13586	301	A

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BRIDGE COLUMN 1
SCALE 1 : 45



TYPICAL BRIDGE SECTION 2
SCALE 1 : 15

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PAGE NAME
BRIDGE & COLUMN SECTION

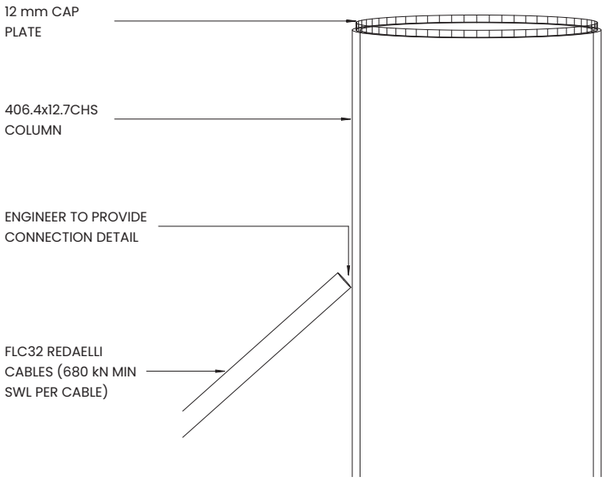
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PROJECT NUMBER
13586

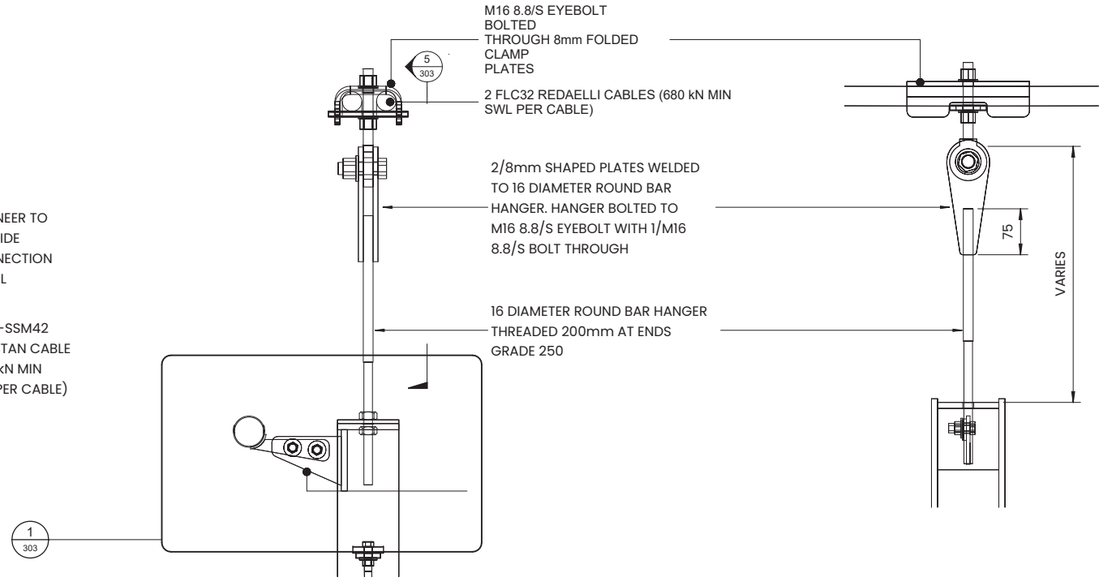
PAGE NUMBER
302

REV
A

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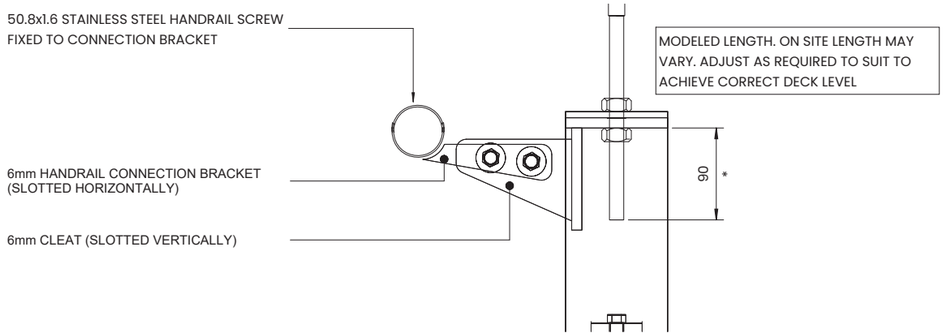


TYPICAL COLUMN CABLE DETAIL 7
SCALE 1:5

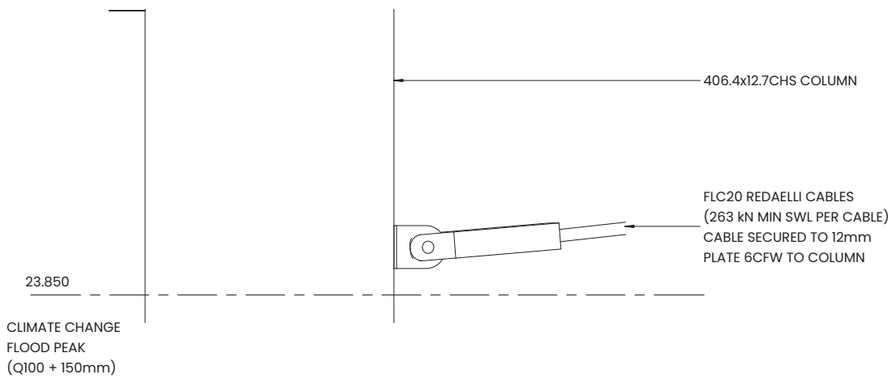


TYPICAL HANGAR DETAIL 4 302
SCALE 1:5

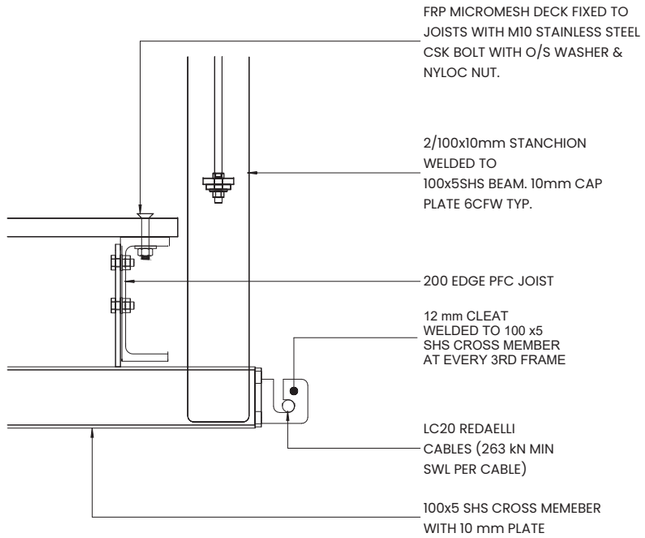
TYPICAL HANGAR CONNECTION 5 303
SCALE 1:5



HANGAR DETAIL 1 303
SCALE 1:3



CABLE CONNECTION DETAIL 2
SCALE 1:5



TYPICAL BRIDGE DETAIL 3 302
SCALE 1:5

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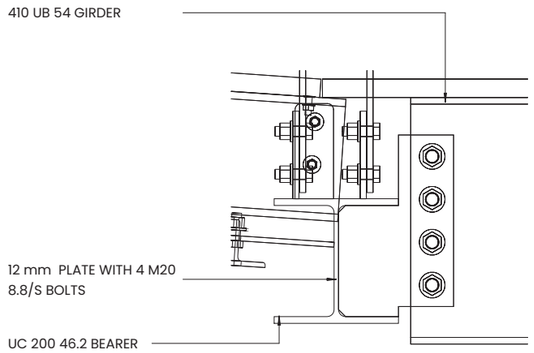
PRODUCT **BINGARA™ SUSPENSION BRIDGE**

PAGE NAME **BRIDGE DETAILS**

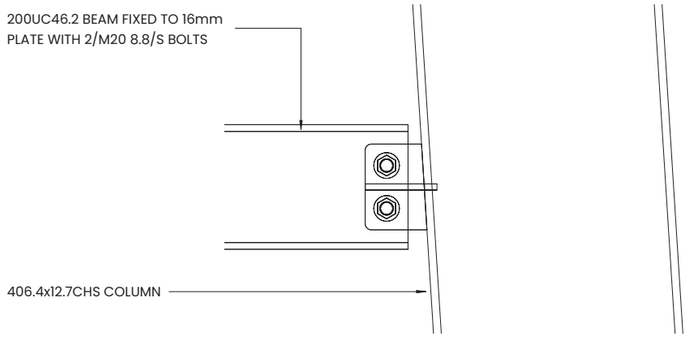
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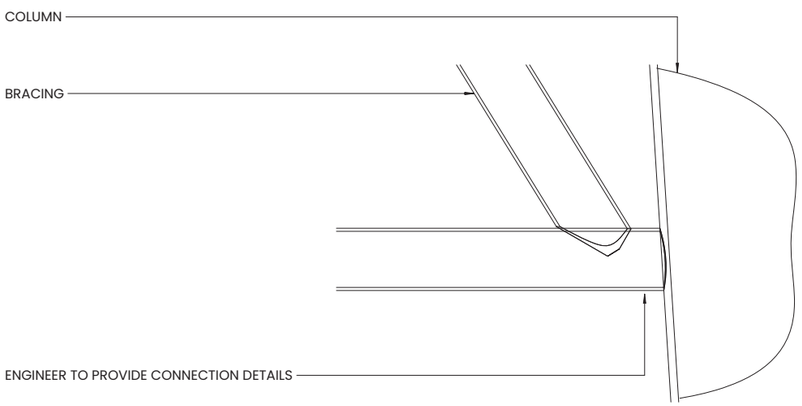
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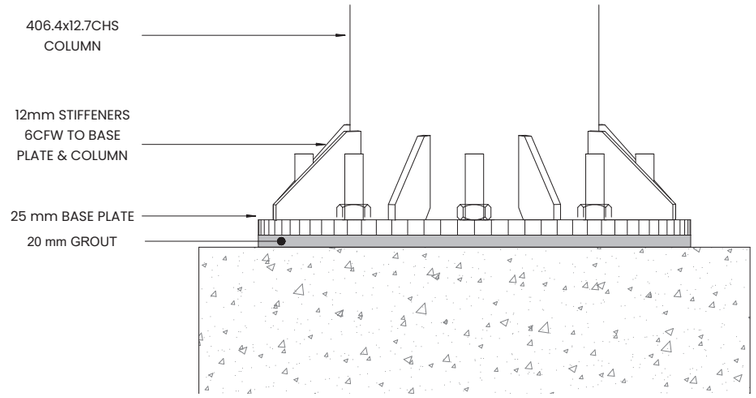
TYPICAL BOARDWALK CONNECTION 4 301
SCALE 1 : 5



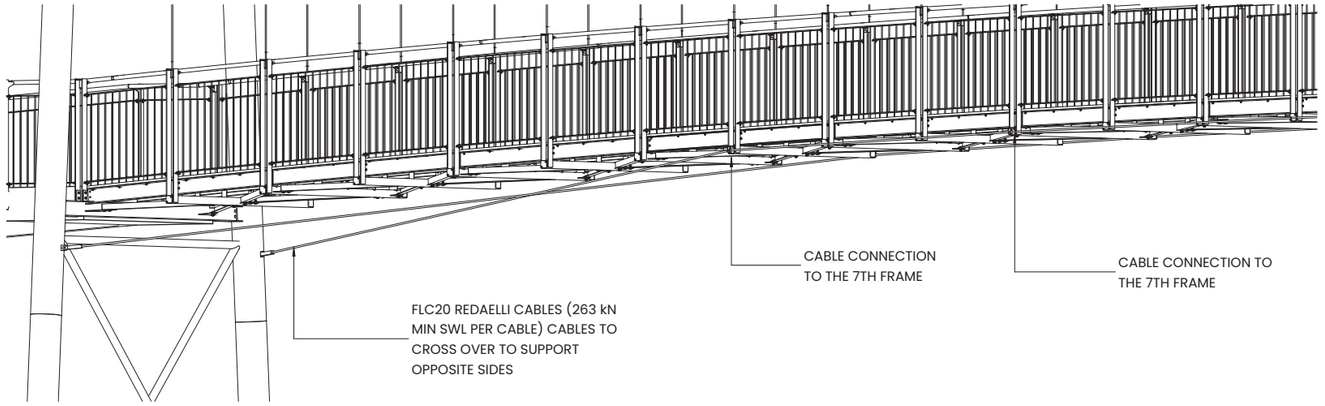
TYPICAL CROSS BRACING DETAIL 3 302
SCALE 1 : 5



TYPICAL SPIGOT DETAIL 1 302
SCALE 1 : 5



TYPICAL COLUMN BASE PLATE 5
SCALE 1 : 5



CABLE DETAIL 6
SCALE

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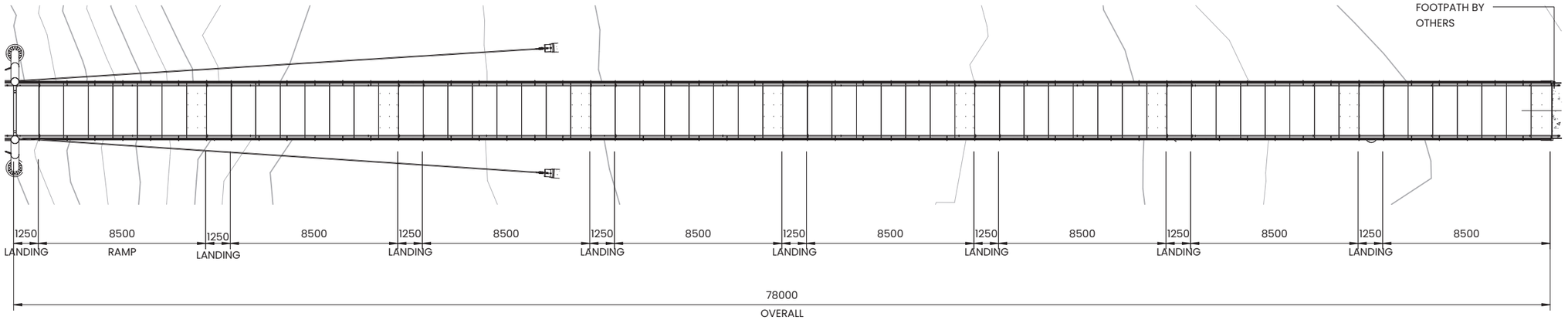
PRODUCT
BINGARA™ SUSPENSION BRIDGE

PAGE NAME
BRIDGE DETAILS

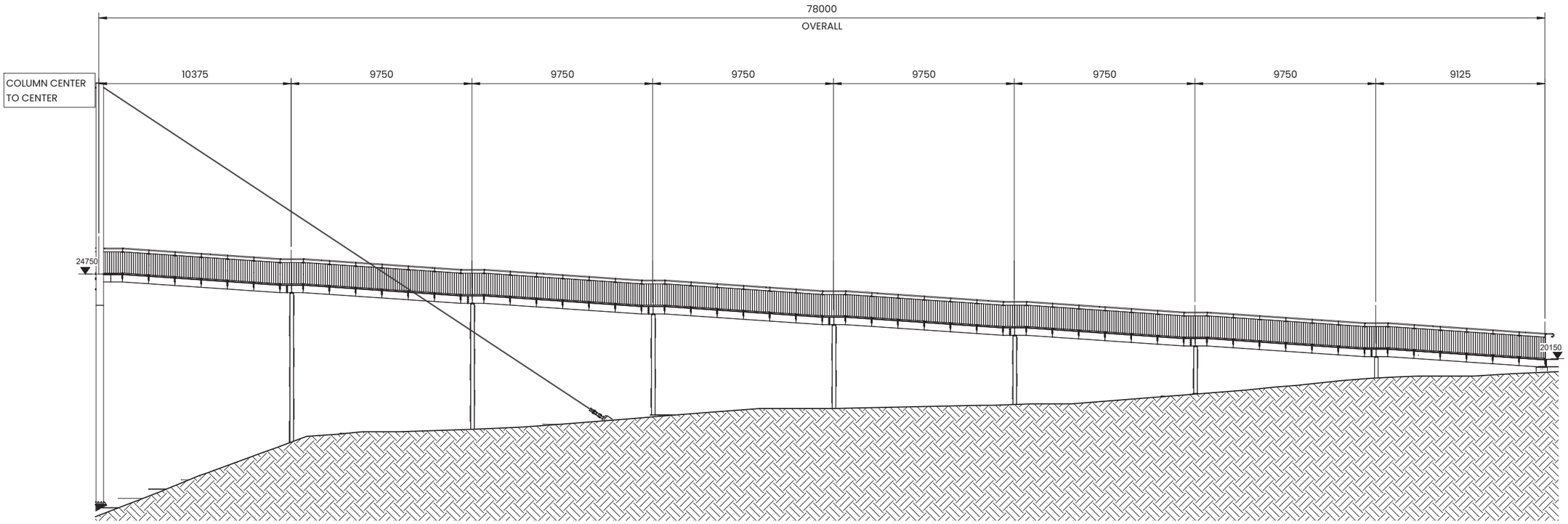
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EAST BOARDWALK PLAN 2
SCALE 1 : 120



BOARDWALK ELEVATION EAST 1
SCALE 1 : 120

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PAGE NAME
EAST BOARDWALK PLAN & ELEVATION

PAGE SIZE
A1

PROJECT NUMBER
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PAGE NUMBER
401

REV
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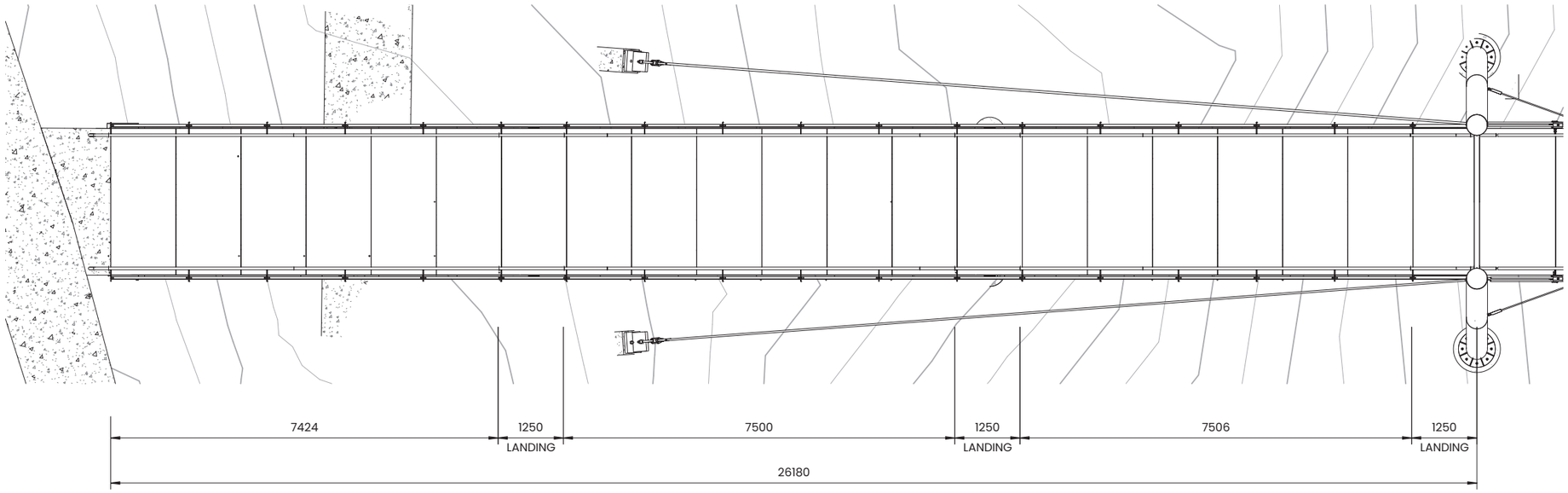
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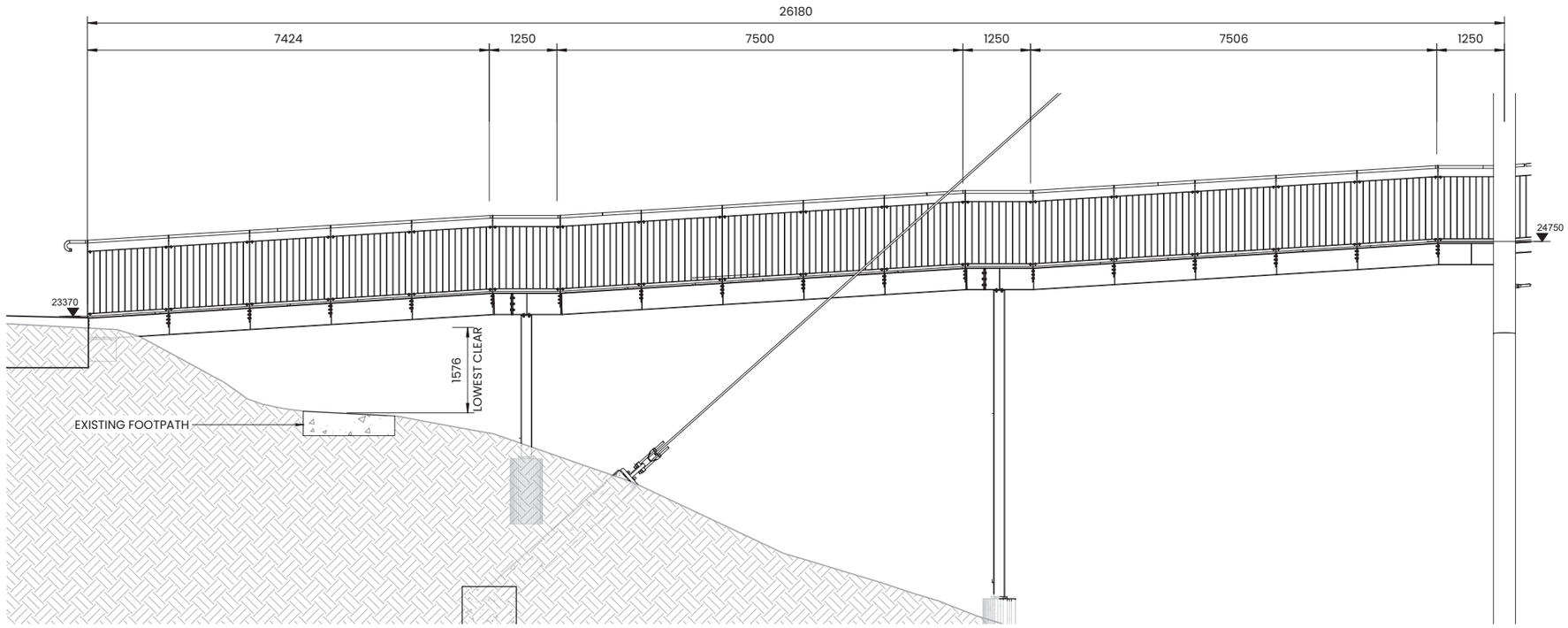
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WEST BOARDWALK PLAN 2
SCALE 1 : 50



WEST BOARDWALK ELEVATION 1
SCALE 1 : 50

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PAGE NAME
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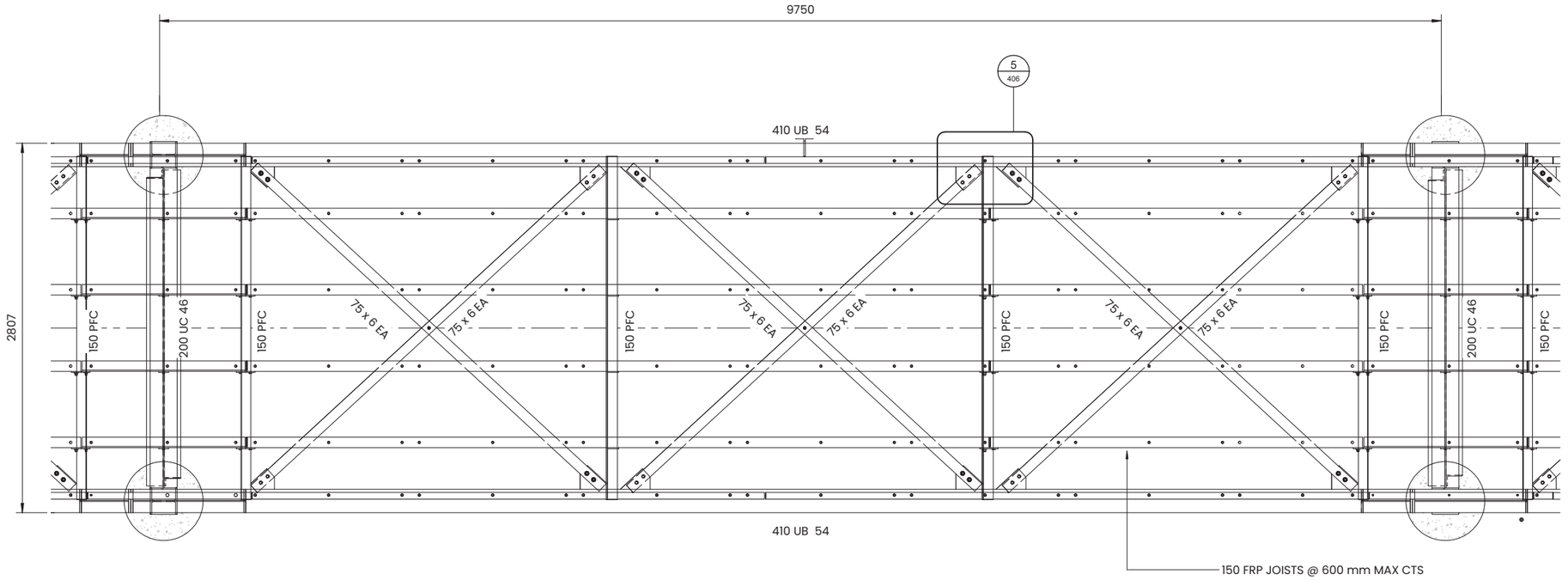
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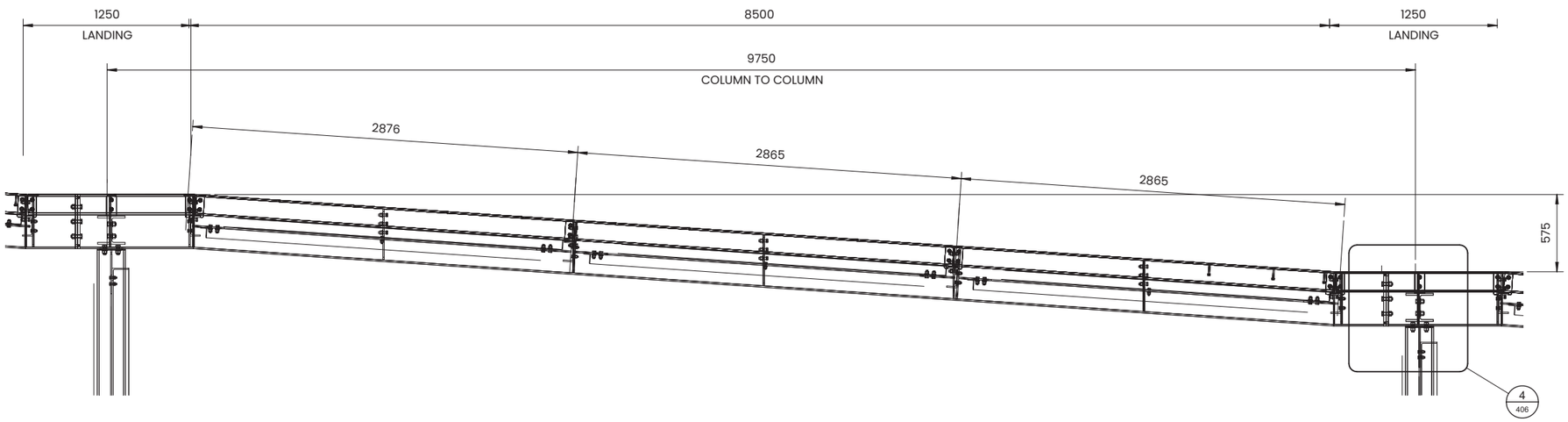
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TYPICAL BOARDWALK FRAMING PLAN 1
SCALE 1 : 20

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TYPICAL BOARDWALK FRAMING ELEVATION 2
SCALE 1 : 20

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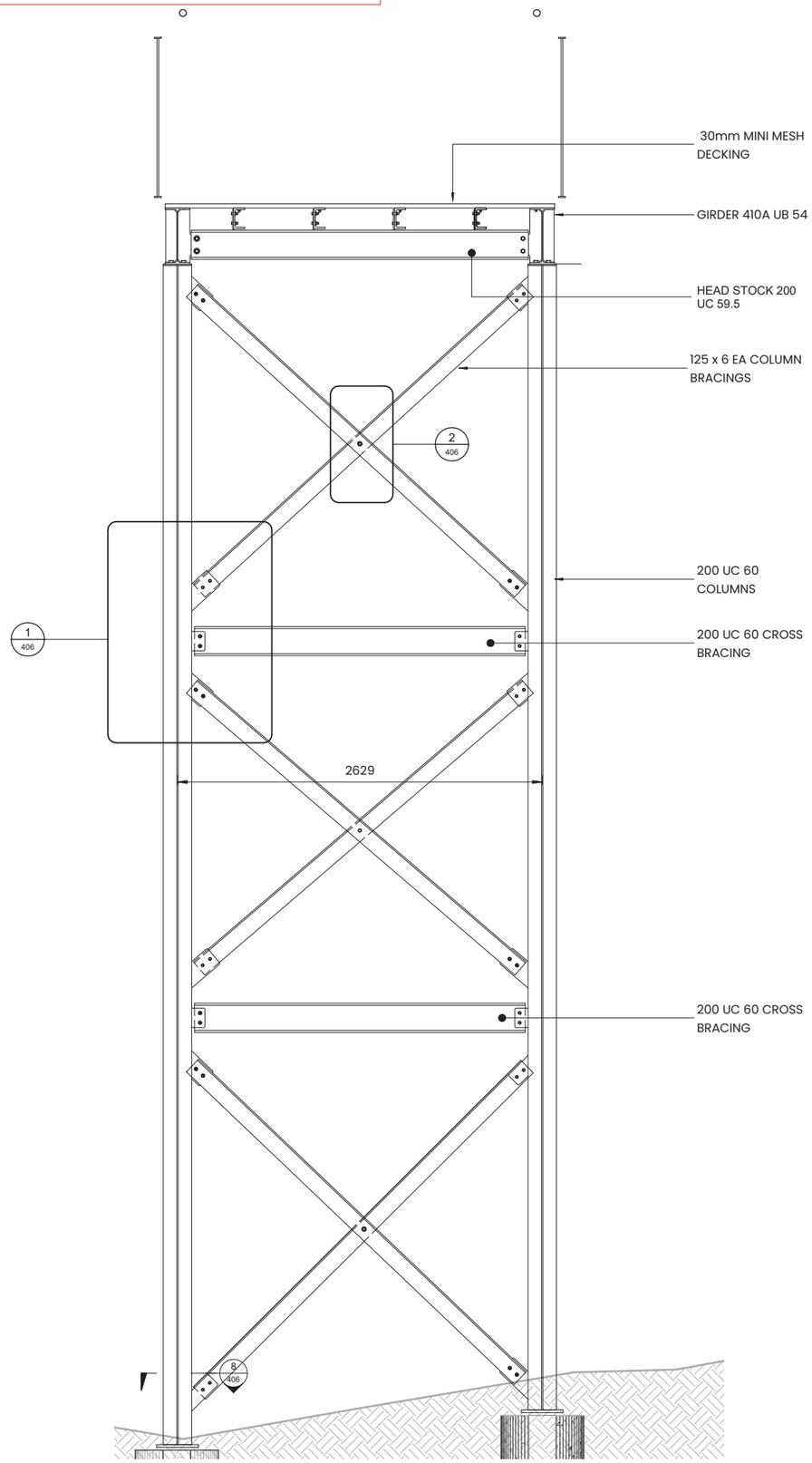
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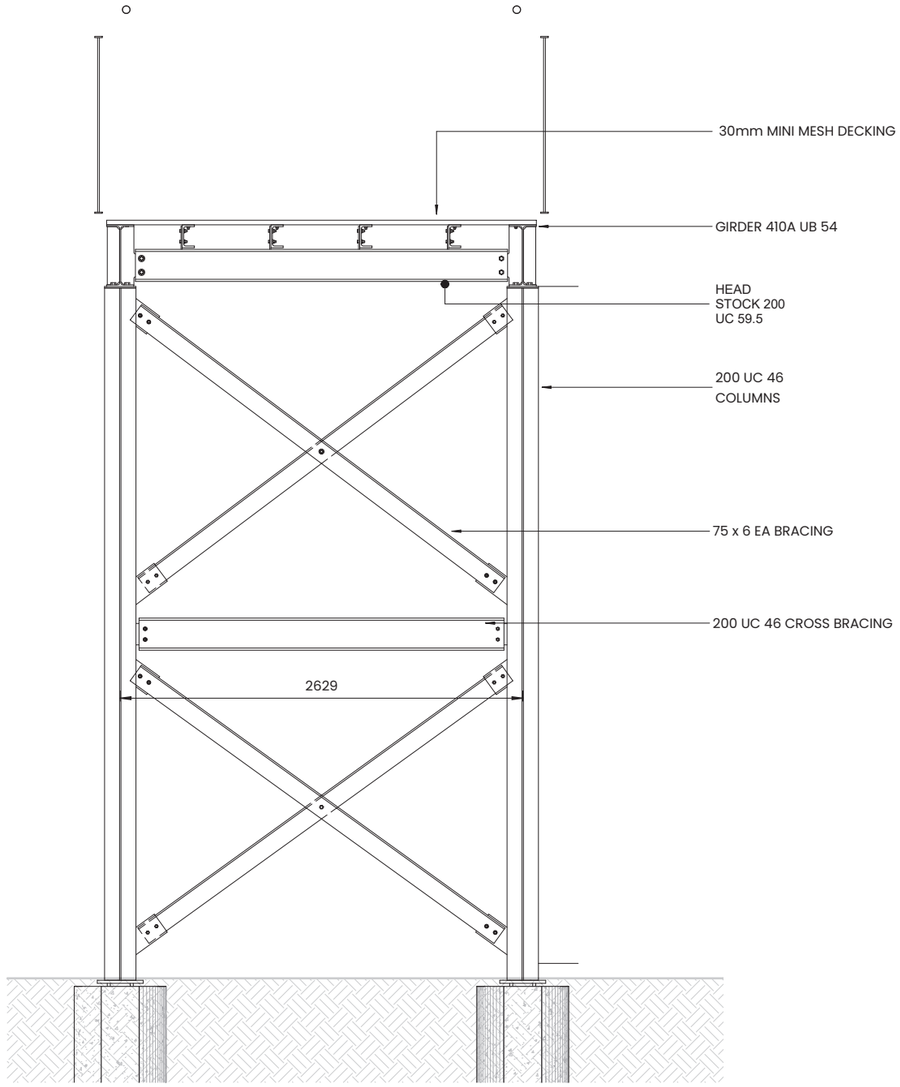
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BOARDWALK COLUMN 1
SCALE 1 : 20

NOTE: FOR COLUMNS >4 m



BOARDWALK COLUMN 2 4
SCALE 1 : 20

NOTE: FOR COLUMNS <4 m

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PAGE NAME
BOARDWALK SECTIONS

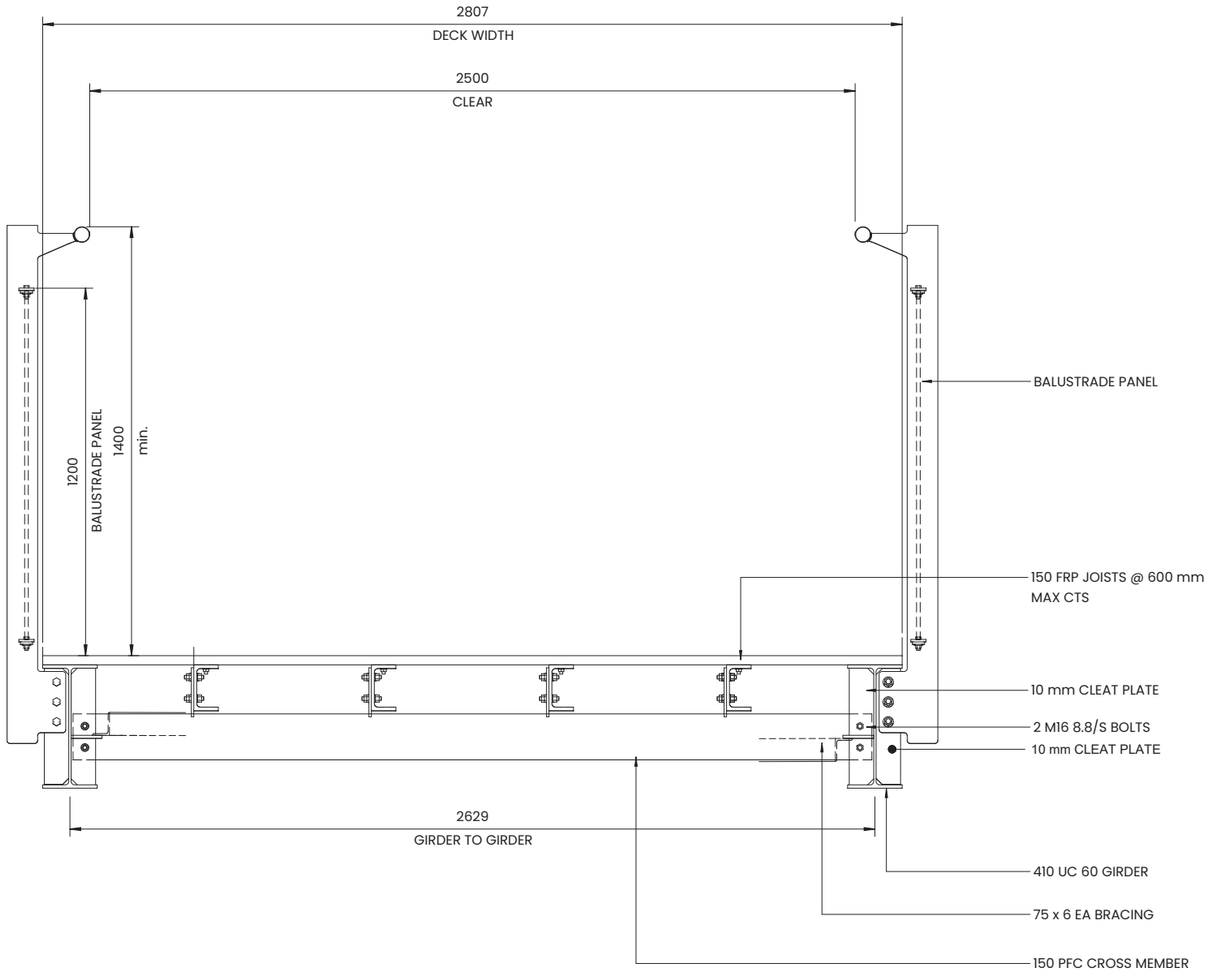
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TYPICAL BOARDWALK SECTION 2
SCALE 1 : 10

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PAGE NAME
BOARDWALK COLUMN SECTIONS

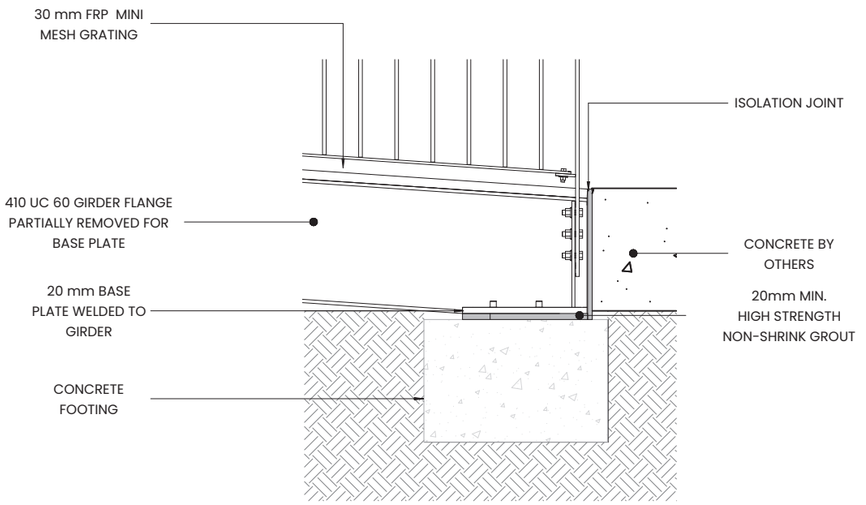
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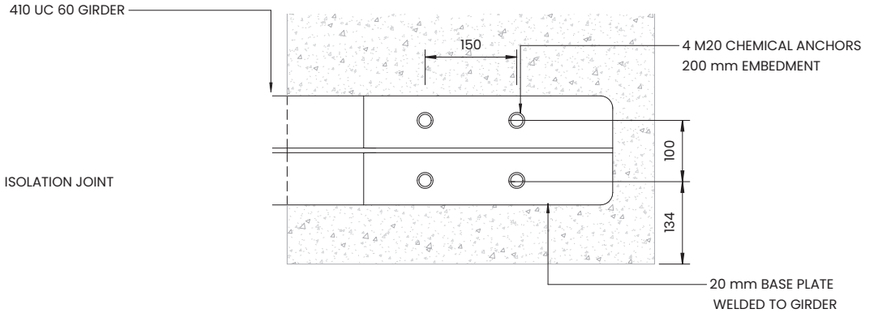
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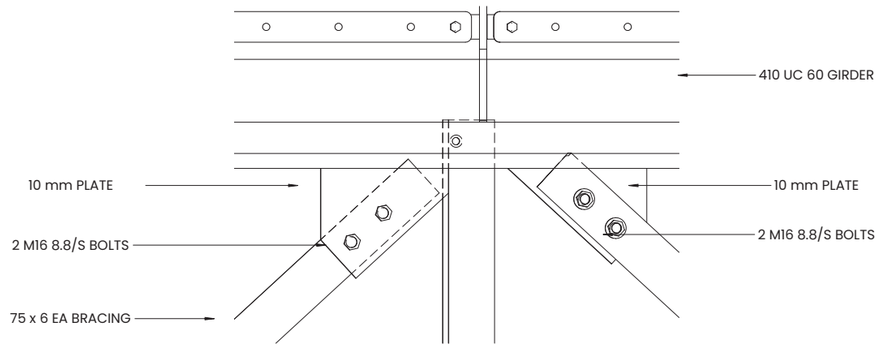
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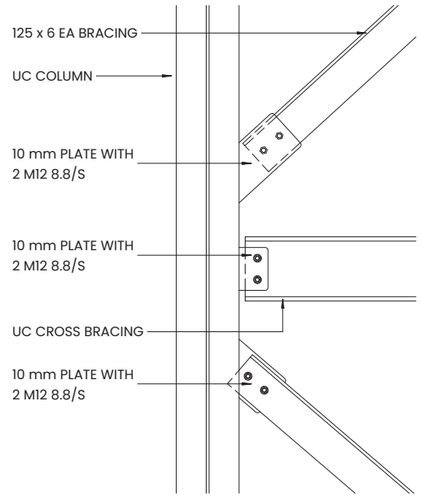
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SCALE 1 : 10



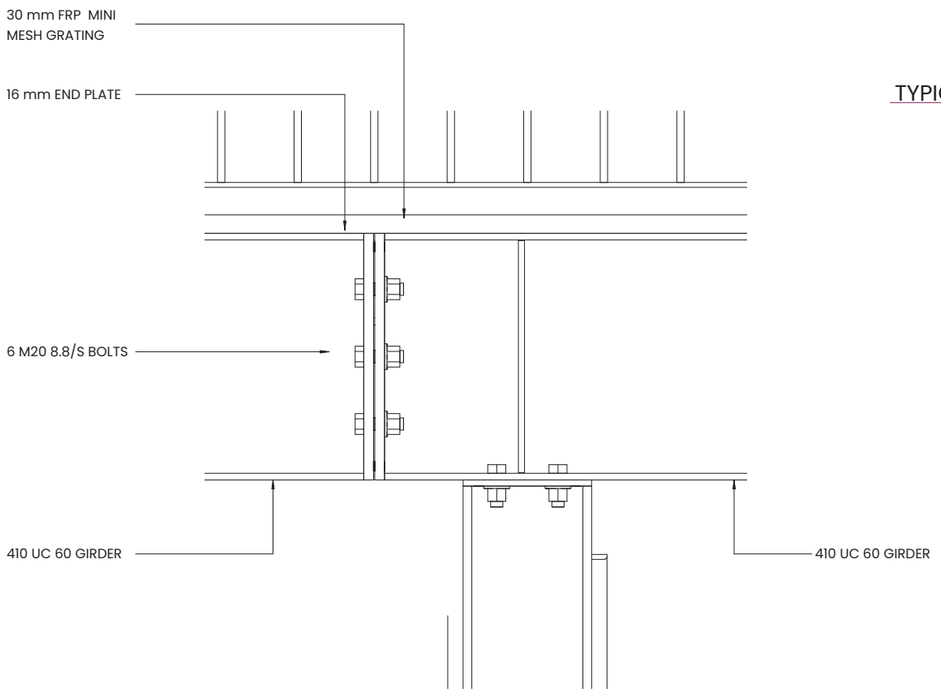
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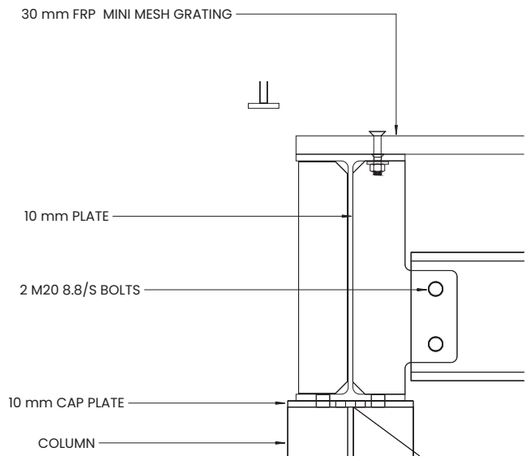
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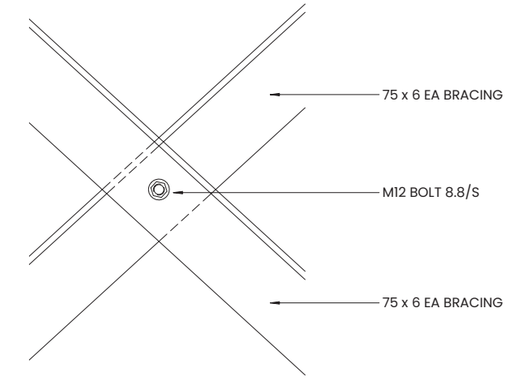
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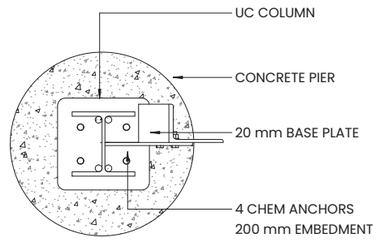
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SCALE 1 : 5



TYPICAL BEARER TO GIRDER CONNECTION 6
SCALE 1 : 5



TYPICAL BRACING CONNECTION 2 2 404
SCALE 1 : 5



TYPICAL COLUMN BASE PLATE 8 404
SCALE 1 : 10

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PROJECT **CASINO**

PRODUCT **BINGARA™ SUSPENSION BRIDGE**

PAGE NAME **BOARDWALK DETAILS**

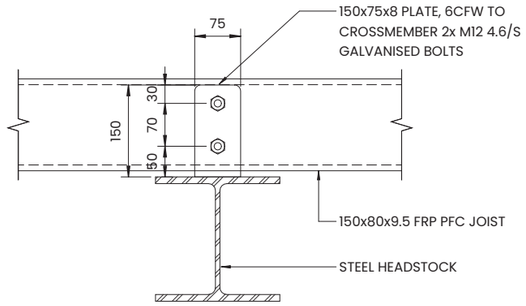
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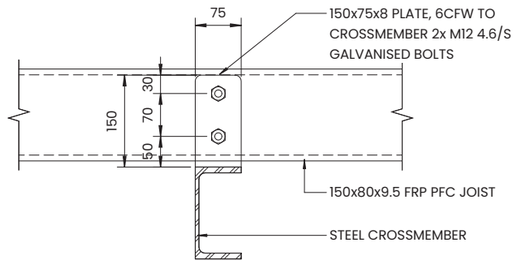
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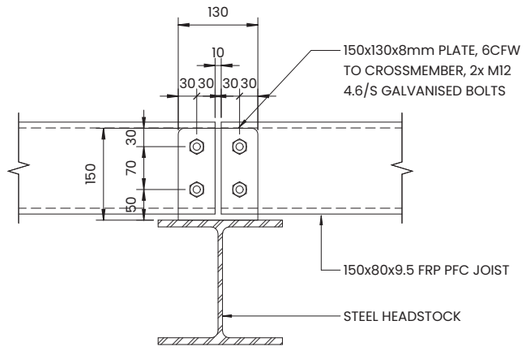
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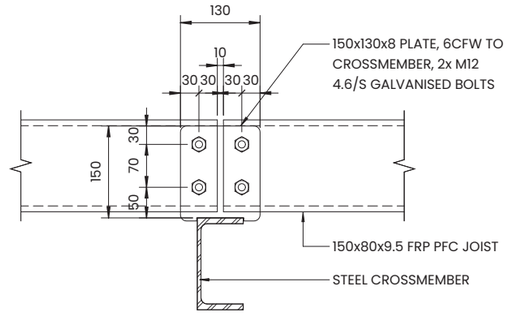
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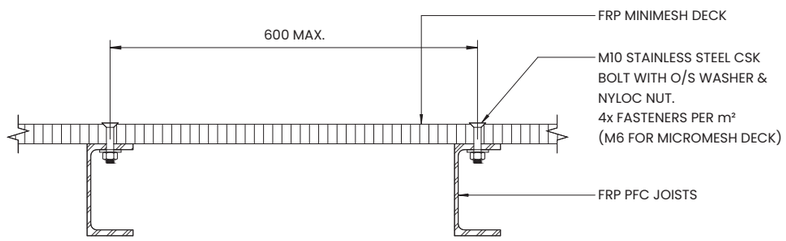
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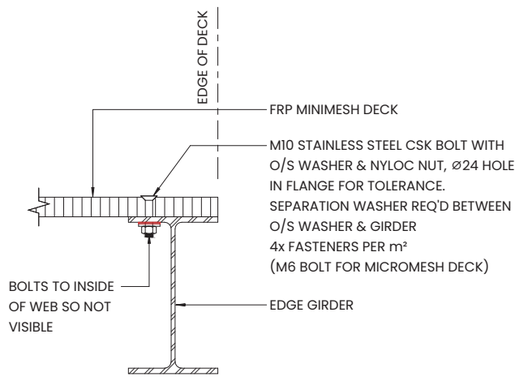
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SCALE: 1 : 5



TYPICAL FRP DECKING TO JOIST BOLT DETAIL

SCALE: 1 : 5



TYPICAL FRP DECKING TO EDGE GIRDER DETAIL

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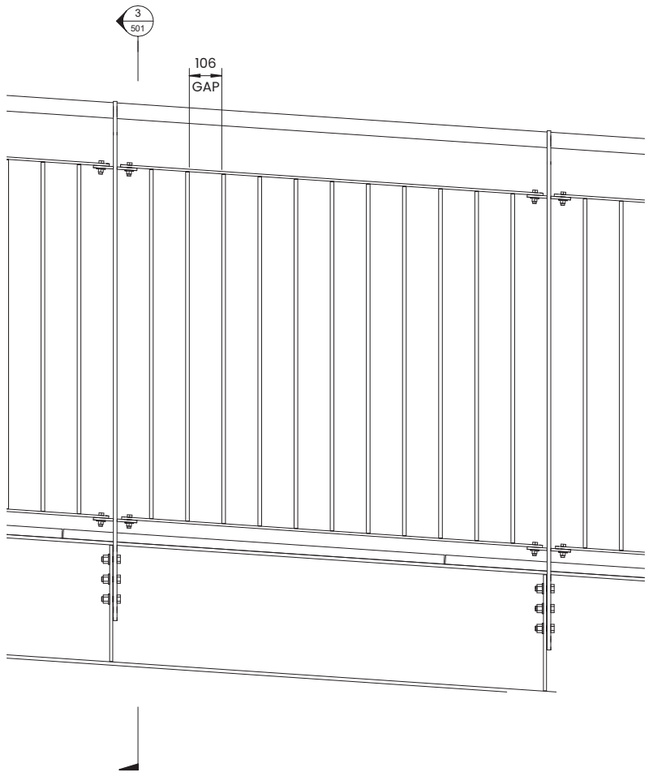
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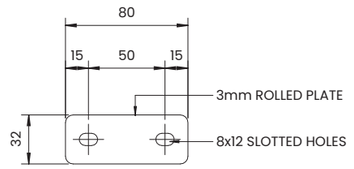
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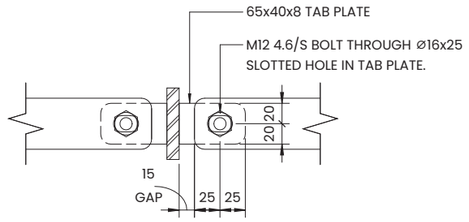
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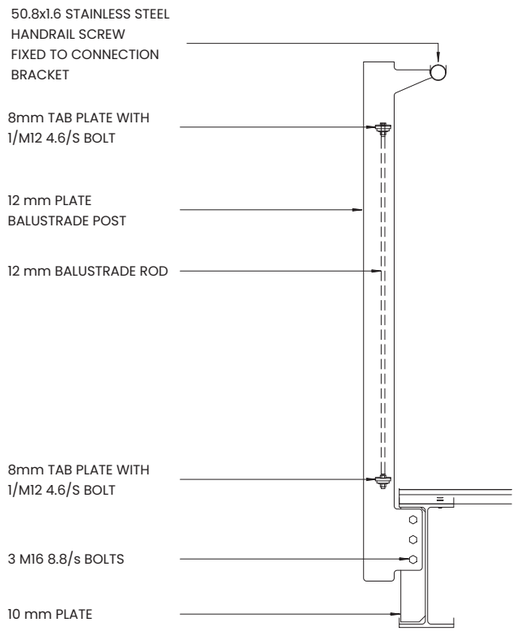
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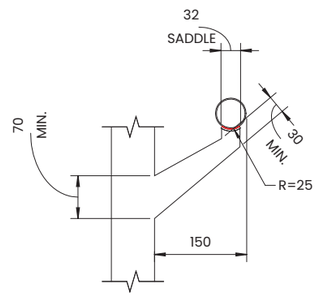
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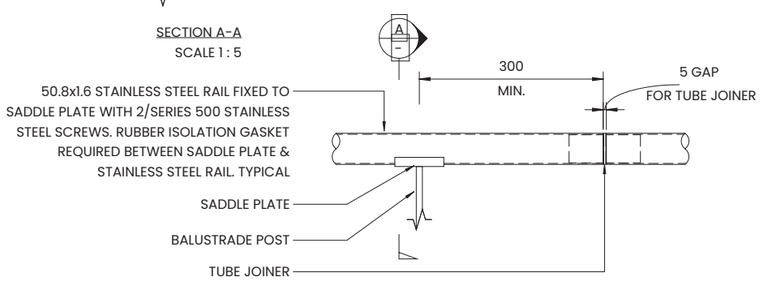
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TYPICAL BALUSTRADE POST 3 501
SCALE 1 : 10



SECTION A-A
SCALE 1 : 5



TYPICAL HANDRAIL TO SADDLE CONNECTION
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PRODUCT **BINGARA™ SUSPENSION BRIDGE**

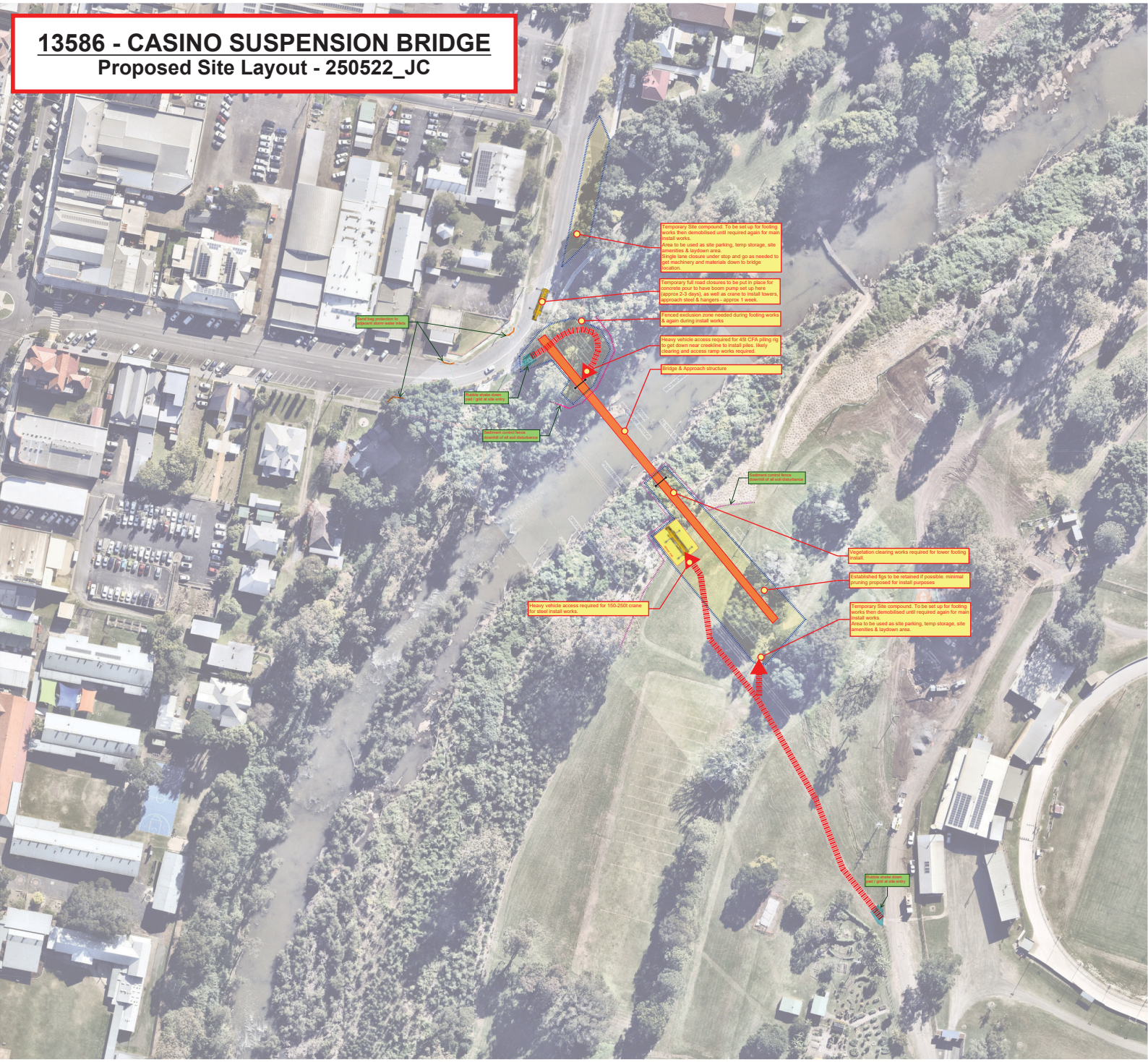
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PROJECT NUMBER	PAGE NUMBER	REV
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13586 - CASINO SUSPENSION BRIDGE

Proposed Site Layout - 250522_JC



Appendix B

Construction Methodology Statement

Methodology Statetment.

We understand Richmond Valley Council (Council) are seeking to engage a suitably qualified and experienced organisation to design and construct the Casino Suspension Bridge, located at McAuliffe Park (DP1056270), and crossing the Richmond River into Queen Elizabeth Park (DP755627) in Casino NSW 2470.

We note that a preliminary concept section and plan were provided in Appendix_B-Casino_Suspension_Bridge-Geotechnical_Report provided as part of Tender Documentation. This designed proposed an approximate length of 117 metre of suspension bridge and boardwalks with an additional approximate 25 metres of on grade concrete footpaths noted as earth ramps by others.

Council noted that the concept design provided is in a different location to a proposed new location. The new location is nominated in Fig.1 Aerial image of location for Suspension Bridge over Richmond River in VP430435_Addendum_UPDATED - Part 3 - Specification (1). The survey and geotechnical reports provided are specific to this new proposed location.

The concept drawings and costs provided by Fleetwood Urban are based on the location as noted in Fig.1 Aerial image of location for Suspension Bridge over Richmond River and are not reflective of the initial concept drawings provided. The span required at Councils proposed location is longer than that indicated in concept drawings. Our concept drawings and costs allow for approximately 170 metres of suspension bridge and boardwalks with no requirement for any earth ramps or filling works to support on grade concrete paths.



Approximate location of tender design as per Fig.1 Aerial image of location for Suspension Bridge over Richmond River at 170 metres long

Approximate location of concept design as per Appendix_B-Casino_Suspension_Bridge-Geotechnical_Report at 117 metres long

The Proposed Development:

The proposed works will comprise the construction of:

- The work includes design drawings and shop drawings in accordance with the proposed tender allowances
- Construction of the new Casino Suspension Bridge in accordance with the approved design drawings
- Construction of the elevated approach walkways to connect the new suspension bridge to the existing ground level in accordance with the approved design drawings

The construction scope may include, but not limited to:

- Traffic / pedestrian management
- Environmental protection
- Site establishment
- Excavations and earthworks
- Foundations and concrete works
- Fabrication (off-site)
- Protective Coatings (off-site)
- FRP manufacturing (off-site)
- Pre-assembling steel assemblies
- Temporary works
- Site rehabilitation
- Ancillary points
- Crane lifting, rigging, dogging
- Clearing/Demolition
- Quality assurance
- Handover documentation

1. Site Working Hours

- Working hours on site shall be between the hours of 07:00-17:00 Monday to Friday, and 08:00-13:00 on Saturdays if required. There shall be no working on Sundays or public holidays.
- Any allowance for nighttime working or out-of-hour working must be agreed on .a case by case basis.

2. Legal and Other Requirements

This project calls for a number of project specific plans and reports to be prepared, the most critical of which being the procurement of a Review of Environmental Factors (REF), and the development of Fleetwood's project specific Project Integrated Management System (IMS) Plan. The Project IMS Plan is an iterative document and will require periodic update once a contractor has been appointed to identify how site works will take place and if necessary, introduce further measures to minimise environmental effects, along with those proposed. The Project IMS Plan will be updated in accordance with the following requirements:

- Project specific contract requirements
- Planning permission
- Legislative requirements
- Findings of the REF
- Contractors EMP / EMS

The contractor will carry out any detailed design and construction in accordance with relevant guidance and standards.

Methodology Statetment (cont).

3. Design Methodology

3.1 Design Options

Bridges
We have developed two bridge design options, including a suspension bridge and an approach boardwalk, with detailed concept drawings provided for your consideration. These designs align with the project's requirements while addressing the logistical, environmental, and structural challenges of the site.

The proposed design features a 70-metre clear-span suspension bridge with 600mm freeboard to the 1% flood level. The approach boardwalks utilize a girder design, seamlessly tying into existing levels on either side of the Richmond River without requiring fill or concrete paths.

To maintain the visual integrity of the natural trail setting, the bridge design follows a minimalist aesthetic, ensuring it blends harmoniously with the landscape while providing functional and durable infrastructure.

Proposed Design Options
- Fleetwood Urban BINGARA™ Suspension Bridge Design
- Fleetwood Urban BALMORAL™ Girder Bridge Design

We have provided a base design for the tower, balustrade, and deck finishes, with opportunities for further customization, including:
- Painted towers and steel structures
- Alternate balustrade designs
- Alternative timber decking materials
- Timber-based lighting design options

3.2. Design Compliance

Safety Standards and Compliance
Our bridge design and construction proposal incorporates key compliance measures and deliverables to ensure safety and regulatory adherence:
- Obtain necessary approvals and permits from Richmond Valley Council and submit the design for review at agreed milestones, as outlined in the project program.
- Ensure the bridge design and construction comply with the conditions outlined in the geotechnical report and survey documents.
- Align bridge construction with the Project Specification and detailed concept drawings provided.
- Adhere to Australian Standards, including:
  - AS2156.1 – Walking track classification
  - AS1170.2 – Wind loads

Engineering Oversight and Safety in Design
- The design will undergo engineering reviews, inspections, and certifications by qualified professionals with specialized expertise in bridge construction.
- A comprehensive Safety in Design Report will be prepared in accordance with the WHS Act 2011, covering the entire lifecycle of the bridge structures.

Load Rating and Longevity
- The bridges will be designed for a 3kPa load rating and a 50-year design life, ensuring long-term durability.
- Materials will be selected based on their suitability for the local climate, prioritizing longevity and minimizing maintenance requirements.
- Environmental Considerations
- Environmental impact will be minimized by reducing vegetation clearance and soil disturbance during construction.
- The design will prioritize a low ecological footprint, ensuring the trail's natural setting is preserved.



Methodology Statetment (cont).

3.3 Management Plans

The following management plans and approvals will guide the project's execution, ensuring compliance with safety, environmental, and regulatory requirements. Additionally, we request any relevant environmental reports or assessments that may impact the design and construction process.

3.3.1 Review of Environmental Factors (REF)

The Review of Environmental Factors (REF) is a critical component of the project, ensuring compliance with environmental legislation and identifying potential impacts associated with construction and operation. The REF will assess environmental, social, and heritage considerations while proposing mitigation measures to minimize any negative impacts including.

- Alignment with EP&A Act 1979, Biodiversity Conservation Act 2016, and local regulations
- Protection of native flora, fauna, and sensitive habitats
- Measures to safeguard water quality in Richmond River through sediment and erosion controls
- Consideration of flood resilience, bushfire risk, and climate impacts
- Cultural heritage assessment, ensuring preservation of Indigenous and historical sites
- Management of noise, dust, vibration, and waste disposal

Please refer to Geo Link's full REF report on Schedule under subcontractors capability.

3.3.2 Safety Management Plan

A comprehensive Safety Management Plan (SMP) will be developed to identify, assess, and mitigate risks associated with bridge construction. This plan will outline:

- Site-specific hazards and risk assessments
- Safe work procedures and permit-to-work systems
- Emergency response protocols, including first aid and evacuation procedures
- Mandatory personal protective equipment (PPE) requirements
- Worker induction and ongoing safety training programs
- Compliance with WHS Act 2011 and Safe Work Australia Guidelines

3.3.3 Traffic Management Plan

Given the site's constraints, a Traffic Management Plan (TMP) will be implemented to ensure the safe movement of vehicles, equipment, and personnel. This plan will cover:

- Construction vehicle access and egress routes
- Traffic control measures, including signage, barriers, and speed restrictions
- Coordination with local authorities for temporary road closures or detours, if required
- Strategies to minimize disruptions to public access, local businesses, and residents
- Compliance with Austroads Guide to Traffic Management and local council regulations

3.3.4 Contractor's Environmental Management Plan

The Contractor's Environmental Management Plan (CEMP) will establish guidelines for minimizing environmental impacts during construction. This plan will include:

- Protection of native vegetation and fauna habitats
- Management of dust, noise, and air emissions
- Spill response procedures for fuel, chemicals, or hazardous materials
- Waste management strategies, including recycling and disposal protocols
- Site restoration measures to ensure long-term environmental sustainability
- Compliance with EPA guidelines and local environmental regulations

3.3.5 Sediment & Erosion Control Plan

A Sediment & Erosion Control Plan (SECP) will be developed to prevent sediment runoff and soil degradation, particularly given the site's proximity to the Richmond River. The plan will include:

- Installation of silt fences, sediment basins, and geotextile barriers
- Stabilisation of exposed soil using vegetation, mulching, or erosion control mats
- Strategies to minimize ground disturbance and protect waterways from pollution
- Regular monitoring and maintenance of erosion control measures
- Compliance with NSW Land & Water Management regulations and local council requirements

3.3.5 Flood Management Plan

Due to the site's location and flood risk, a Flood Management Plan (FMP) will be implemented to safeguard construction activities and infrastructure. This plan will address:

- Design considerations to elevate critical infrastructure above the 1% flood level
- Emergency response measures in the event of flooding during construction
- Safe storage and securing of materials and equipment to prevent water damage
- Coordination with Richmond Valley Council and emergency services for flood warnings and contingency planning
- Compliance with local floodplain development controls and Australian flood safety standards

3.3.6 Fisheries Permit

As the project involves construction near the Richmond River, a Fisheries Permit must be obtained by the contractor before commencing any works. This permit ensures that construction activities do not harm aquatic habitats, fish populations, or water quality. The approval process will require:

- Assessment of potential impacts on fish passage and breeding habitats
- Implementation of mitigation measures, such as sediment control and water flow management
- Adherence to NSW Fisheries Management Act 1994 and relevant regulatory guidelines
- Coordination with local fisheries authorities for permit application and compliance monitoring

Methodology Statetment (cont).

4.0 Construction Methodology

4.1. Sequence of Works

The sequence of structural works will be as follows:

4.2. Planning

- 4.2.1. Obtain all required independent reports and approvals including the REF, Traffic Management Plan, Fisheries Permit (if required by the REF) and review the recommendations of these reports in collaboration with the Client.
- 4.2.2. Pre-Construction start-up meeting with respective stakeholders.
- 4.2.3. Updated or revised construction program.
- 4.2.4. Submit all WHS, quality and environmental managements plan's and documents for review and approval. This will include, but not limited to site specific SWMS's, ITP's, traffic management plan (inc. TGS's), mobile plant details, material safety data sheets, etc.
- 4.2.5. Carry out dilapidation assessment and report on all existing services, assets and surrounding prior to any construction works.
- 4.2.6. Dial before you dig enquiries and service locating reports for identifying existing underground services.
- 4.2.7. Preparation of shop drawings for review, approval and fabrication.
- 4.2.8. If requested, samples of materials for review and approval

4.3. Site Establishment

- 4.3.1. Establish safety controls, traffic and pedestrian management, protection to existing services.
- 4.3.2. Temporary fence will be established to protect public from construction works. Project specific signage detailing PPE requirements, emergency contact and project information will be fixed to the site and spaced out accordingly. Particularly access into site, which will be clearly sign posted with the project details, UHF channel, etc. for deliveries and subcontractors in and out, as well as visual signs to keep all vehicles on the lookout as they enter/exit.
- 4.3.3. Clearing and removal of trees and shrubs inside the designated works corridor as well as minor civil works for haul roads, access and crane pads.
- 4.3.4. Designated material stockpile areas sediment and erosion control will be installed as per a sediment and erosion plan. Confirmation of sediment and erosion control devices will be detailed in our project specific Environmental Management Plan.
- 4.3.5. A concrete wash out bay set up to prevent potential contamination the location of these will be determined during the development of the EMP.
- 4.3.6. Set up a materials storage area clearly delineated, signposted and secure for boardwalk and bridge components such as FRP, balustrade, steel, cables.
- 4.3.7. Under advice from crane supplier, Fleetwood Urban may design a temporary granular crane pad for each respective crane location. The crane pad will be designed by a suitably qualified engineer and should also be designed to account for slope instability.
- 4.3.8. Excavation and set up of temporary crane pad. Location of pad to be determined upon a site visit. Actual crane pad material, thickness, and loading to be confirmed by engineer.
- 4.3.9. Surveying of bridge / boardwalk locations including pile locations, abutments, orientation by Fleetwood Urban's surveyor. All survey pegs are to be offset accordingly, and controls points appropriately positioned around site. Re-surveying of finished concrete heights will be carried to capture any discrepancies in levels, hold down locations, etc and ensure steel fabrication takes these into consideration so any potential installation issues are eliminated prior to the bridge delivery.

4.4. Deliveries to Site

- 4.4.1. Respective of the information above and to follow, all deliveries will be subject to traffic control requirements by a qualified traffic control team depending on the size of the delivery as well as suitably qualified spotters to supervise the loads while traveling under overhead powerlines. The traffic control team will also manage all pedestrian movement.
- 4.4. 2. All deliveries will report to the site office prior to been unloaded.

4.5. Excavation Works – Bridge, Approach Boardwalks

- 4.5.1. Advice from excavation contractors will determine the size and type plant required to achieve design scope engineering and geotech report will determine this.
- 4.5.2. Excavations for the abutments and approaches will be carried out with a suitable size excavator. The machine will position itself approximately 4m from abutment areas.
- 4.5.3. Stockpile of excavated material will have sediment controls in place until abutment works are completed.
- 4.5.4. After the abutments have been excavated the pier locations will be set out by the surveyor and drilled using a rock auger or core barrel. The actual size and capabilities of the excavator will be determined by the pier size and depth requirements by the engineer and information noted in the geotechnical report. All plant operator inductions, risk assessments, pre-start checklists will be carried out prior to operation.
- 4.5.5. Any contamination of excavated materials will be addressed accordingly and managed by Fleetwood Urban as per both our WHS and Environmental Management Plans. Subcontractor and license information respective of the hazardous material will be nominated and the relevant documentation.
- 4.5.6. Any open excavation for piers or abutments to be flagged off and covered per safety documentation. ITP Document the installation process, including soil conditions, installation parameters, and test results for future reference.

4.6. Concrete Works

- 4.6.1. All contractors to be inducted to site and signed on to site specific safety documentation
- 4.6.2. Pier cages will be prefabricated and mechanically installed as soon as the augering or core barrelling is complete.
- 4.6.3. Abutment cages will be mechanically installed after the pier cages have been installed. All necessary inspections prior to pouring will be carried out.
- 4.6.4. Cast-ins holding down bolts will be installed and secured as per the hold down design for the bridge.
- 4.6.5. Pad or strip footings are to meet the design scope and the necessary sign offs are completed.
- 4.6.6. Pouring of concrete will be completed out of a line pump or boom pump with a smooth trowel finished to the design RL. Vibration of concrete during installation is to done to ensure no air pockets
- 4.6.7. If chemical anchors have been designed into the scope, the location of the hold down location will be surveyed on site. The drilling / coring will be done by specialist equipment to ensure environmental controls are met.
- 4.6.8. Any concrete path or approach works being installed by Council will be coordinated on site to ensure that appropriate levels and tie in details are in place to prevent differential settlement.
- 4.6.9. All necessary slump and compressive testing will be carried out if required.
- 4.6.10. Once cured all formed concrete will then be stripped of the formwork.
- 4.6.11. ITP and QA documentation will be shared as part of the handover documentation or as requested.

Methodology Statetment (cont).

4.7. Site Installation

- 4.7.1. Assembly of the BALMORAL ™ approach ramps will be completed off site and transported to site when required. Conduct quality inspections throughout the assembly process to verify compliance with design specifications and industry standards.
- 4.7.2. Develop a detailed install plan, considering factors such as access constraints, overhead powerlines, sequence of erection, lifting plan and equipment requirements, safety measures, and coordination with other trades.
- 4.7.3. All contractors, including crane operators, dogman, riggers, traffic controllers will inducted to site and signed on to site specific safety documentation.
- 4.7.4. Temporary Road Closures of Barker Street with traffic management in place to allow for key material deliveries and installation works.
- 4.7.5. Establish crane onsite on South East side per lift study provided with adequate bearing plates.
- 4.7.6. Begin with the on site assembly of the tower, with columns and H frames for the suspension bridge, as well as any remaining preassembly of Balmoral™ ramp sections
- 4.7.7. Arrange helicopter lifting services for the North West preassembled tower section to be carried across the river to the town side and installed, given there is insufficient access for a crane pad
- 4.7.8. Lift the South East preassembled tower section in via crane and install with the assistance of EWP's followed by the preassembled Balmoral™ approach ramps per design specifications and RL's.
- 4.7.9. Install draw cables from the town side over the tower columns and across the river with the assistance of the crane and cable winches.
- 4.7.10. Draw through the primary support cables using the draw cable and secure all ends to the appropriate deadman footings.
- 4.7.11. Utilise crane whilst in position to position the bridge hangers, frames & FRP material required for the BINGARA™ suspension bridge on the approach boardwalk ready for progressive install.
- 4.7.12. When all primary support cables are installed, secured and checked for the appropriate levels, the progressive installation of hangers, frames and joists can be completed using a combination of craneage, EWP's, specialist lifting and access equipment.
- 4.7.13. As the frames, joists and bracing are installed, the FRP decking and balustrade panels will be progressively installed behind to allow for safe access by all other workers to install handrails and fit off items.
- 4.7.14. Hold down bolts and other structural connections will be checked. Grouting of all base plates to be carried out.
- 4.7.15. Install final tower caps and remove all temporary riggings used for installation.
- 4.7.16. Inspections and sign offs will be scheduled accordingly. ITP and QA documentation will be shared as part of the handover documentation or as requested.

4.8. Overview of Site Personnel and Subcontractors for Site Works

- 4.8.1. Full-time Site Manager during construction; who will manage delivery, program, resourcing, subcontractors, safety, quality and environmental controls.
- 4.8.2. Site Manager will be supported by an off-site Project Manager & Contracts Administrator who will have a focus on local trades and procurement as far as practicable.
- 4.8.3. Surveyor; set out of project
- 4.8.4. Piling / excavation contractor; all excavation requirements and certification as per engineering requirements.
- 4.8.5. Concreter; construction of all concrete abutments.
- 4.8.6. Civil Contractors; haul roads, crane pads, bank stabilisation & scour protection works
- 4.8.7. Riggers / dogmen; suspension bridge, balmoral approach installation and assembly.
- 4.8.8. Crane operator; lifting.
- 4.8.9. Helicopter lifting where required
- 4.8.6. Traffic controllers; traffic and pedestrian management, appropriate traffic management plan and traffic control plans.
- 4.8.7. Carpenters; finishing off decking to boardwalk, and handrail installation
- 4.8.8. Electricians; lighting works
- 4.8.9. Engineer; sign off works.
- 4.8.10. Arborist; vegetation removal (if required).
- 4.8.11. Landscape contractor; retaining wall and revegetation works.

Spotter; qualified spotter for overhead power lines (if required)

4.8. Practical Completion

Upon completion of the bridge construction, the following steps will ensure full site restoration and compliance with project requirements:

3.4.1 Site Restoration

- The project site will be fully restored, including rubbish removal and landscape rehabilitation.
- Any storage compounds used during construction will be cleared, ensuring minimal long-term impact.

3.4.2 Engineering Sign-Off

- A final engineering inspection will be conducted to confirm that all structures meet specified standards and regulatory requirements.

3.4.3 Council Site Walk and Practical Completion

- A final site walk will be carried out with Council representatives to assess the completed work.
- Upon approval, practical completion of the project will be formally confirmed.

Appendix C

Geotechnical Report

Richmond Valley Council

Pedestrian Suspension Bridge

Casino NSW

Geotechnical Report

Report No. RGS34275.1-AB

19 September 2024

REGIONAL GEOTECHNICAL SOLUTIONS

REGIONAL GEOTECHNICAL SOLUTIONS

Manning-Great Lakes
Port Macquarie
Coffs Harbour

RGS34275.1-AB

19 September 2024

Richmond Valley Council
11 Cassino Drive
CASINO NSW 2470

Attention: Jade Clarke-Mitropovic

Dear Jade,

RE: Pedestrian Suspension Bridge – Casino NSW

Geotechnical Report

Regional Geotechnical Solutions Pty Ltd (RGS) has completed geotechnical investigations and assessment for a proposed pedestrian suspension bridge, Casino, NSW. The bridge will span the Richmond River from Barker Street to Queen Elizabeth Park.

The investigation included the drilling of two boreholes, one at each abutment to depths of 16.5m on the western abutment (Casino side) and 13.35m on the eastern abutment (Queen Elizabeth Park side). The boreholes encountered alluvial soils overlying weathered sandstone from 11.0m and 9.7m on the western and eastern abutments respectively. The rock was typically highly weathered, low strength on the western abutment and slightly weathered to fresh, medium to high strength on the eastern abutment.

Based in the investigations the new bridge could be supported on piles founded within the weathered sandstone profile.

This report presents the results of the investigations and provides comments and recommendations to inform planning, design, and construction of the bridge.

If you have any questions regarding this report, please contact the undersigned.

For and on behalf of

Regional Geotechnical Solutions Pty Ltd



Adam Holzhauser

Principal Geotechnical Engineer

Regional Geotechnical Solutions Pty Ltd
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Appendices

Appendix A Results of Field Investigations
Appendix B Laboratory Test Result Sheets

1 INTRODUCTION

This report presents the results of a geotechnical investigations and assessment undertaken by Regional Geotechnical Solutions Pty Ltd (RGS) for the proposed pedestrian suspension bridge, Barker Street, Casino, NSW.

The bridge will span the Richmond River from Barker Street to Queen Elizabeth Park as illustrated in Diagram 1.

Diagram 1: Site Location



The investigations were undertaken to inform planning, design, and construction of the bridge. This report provides the following:

- A description of the subsurface conditions encountered, including any problematic conditions (gravels, cobbles, etc.).
- An interpreted geotechnical model and cross-section along the alignment of the proposed bridge.
- Alternative foundation options and foundation design parameters including appropriate geotechnical strength reduction factors and founding materials for piled footings.
- Aggressivity assessment of the soils to buried structural elements in accordance with AS2159 - 2009.

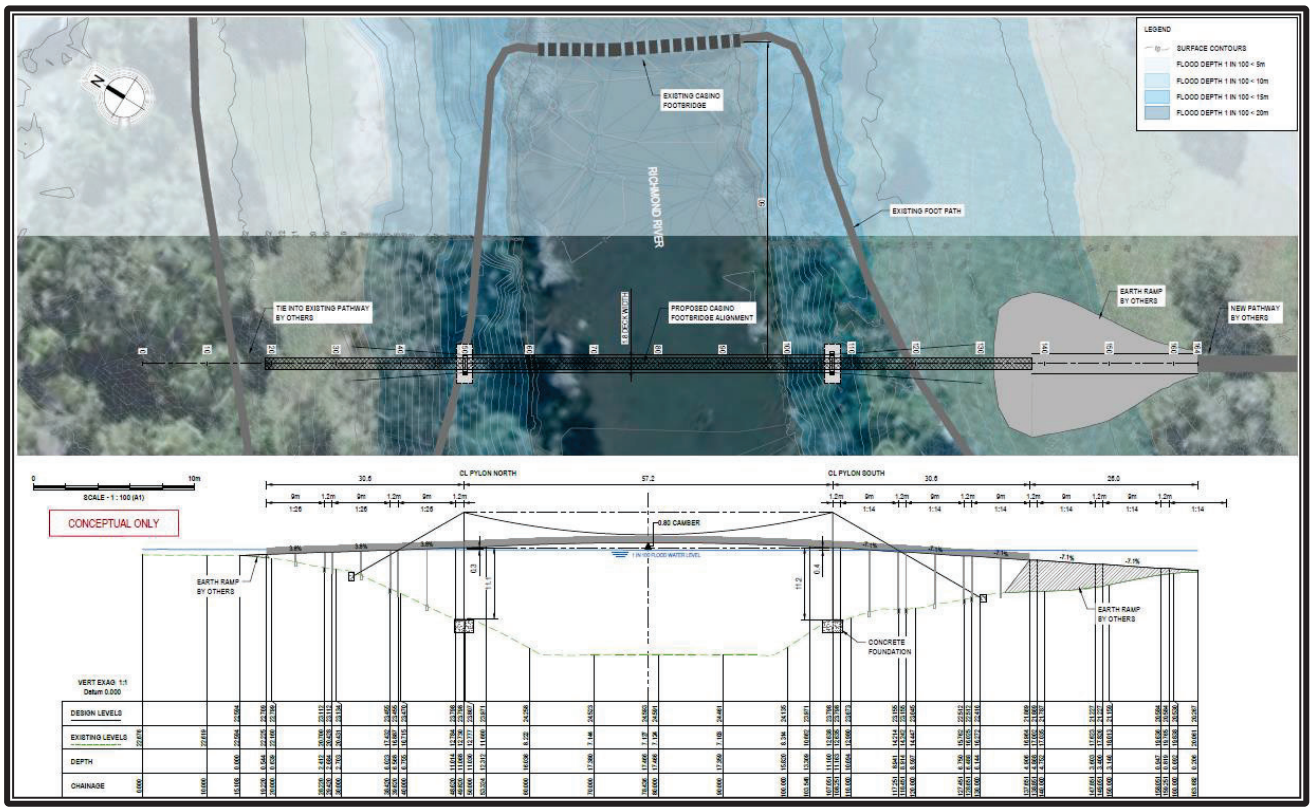
The assessment was undertaken in accordance with proposal RGS34275.1 – AA.

2 PROPOSED DEVELOPMENT

Access from Casino CBD to Queen Elizabeth is currently achieved via a low-level walking path. It is proposed to upgrade the access by constructing a pedestrian suspension bridge. The bridge will span the Richmond River extending from Barker Street in the west to Queen Elizabeth Park in the east. The bridge will be single span with earth fill abutment approach ramps constructed on the eastern side. Structural loads have not been provided.

Diagram 2 provides an illustration of the proposed structure.

Diagram 2: Proposed Bridge



3 FIELDWORK AND LABORATORY ANALYSIS

3.1 Fieldwork

The fieldwork was undertaken by a Principal Geotechnical Engineer from RGS and included the following:

- Observation of site features and surrounding features relevant to the geotechnical conditions of the site. A site plan and a longitudinal section along the alignment of the bridge were also developed using field mapping procedures.
- The drilling of two boreholes, one on each bridge abutment. The boreholes were drilled using auger drilling and wash bore methods through the soils and upper weathered rock profile. When highly weathered rock was reached the boreholes were advanced using NMLC diamond core drilling methods.
- Standard Penetrometer Tests (SPTs) were undertaken at approximately 1.5m intervals to assist in assessing the strength of the soil profile.

- Collection of samples for subsequent laboratory testing as outlined below.

Engineering logs of the boreholes are presented in Appendix A. The approximate locations obtained by measurements from the existing bridge abutments are presented on Figure 1 and Figure 2.

3.2 Laboratory Testing

The following laboratory analysis was undertaken by NATA accredited contract laboratories or internally by RGS.

- Soil aggressivity testing to assess durability requirements in accordance with AS2159 - 2009.
- Point Loads Strength Index Testing to assess rock strength.

The results are discussed in the relevant sections of this report. Laboratory test results sheets are provided in Appendix B.

4 SITE CONDITIONS

4.1 Surface Conditions

The site is situated within a region characterised by broad flat to gently undulating alluvial flood plains. The terrain transitions to gently to moderately sloping residual slopes to the south.

The Richmond River cuts through the alluvial terrain with the river level approximately 8m to 15m below the surrounding topography. The river flows in a general west to eats direction. The bridge location is situated on a sweeping bend in the river with the western abutment on the outside bend and the eastern abutment on the inside end. There is an abrupt change in direction of the river to the south where residual terrain is situated.

The riverbanks are variable with slopes generally between 5 to 30 degrees. The banks are vegetated with weeds, shrubs and large trees.

Material exposed in the riverbanks include alluvial sands and clay with weathered sandstone exposed in the bed of the river and at the toe of the riverbanks. The sandstone was assessed to be medium to high strength.

A photograph illustrating the site features is presented below.

Plate 1: Site Photographs



1. Looking west from the eastern abutment (Queen Elizabeth Park) along the proposed alignment.

4.2 Subsurface Conditions

The 1:250,000 Tweed Heads Geological Series Sheet (SH56-3) indicates that the site is underlain by Quaternary alluvial.

The profile generally comprised fill and alluvial soils overlying weathered sandstone from 11m and 9.7m on the western and eastern abutments respectively. The rock was typically highly to moderately weathered, very low to high strength.

Table 1 provides a summary of the conditions encountered. Further details are provided in the Engineering logs presented in Appendix A.

Table 1: Summary of Subsurface Conditions

Unit	Material Name	Material Description	Depth to Base of Material Unit (m) (From ground surface level*)	
			Western Abutment	Eastern Abutment
			BH1	BH2
1	Fill / topsoil	Silty Sand	2.00	0.15
2A	Alluvial – Sand	Silty Sand, fine to medium grained, loose to medium dense	--	9.70
2B	Alluvial - Clay	Silty and Sandy Clay, medium plasticity, stiff to hard.	11.0	--
3	Extremely to Highly Weathered Sandstone	Sandstone, very low strength	13.4	10.25
4	Moderately Weathered to Fresh Sandstone	Sandstone medium to high strength	≥16.50	≥13.35

Notes:

≥ Indicates base of the material layer was not encountered
-- Indicates material not encountered in borehole
* Ground surface level was estimated to be similar on both abutments.

Groundwater seepage was encountered in BH2 at a depth of 9.0m. The use of drilling fluids during core drilling obscured meaningful groundwater observations.

Groundwater levels will fluctuate due to inclement weather, seasonal variations, creek level changes and other factors.

An interpretive geotechnical section is presented in Figure 2.

4.3 Laboratory Test Results

The laboratory test results are presented in Appendix B. The results of the aggressivity testing are presented and discussed in Section 6.

Point load strength index test results are shown on the borehole logs and are presented in Appendix B.

5 FOUNDATIONS

5.1 Foundation Options & Design Parameters

The investigations encountered alluvial soils overlying weathered sandstone. The alluvial soils comprised mainly silty clay on the western abutment and sands on the eastern abutment. Rock was encountered at depths of 13.4m and 9.7m on the western and eastern abutments respectively.

Shallow footings could be considered but would need to be set well back and embedded at reasonable depth to reduce the potential for undermining as river-bank scour, erosion and migration occurs over time. Considering this potential and the nature of the structure, piles are likely to be a more feasible alternative, significantly reducing potential impacts of riverbank scour, erosion, and migration. Piles will also provide increased capacity for uplift and lateral loading on the bridge structure.

Open bored piles are not recommended due to the potential for pile wall collapse, particularly given the presence of sands on the western abutment. Cased bored piles would be a feasible alternative with the casing socketed into the weathered rock profile to provide a cut off reducing potential groundwater water inflows and significantly reducing the potential for pile wall collapse.

Other suitable pile types could include grout injected CFA piles and driven piles such as driven steel, precast concrete, or timber. If driven piles are to be used consideration must be given to the potential impacts of ground induced vibrations on nearby structures.

Penetration into the underlying weathered sandstone profile should be achievable with conventional piling rigs. Driven piles including timber, steel and precast concrete will also be capable of penetrating the upper weathered rock profile.

Pile design parameters are provided in Table 2. Piles should be designed in accordance with AS2159-2009, 'Piling-Design and installation'. The estimated design geotechnical strength (Rd,g) should be calculated in accordance with AS2159 -2009. To calculate the design geotechnical strength (Rd,g) an assessment of the geotechnical strength reduction factor (Φg) needs to be made. The following assumptions have been made in assessing a suitable geotechnical strength reduction factor.

- Limited geotechnical involvement will occur during pile installation.
- Some performance monitoring of the supported structure would be undertaken during or after construction.
- No pile testing will be undertaken.
- The foundations will be designed by a designer of at least moderate experience in similar geotechnical profiles and pile design.
- Well established pile design methods will be adopted.

Based on the above assumptions and in accordance with AS2159-2009 a risk rating of 2.93 is estimated. Therefore, assuming the pile configuration will have low redundancy a Geotechnical Strength Reduction Factor of Φg=0.52 would be appropriate for the site.

If any of the assumptions outlined above are not correct, the Geotechnical Strength Reduction Factor may change, and further advice should be sought.

Table 2: Pile Design Parameters for Bored & Driven Piles

Founding Material	Pile Type	Ultimate End Bearing Pressure[1] (kPa)	Ultimate Skin Friction[2] (kPa)	Effective Vertical Young's Modulus, E'v (MPa)	Effective Horizontal Young's Modulus, E'h (MPa)	Limiting Lateral Yield Pressure[3], py (kPa)
Unit 2 - Alluvial Soils	Non-Displacement/ Displacement	--	30	20	15	150
Unit 3 - Extremely Weathered Sandstone	Non-Displacement/ Displacement	1,500	50	40	30	300
Unit 4 - Highly Weathered to Fresh Sandstone	Non-Displacement/ Displacement	7,500	500	750	500	1,500

NOTES:

1. *Ultimate end bearing values occur at large displacements (approx. 5% of pile diameter).*
2. *Minimum pile socket of 1m required and pile wall roughness of at least Class R2.*
3. *The upper 2m of pile embedment should be ignored when calculating shaft adhesion and lateral capacities*

At least the initial stages of pile installation should be observed by a suitably experienced geotechnical engineer to assess that the recommended founding material has been reached and to check initial assumptions about foundation conditions and possible variations between borehole locations.

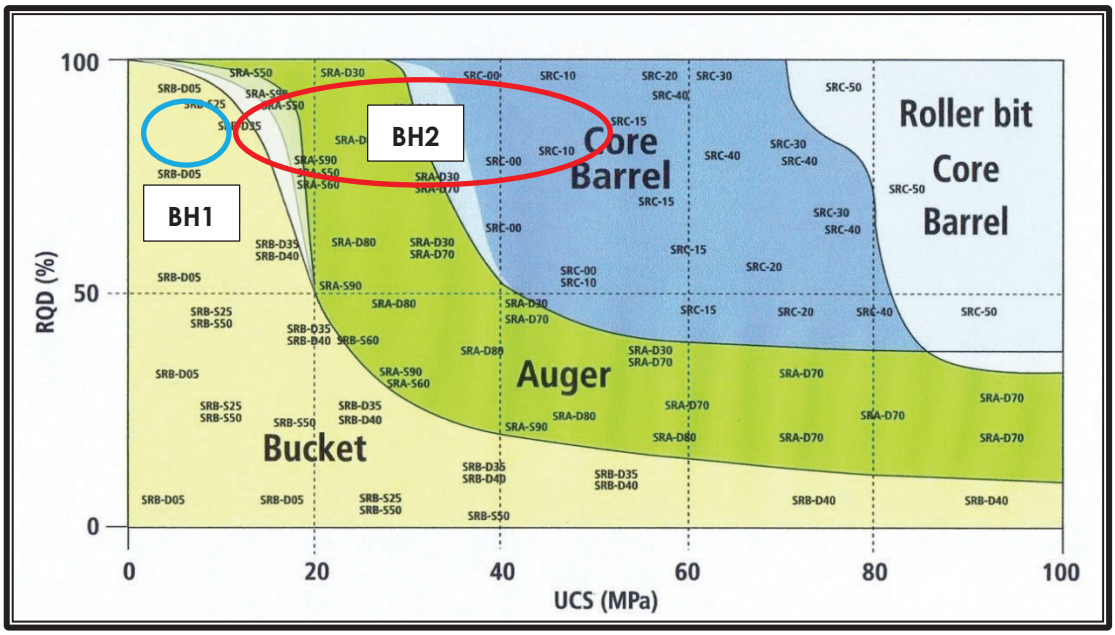
5.2 Excavatability

Bored piles will require casing, embedded into the upper rock profile to provide a cutoff. The soil profile and upper extremely to highly weathered rock will be drillable with an auger fitted with soil and rock teeth respectively. Sockets within the medium to high strength rock may not be achievable using conventional pile boring tools and coring buckets may be required.

Soilmec provides guideline for boring tool selection based on typical Rock Quality Designation (RQD) and Uniaxial Compressive Strength (UCS), as shown in Plate 1 below.

Based on the UCS and RQD a core barrel will be required to achieve a socket into the Unit 4 slightly weathered to fresh sandstone encountered in BH2 on the eastern abutment.

Plate 1: Soilmec Pile Boring Tool Section Guide



6 SOIL AGGRESSIVITY

The aggressivity test results presented in Table 3 were compared to the exposure classifications provided in Australian Standard AS2159-2009, *Piling Design and Installation*.

Table 3: Results of Soil Aggressivity Testing

Sample Location	Sample Depth (m)	Sample Type	pH	Soluble Sulfate (mg/kg)	Chloride (mg/kg)	Resistivity (ohm.cm)
BH1	4.0 to 4.45	Soil	8.09	32	200	4,902
BH2	4.0 to 4.45	Soil	7.46	8	11.7	45,455

The laboratory results indicate the soil is non-aggressive for concrete and steel elements.

7 LIMITATIONS

This report comprises the results of an investigation carried out for a specific purpose and client as defined in the document. The report should not be used by other parties or for purposes or projects other than those assumed and stated within the report, as it may not contain adequate or appropriate information for applications other than those assumed or advised at the time of its preparation. The contents of the report are for the sole use of the client and no responsibility or liability will be accepted to any third party. The report should not be reproduced either in part or in full, without the express permission of Regional Geotechnical Solutions Pty Ltd.

Geotechnical site investigation is based on data collection, judgment, experience, and opinion. By its nature, it is less exact than other engineering disciplines. The findings presented in this report and used as the basis for the recommendations presented herein were obtained using normal, industry accepted geotechnical design practises and standards. To our knowledge, they represent a reasonable interpretation of the general condition of the site. Under no circumstances, however, can it be considered that these findings represent the actual state of the site at all points.

The recommended depth and properties of any soil, rock, groundwater, or other material referred to in this report is an engineering estimate based on the information available at the time of its writing. The estimate is influenced and limited by the fieldwork method and testing carried out in the site investigation, and other relevant information as has been made available. In cases where information has been provided to Regional Geotechnical Solutions for the purposes of preparing this report it has been assumed that the information is accurate and appropriate for such use. No responsibility is accepted by Regional Geotechnical Solutions for inaccuracies within any data supplied by others.

If site conditions encountered during construction vary significantly from those discussed in this report, Regional Geotechnical Solutions Pty Ltd should be contacted for further advice.

This report alone should not be used by contractors as the basis for preparation of tender documents or project estimates. Contractors using this report as a basis for preparation of tender documents should avail themselves of all relevant background information regarding the site before deciding on selection of construction materials and equipment.

If you have any questions regarding this project, or require any additional consultations, please contact the undersigned.

For and on behalf of

Regional Geotechnical Solutions Pty Ltd

Prepared by



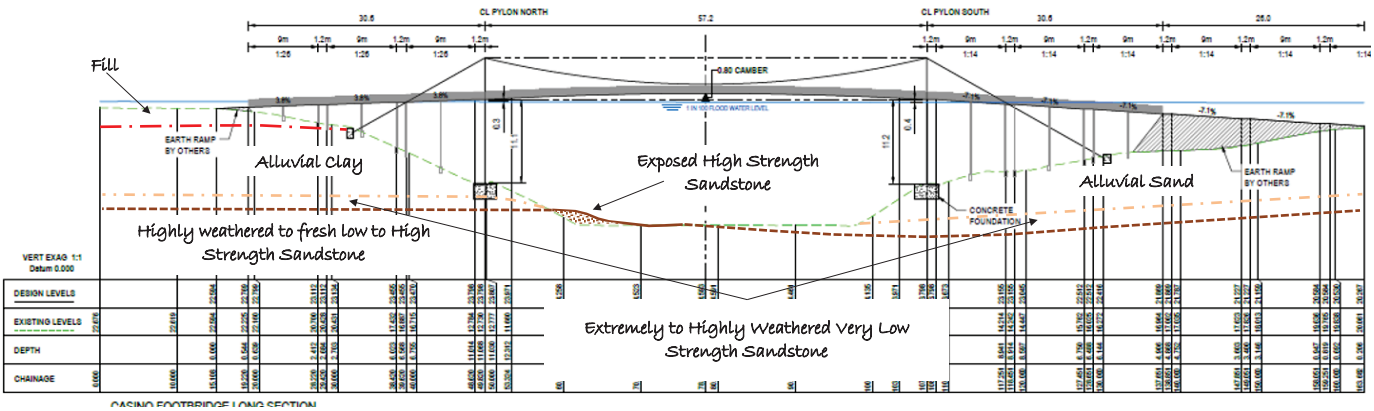
Adam Holzhauser

Principal Geotechnical Engineer

Figures



REGIONAL GEOTECHNICAL SOLUTIONS	**Client:**	Richmond Valley Council	Job No.	RGS34275.1
	Project:	Proposed Pedestrian Bridge	Drawn By:	AH
			Scale:	NTS
		Casino	Date:	19-Sep-24
	Title:	Borhole Location Plan	Drawing No.	**Figure 1**



REGIONAL GEOTECHNICAL SOLUTIONS	**Client:**	Richmond Valley Council	Job No.	RGS34275.1
	Project:	Proposed Pedestrian Bridge Casino	Drawn By:	AH
			Scale:	1:500 @ A3
			Date:	19-Sep-24
	Title:	Interpreted Geotechnical Long-section A-A	Drawing No.	**Figure 1**

Appendix A

Results of Field Investigations

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH1

CLIENT: Richmond Valley Council
PAGE: 1 of 4
PROJECT NAME: Proposed Suspension Bridge
JOB NO: RGS34275.1
SITE LOCATION: Barker Street, Casino
LOGGED BY: DR
TEST LOCATION: Refer to Figure
DATE: 23/8/24

DRILL TYPE: 350 Intertec
EASTING:
SURFACE RL:
BOREHOLE DIAMETER: 100 mm
INCLINATION: 90°
NORTHING:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered						**FILL:** Silty SAND fine to medium grained, dark brown, some fine to coarse gravel.					FILL
						SM	0.20m **Silty SAND:** Fine to medium grained, brown, trace to some gravel.	M < w_P	MD / Fr			FILL
		1.00m SPT 6,6,6 N=12 1.45m		1.0								
				2.0		CI	2.00m **Silty CLAY:** Medium plasticity, dark brown, trace sand fine grained.	M < w_P	VSt / H			ALLUVIAL
		2.50m SPT 6,7,11 N=18 2.95m		3.0						HP	450	
		4.00m SPT 10,11,13 N=24 4.45m		4.0						HP	550	
		5.50m SPT 10,11,13 N=24		5.0		CI	5.10m **Sandy CLAY:** Medium plasticity, brown, sand fine grained.			HP	450	

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

RG 2.00.3 LIB.GLB Log RG NON-CORED BOREHOLE - TEST PIT RGS34275.1 BH LOGS.GPJ <<DrawingFile>> 20/9/2024 09:46 10.02.00.04 Datgel Lab and In Situ Tool - DGD | Lib: RG 2.00.3 2022-03-03.Prj: RG 2.00.0 2021-06-30

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH1

CLIENT: Richmond Valley Council
PAGE: 2 of 4
PROJECT NAME: Proposed Suspension Bridge
JOB NO: RGS34275.1
SITE LOCATION: Barker Street, Casino
LOGGED BY: DR
TEST LOCATION: Refer to Figure
DATE: 23/8/24

DRILL TYPE: 350 Intertec
EASTING:
SURFACE RL:
BOREHOLE DIAMETER: 100 mm
INCLINATION: 90°
NORTHING:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	5.95m				CI	**Sandy CLAY:** Medium plasticity, brown, sand fine grained. *(continued)*					
		7.00m		7.0								
		SPT 6,7,11 N=18										
		7.45m										HP=350-400kPa
				8.0								
		8.50m								HP	>600	
		SPT 8,8,11 N=19										
		8.95m		9.0								
		10.00m		10.0			10.00m			HP	500	
		SPT 6,7,10 N=17				CI	**Sandy CLAY:** Medium plasticity, pale brown, sand fine to medium grained.	M < w_P	H			RESIDUAL
		10.45m										
				11.0			11.00m					
							SANDSTONE: Extremely weathered, fine to medium grained, brown, very low strength.					EXTREMELY WEATHERED SANDSTONE
		11.50m										
		SPT 10,30/60mm N=R										
		11.71m										

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

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REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH1

CLIENT: Richmond Valley Council
PAGE: 3 of 4
PROJECT NAME: Proposed Suspension Bridge
JOB NO: RGS34275.1
SITE LOCATION: Barker Street, Casino
LOGGED BY: DR
TEST LOCATION: Refer to Figure
DATE: 23/8/24

DRILL TYPE: 350 Intertec
EASTING:
SURFACE RL:
BOREHOLE DIAMETER: 100 mm
INCLINATION: 90°
NORTHING:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	13.00m SPT 30 N=R 13.15m		13.0			**SANDSTONE:** Extremely weathered, fine to medium grained, brown, very low strength. *(continued)* 13.40m		H			
							Continued as Cored Drill Hole					
				14.0								
				15.0								
				16.0								
				17.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

RG 2.00.3 LIB.GLB Log RG NON-CORED BOREHOLE - TEST PIT RGS34275.1 BH LOGS.GPJ <<DrawingFile>> 20/9/2024 09:46 10.02.00.04 Datgel Lab and In Situ Tool - DGD | Lib: RG 2.00.3 2022-03-03 Prj: RG 2.00.0 2021-06-30

ENGINEERING LOG - CORED BOREHOLE

REGIONAL GEOTECHNICAL SOLUTIONS

BOREHOLE NO: BH1
PAGE: Page 4 of 4
JOB NO: RGS34275.1
LOGGED BY: DR
DATE: 23/8/24

CLIENT: Richmond Valley Council
PROJECT NAME: Proposed Suspension Bridge
SITE LOCATION: Barker Street, Casino
TEST LOCATION: Refer to Figure

DRILL TYPE: 350 Intertec
BOREHOLE DIAMETER: 100 mm
INCLINATION: 90°
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Drilling and Sampling				Material description and profile information				Testing	Rock Mass Defects		
METHOD	WATER	RL Not measured	DEPTH (m)	GRAPHIC LOG	Material Description: Rock type, particle characteristics, colour, minor components, structure	WEATHERING	ESTIMATED STRENGTH	$I_{s(50)}$D/A	RQD %	Defect Spacing mm	Defect Description: Type, inclination, planarity, roughness, coating, thickness
			13.0		START CORING AT 13.40m						
NMLC			14.0		**SANDSTONE:** Fine to medium grained with carbon seams, siltstone wisps and lenses throughout, interbedded.	MW	L-M		87	400	DB
											PT 5° RO CN PL
										700	
										200	PT 5° RO SN PL
										20	Clay Seam
										20	
			15.0							80	PT 0-15° SO IN PL-IR
									89	160	
											PT 10° SO CO (Clay) PL
										20	DB
										20	Clay Seam
										50	PT 5° RO CN IR
										120	PT 0° SO VN PL
										200	
			16.0								PT 15° RO ST (Fe) IR
					Fine grained from 16.10m					60	
											PT 85° RO IR
										60	
											PT 5° SO CN PL
			17.0		Hole Terminated at 16.50 m						

LEGEND:

Method

WB	Wash Bore
RR	Rock Roller
CB	Claw or Blad Bit
NMLC	NMLC Core
NQ,HQ,PQ	Wireline Coring

Bedding

Laminated	<20mm
Thinnly Bedded	20-200mm
Medium Bedded	200-600mm
Thickly Bedded	600-2000mm
Very Thickly Bedded	2000mm
Massive	No Visible Bedding

Degree of Fracturing

Fragmented	<20mm
Highly Fractured	20mm to 40mm
Fractured	40mm to 200mm
Slightly Fractured	200mm to 1000mm

Weathering

EW	Extremely Weathered
HW	Highly Weathered
MW	Moderately Weathered
SW	Slightly Weathered
FR	Fresh

Strength

		$I_{s(50)}$
VL	Very Low	<0.1
L	Low	0.1 - 0.3
M	Medium	0.3 - 1
H	High	1 - 3
VH	Very High	3 - 10
EH	Extremely High	>10

Defect Type

JT	Joint
PT	Parting
SM	Seam
SZ	Shear Zone
CS	Crushed Seam

Roughness

VR	Very Rough
RO	Rough
SO	Smooth
SL	Slickensided

Coating

CN	Clean
SN	Stained
VN	Veneer(<1mm)
CO	Coating(1-5mm)

Planarity

PL	Planar
CU	Curved
ST	Stepped
IR	Irregular

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BH1 13.4m to 16.5m



REGIONAL GEOTECHNICAL SOLUTIONS	**Client:**	Richmond Valley Council	Job No.	RGS34275.1
	Project:	Proposed Suspension Bridge	Drawn By:	AH
		Barker Street Casino	Date:	19-Sep-24
	Title:	BH1 - Core Photo 13.40m to 16.50m	Core Photo No.	**BH1**

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH2

CLIENT: Richmond Valley Council
PAGE: 1 of 4
PROJECT NAME: Proposed Suspension Bridge
JOB NO: RGS34275.1
SITE LOCATION: Barker Street, Casino
LOGGED BY: AH
TEST LOCATION: Refer to Figure
DATE: 27/8/24

DRILL TYPE: 350 Intertec
EASTING: 504952 m
SURFACE RL:
BOREHOLE DIAMETER: 100 mm
INCLINATION: 90°
NORTHING: 6806837 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T		1.00m SPT 2,4,3 N=7 1.45m 2.50m SPT 5,9,7 N=16 2.95m 4.00m SPT 5,6,6 N=12 4.45m 5.50m SPT 6,7,7 N=14		1.0 2.0 3.0 4.0 5.0		SM SM	0.15m **TOPSOIL:** Silty SAND fine to medium grained, brown with rootlets to 150mm. **Silty SAND:** Fine to medium grained, brown with clay and sand lenses. Increased clay content 5.50m **Silty SAND:** Fine grained, brown with clay medium to high plasticity.	M M	VL L MD			TOPSOIL/FILL ~~GRASSED~~ ALLUVIAL

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

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REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH2

CLIENT: Richmond Valley Council
PAGE: 2 of 4
PROJECT NAME: Proposed Suspension Bridge
JOB NO: RGS34275.1
SITE LOCATION: Barker Street, Casino
LOGGED BY: AH
TEST LOCATION: Refer to Figure
DATE: 27/8/24

DRILL TYPE: 350 Intertec
EASTING: 504952 m
SURFACE RL:
BOREHOLE DIAMETER: 100 mm
INCLINATION: 90°
NORTHING: 6806837 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T		5.95m				SM	**Silty SAND:** Fine grained, brown with clay medium to high plasticity. *(continued)*	M	MD			
		7.00m		7.0								
		SPT 6,6,6 N=12										
		7.45m										
		8.50m		8.0								
		SPT 5,5,6 N=11										SPT: No Sample Recovered
	▶	8.95m		9.0								Water Seepage at 9.0m
							9.50m **SANDSTONE:** Fine grained, grey, brown.					EXTREMELY WEATHERED TO HIGHLY WEATHERED SANDSTONE VERY LOW TO LOW STRENGTH
				10.0			10.25m Continued as Cored Drill Hole					
				11.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

RG 2.00.3 LIB.GLB Log RG NON-CORED BOREHOLE - TEST PIT RGS34275.1 BH LOGS.GPJ <<DrawingFile>> 20/9/2024 09:46 10.02.00.04 Datgel Lab and In Situ Tool - DGD | Lib: RG 2.00.3 2022-03-03 Prj: RG 2.00.0 2021-06-30

ENGINEERING LOG - CORED BOREHOLE

REGIONAL GEOTECHNICAL SOLUTIONS

BOREHOLE NO: BH2

CLIENT: Richmond Valley Council
PROJECT NAME: Proposed Suspension Bridge
SITE LOCATION: Barker Street, Casino
TEST LOCATION: Refer to Figure

PAGE: Page 3 of 4
JOB NO: RGS34275.1
LOGGED BY: AH
DATE: 27/8/24

DRILL TYPE: 350 Intertec
BOREHOLE DIAMETER: 100 mm
INCLINATION: 90°
EASTING: 504952 m
NORTHING: 6806837 m
SURFACE RL:
DATUM: AHD

Drilling and Sampling				Material description and profile information				Testing	Rock Mass Defects		
METHOD	WATER	RL Not measured	DEPTH (m)	GRAPHIC LOG	Material Description: Rock type, particle characteristics, colour, minor components, structure	WEATHERING	ESTIMATED STRENGTH	$I_{s(50)}$D/A	RQD %	Defect Spacing mm	Defect Description: Type, inclination, planarity, roughness, coating, thickness
			7.0								
			8.0								
			9.0								
			10.0		START CORING AT 10.25m						
NMLC	90% RETURN				**SANDSTONE:** Fine grained, grey, brown, indistinctly bedded.	MW - SW	M			100	SM 10-20° IR RO CO
					SANDSTONE: Fine grained, pale grey, indistinctly bedded.	SW - FR				300	
			11.0		**SANDSTONE:** Fine grained, pale grey with thin dark grey (black) bands, <1mm thick at 1-20mm, spacing bedded at 0-15°.				90	50	PT 0° PL RO JT 45° IR RO CN PT 0° IR VN SM 0-50° CO IR Clay 5mm thick
										300-400	PT 0° VN SM 5° PL Clay 5mm
					SANDSTONE: Fine grained, pale grey, indistinctly bedded.	FR	H			50	JT IR TO VN SM 0-10° IR Clay 10mm
										200	SM 15° IR RO XW
									90	71	

LEGEND:

Method

WB	Wash Bore
RR	Rock Roller
CB	Claw or Blad Bit
NMLC	NMLC Core
NQ,HQ,PQ	Wireline Coring

Bedding

Laminated	<20mm
Thinnly Bedded	20-200mm
Medium Bedded	200-600mm
Thickly Bedded	600-2000mm
Very Thickly Bedded	2000mm
Massive	No Visible Bedding

Degree of Fracturing

Fragmented	<20mm
Highly Fractured	20mm to 40mm
Fractured	40mm to 200mm
Slightly Fractured	200mm to 1000mm

Weathering

EW	Extremely Weathered
HW	Highly Weathered
MW	Moderately Weathered
SW	Slightly Weathered
FR	Fresh

Strength

		$I_{s(50)}$
VL	Very Low	<0.1
L	Low	0.1 - 0.3
M	Medium	0.3 - 1
H	High	1 - 3
VH	Very High	3 - 10
EH	Extremely High	>10

Defect Type

JT	Joint
PT	Parting
SM	Seam
SZ	Shear Zone
CS	Crushed Seam

Roughness

VR	Very Rough
RO	Rough
SO	Smooth
SL	Slickensided

Coating

CN	Clean
SN	Stained
VN	Veneer(<1mm)
CO	Coating(1-5mm)

Planarity

PL	Planar
CU	Curved
ST	Stepped
IR	Irregular

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ENGINEERING LOG - CORED BOREHOLE

REGIONAL GEOTECHNICAL SOLUTIONS

BOREHOLE NO: BH2

CLIENT: Richmond Valley Council
PROJECT NAME: Proposed Suspension Bridge
SITE LOCATION: Barker Street, Casino
TEST LOCATION: Refer to Figure

PAGE: Page 4 of 4
JOB NO: RGS34275.1
LOGGED BY: AH
DATE: 27/8/24

DRILL TYPE: 350 Intertec
BOREHOLE DIAMETER: 100 mm
INCLINATION: 90°
EASTING: 504952 m
NORTHING: 6806837 m
SURFACE RL:
DATUM: AHD

Drilling and Sampling				Material description and profile information				Testing	Rock Mass Defects		
METHOD	WATER	RL Not measured	DEPTH (m)	GRAPHIC LOG	Material Description: Rock type, particle characteristics, colour, minor components, structure	WEATHERING	ESTIMATED STRENGTH	$I_{s(50)}$D/A	RQD %	Defect Spacing mm	Defect Description: Type, inclination, planarity, roughness, coating, thickness
NMLC	90% RETURN				**SANDSTONE:** Fine grained, pale grey, indistinctly bedded. *(continued)*	FR	H				
			13.0		**SANDSTONE:** Fine grained, pale grey, indistinctly bedded with carbonous bands, dark grey (black).				90	71 50 200	PT 5° IR PT 10° IR VN JT 15° IR RO VN
					Hole Terminated at 13.35 m						
			14.0								
			15.0								
			16.0								
			17.0								

LEGEND:

Method

WB	Wash Bore
RR	Rock Roller
CB	Claw or Blad Bit
NMLC	NMLC Core
NQ,HQ,PQ	Wireline Coring

Bedding

Laminated	<20mm
Thinnly Bedded	20-200mm
Medium Bedded	200-600mm
Thickly Bedded	600-2000mm
Very Thickly Bedded	2000mm
Massive	No Visible Bedding

Degree of Fracturing

Fragmented	<20mm
Highly Fractured	20mm to 40mm
Fractured	40mm to 200mm
Slightly Fractured	200mm to 1000mm

Weathering

EW	Extremely Weathered
HW	Highly Weathered
MW	Moderately Weathered
SW	Slightly Weathered
FR	Fresh

Strength

		$I_{s(50)}$
VL	Very Low	<0.1
L	Low	0.1 - 0.3
M	Medium	0.3 - 1
H	High	1 - 3
VH	Very High	3 - 10
EH	Extremely High	>10

Defect Type

JT	Joint
PT	Parting
SM	Seam
SZ	Shear Zone
CS	Crushed Seam

Roughness

VR	Very Rough
RO	Rough
SO	Smooth
SL	Slickensided

Coating

CN	Clean
SN	Stained
VN	Veneer(<1mm)
CO	Coating(1-5mm)

Planarity

PL	Planar
CU	Curved
ST	Stepped
IR	Irregular

RG 2.00.3 LIB.GLB Log RG CORED BOREHOLE RGS34275.1 BH LOGS.GPJ <<DrawingFile>> 20/9/2024 09:51 10.02.00.04 Datgel Lab and In Situ Tool - DGD | Lib: RG 2.00.3 2022-03-03 Prj: RG 2.00.0 2021-06-30

BH2 10.25m to 13.35m



REGIONAL GEOTECHNICAL SOLUTIONS	**Client:**	Richmond Valley Council	Job No.	RGS34275.1
	Project:	Proposed Suspension Bridge	Drawn By:	AH
		Barker Street Casino	Date:	19-Sep-24
	Title:	BH2 - Core Photo 10.25m to 13.35m	Core Photo No.	**BH2**

Appendix B

Laboratory Test Result Sheets

a

RESULTS OF SOIL ANALYSIS

2 samples supplied by Regional Geotechnical Solutions Pty Ltd on 3/09/2024. Lab Job No. R8432.
Samples submitted by Adam Holzhauser. Your Job: RGS34275.1.
1/21 Cook Drive COFFS HARBOUR NSW 2450

	Method	Sample 1 BH1, 4-4.45	Sample 2 BH2, 4-4.45
	EAL job No.	*R8432/1*	*R8432/2*
Moisture (%)	*inhouse*	21	10
Texture	*See note 2 below.*	Fine	Fine
pH	Rayment & Lyons 2011 - 4A1 (1:5 Water)	8.09	7.46
Conductivity (dS/m)	Rayment & Lyons 2011 - 3A1 (1:5 Water)	0.204	0.022
Resistivity (ohm.mm)	** Calculation	49,020	454,545
Resistivity (ohm.cm)	** Calculation (ohm.mm / 10)	4,902	45,455
Chloride (mg/kg)	** Water Extract - ISE (1:5 Water)	200	11.7
Chloride **(as %)**	** Calculation	0.020	0.001
Sulfate (mg/kg)	** Water Extract-APHA 3120 ICPOES	32	8
Sulfate **(as % SO_4)**	** Calculation	0.003	0.001
Chloride / Sulfate Ratio	** Calculation	6.3	1.5

Notes:

1. ppm = mg/kg dried soil
2. For Texture: coarse = sands to loamy sands; medium = sandy loams to light clays; fine = medium to heavy clays and silty clays
3. All results as dry weight DW - soils were dried at 60°C for 48hrs prior to crushing and analysis.
4. For conductivity 1 dS/m = 1 mS/cm = 1000 µS/cm
5. Methods from Rayment and Lyons, 2011. Soil Chemical Methods - Australasia.CSIRO Publishing: Collingwood.
6. Based on Australian Standard AS: 2159-2009
7. Methods from Ahern, CR, McElnea AE , Sullivan LA (2004). Acid Sulfate Soils Laboratory Methods Guidelines. QLD DNRME.
8. Analysis conducted between sample arrival date and reporting date.
9. ** NATA accreditation does not cover the performance of this service.
10. .. Denotes not requested.
11. This report is not to be reproduced except in full.
12. All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer scu.edu.au/eal or on request).
13. Results relate only to the samples tested.
14. This report was issued on 9/09/2024.

NATA
WORLD RECOGNISED ACCREDITATION
Accreditation No. 14960
Accredited for compliance with ISO/IEC 17025 - Testing

Environmental Analysis Laboratory, Southern Cross University,
Tel. 02 6620 3678, website: scu.edu.au/eal

checked: .....
Graham Lancaster
Laboratory Manager

Point Load Strength Report - Diametral and Axial Testing of Rock Core

REGIONAL GEOTECHNICAL SOLUTIONS

Client:	Richmond Valley Council	**Job Number:**	RGS34275.1
Project:	Proposed Suspension Bridge	**Date:**	11/09/2024
Location:	Casino	**By:**	JB

Date Sampled:	
Date Tested:	

Test Method: AS4133.4.1 - 2007

Test Machine: HMA 6510

Date of Calibration: 18-Aug-20

Borehole	Test Depth (m)	Rock Type	Moisture Condition	Diametral Test							Axial Test								
				Length L (mm)	Diameter D (mm)	Load P (kN)	I_s (Mpa)	Size Correction	$I_{s(50)}$ (Mpa)	Strength Classification	Width W (diameter)	Platen Separation	Load P (kN)	I_s (Mpa)	Size Correction	$I_{s(50)}$ (Mpa)	Strength Classification	UCS (Mpa)	Anisotropy Index $I_{s(50)}$
BH1	14.2	SANDSTONE	N	200.0	52.0	0.60	0.22	1.02	0.23	**L**	52	56	0.74	0.20	1.093	0.22	**L**	**4.4**	1.04
	15.5	SANDSTONE	N	200.0	52.0	0.37	0.14	1.02	0.14	**L**	52	34	1.33	0.59	0.977	0.58	**M**	**11.5**	0.24
	16.4	SANDSTONE	N	100.0	52.0	0.28	0.10	1.02	0.11	**L**	52	34	0.51	0.23	0.977	0.22	**L**	**4.4**	0.48
BH2	10.5	SANDSTONE	N	300.0	52.0	0.41	0.15	1.02	0.15	**L**	52	60	2.57	0.65	1.110	0.72	**M**	**14.4**	0.21
	11.6	SANDSTONE	N	250.0	52.0	7.92	2.93	1.02	2.98	**H**	52	58	7.69	2.00	1.101	2.21	**H**	**44.1**	1.35
	13.1	SANDSTONE	N	200.0	52.0	4.44	1.64	1.02	1.67	**H**	52	58	5.97	1.55	1.101	1.71	**H**	**34.2**	0.98

Moisture Condition:
D = Dry
N = Natural
S = Saturated

Strength Classification:

$I_{s(50)}$ Mpa	Term	Abbreviation
> 10	Extremely High Strength	EH
3 to 10	Very High Strength	VH
1 to 3	High Strength	H
0.3 to 1	Medium Strength	M
0.1 to 0.3	Low Strength	L
< 0.1	Very Low Strength	VL

Template Revision: C

Appendix D

Crown Land Licence

NSW Department of Planning, Housing and Infrastructure

Our ref: 24/03352
Account No: RN 645784

Phone: 1300 886 235
cl.licences@crownland.nsw.gov.au

Richmond Valley Council
LB 10
CASINO NSW 2470

14 April 2025

Dear Sir/Madam

Subject: OFFER OF LICENCE PROPOSED LICENSEE: Richmond Valley Council

We are pleased to make you a licence offer to authorise the use or occupation of Crown land. The purpose and conditions are set out in the attached licence offer document and the offer will remain open until 12th May 2025

What do you need to do?

1. Review the Licence Offer.
2. Get all required parties to sign the Licence Offer attached.
3. Return the signed Licence Offer within 28 days using one of the options below:
    a. Email to: licences@crownland.nsw.gov.au
    b. Mail to: PO Box 2215, Dangar, NSW 2309

What clauses are important to note?

When considering the terms and conditions set out in the licence offer, we recommend considering provisions for any clauses related to:

- The permitted use of the land
- Rent
- Revocation
- Insurance
- Any special conditions that may be included at the end of the licence

What do you need to pay?

Annual rent will need to be paid in advance and will be applied from the commencement date of your licence:

Initial Market Rent	$604.00
GST on Rent ($604.00)	$60.40
Amount Payable	**$664.40**

Who needs to sign the agreement?

To accept the offer of the licence, the licence document must be signed by each party to the application in the spaces provided on the front page.

- **Company with more than one Director**: Two Directors or one Director and the Company Secretary must sign.
- **Incorporated entity**: Two office bearers e.g. Chairman, Secretary or Treasurer must sign.

If the signed document is not returned by 12th May 2025 the offer will lapse, and you will need to reapply if you still wish to use or occupy the Crown land.

What will happen next?

- Once you return the signed licence document a final approval process is required. Your licence does not take effect until final approval has been granted.
- If approved, we will return a copy of the licence document to the Licensee for record purposes and compliance with the terms and conditions.

Need help? Contact one of our friendly staff today:

licences@crownland.nsw.gov.au

1300 886 235

www.crownland.nsw.gov.au

Yours sincerely,

D Ambler

Dominic Ambler
NSW Department of Planning, Housing and Infrastructure - Crown Lands Business Centre

LICENCE

Crown Land Management Act 2016 - Section 2.18

File Reference	Licence Number
24/03352	RN 645784

MINISTER

The Minister administering the Crown Land Management Act 2016, (hereinafter referred to as the Minister)

grants to

LICENSEE name & address

RICHMOND VALLEY COUNCIL
98 Walker St
CASINO NSW 2470
(hereinafter referred to as the Holder)

a Licence pursuant to the provisions of Section 2.18 of the Crown Land Management Act 2016 in respect of the land described hereunder in Parts 1 and 2 and subject to the terms and conditions contained in the following pages and Schedule 1, and in any additional Schedules or documents referred to in Schedule 1.

EXECUTION

Dated this day of 20

THE MINISTER

as delegate of the Minister administering the Crown Land Management Act 2016

name and position

THE HOLDER

In consideration of the grant of this Licence I / We agree to be bound by the terms, conditions and provisions of the Licence.
Certified on behalf of the entity named below by the authorised person(s) whose signature(s) appear(s) below pursuant to the authority specified.

Entity: RICHMOND VALLEY COUNCIL ABN 54 145 907 009
Authority: Section 377 of the Local Government Act 1993
Signature of authorised person:
Name of authorised person: Vaughan Macdonald
Office held: General Manager
Signature of authorised person:
Name of authorised person:
Office held:

DESCRIPTION OF LANDS

PART 1

Local Govt. Area	RICHMOND VALLEY			
County	RICHMOND			
Parish	SOUTH CASINO			
Locality	CASINO			
Status:		**Lot**	**Section**	**DP**
Crown land located near		74		DP: 755627

PART 2

Plan/diagram: Schedule 3	Area: 100m2

TEXT DESCRIPTION: Crown Waterway known as Richmond River (Reserve 56146 from Sale or Lease Generally, notified 11 May 1923 and Reserve 1011268 for Future Public Requirements, notified 3 February 2006) adjoining Lot 74 DP 755627 as shown by red line on schedule 3 Diagram

******** **End of Description of Land** ********

1. Definitions

In this Licence unless the contrary intention appears:

"Act" means the Crown Land Management Act 2016

"Commencement Date" means the date on which this Licence is stated to commence.

"Holder" means the person described as the Holder on the front page of this Licence.

"Improvements" means all buildings structures facilities works and pontoons situated on or in the land or which under the terms of this Licence are to be situated on or in the land.

"Land" means the land specified in Parts 1 and 2 of this Licence under the heading "DESCRIPTION OF LAND" (including any submerged land and waterway) or where the context so admits any part thereof.

"Licence" means this Licence including the Schedules and Annexures hereto.

"Minister" means the Minister referred to on the front page of this Licence as the Minister and where not repugnant to the context includes the Successors of Minister and the servants and agents of the Minister.

"Pontoon" means a floating landing stage.

"Premises" means the Land the Improvements and the Holder's Plant and where the context so permits any part of the foregoing.

"RA" means the Roads Act 1993.

"Rent" means the rent provided for in this Licence.

"Term" means the period commencing on the "Commencement Date" and terminating on the "Termination Date".

"Termination Date" means the date on which the Licence is revoked or ceases to have effect in accordance with the provision of this Licence. (6.002)

2. Plurals and Genders

(a) Words importing the singular number shall include the plural and vice versa.

(b) Words importing the masculine gender shall include the feminine or neuter and vice versa.

(c) Any reference to a person shall be deemed to include a reference to a corporation and vice versa. (6.004)

3. Contra Proferentum

No rules of construction shall apply to the disadvantage of a party on the basis that that party was responsible for the preparation of this Licence or any part of it. (6.005)

4. Headings Plans and Code Numbers

(a) Headings (and subheadings within clauses) marginal notes the matter appearing in Column 1 of Schedule 1 and the Table of Contents have been inserted for guidance only and shall be deemed not to form any part of the Licence.

(b) Any plan or diagram attached or annexed to this licence, which purports to depict the land shall be deemed not to form any part of the licence unless that plan or diagram is referred to in PART 2 in the DESCRIPTION OF LAND.

(c) The code number appearing at the end of each clause of the Licence shall be deemed not to form part of the Licence. (6.006)

5. Clauses and Schedules

References to Clauses Parts and Schedules are references to clauses parts and schedules of this Licence. (6.007)

6. Statutes

(a) A reference to a statute statutory instrument or ordinance includes amendments to that statute statutory instrument or ordinance whether by subsequent statutes statutory instruments or ordinances or otherwise and any statute statutory instrument or ordinance passed in substitution for the statute statutory instrument or ordinance referred to or incorporating any of its provisions.

(b) A reference to a statute includes a reference to any regulation made thereunder. (6.008)

7. Joint and Several Covenants

Any covenant or agreement on the part of two or more persons shall be deemed to bind them jointly and severally. (6.009)

8. Severability

Any provision of this Licence which is prohibited or unenforceable in any jurisdiction shall as to such jurisdiction be ineffective to the extent of such prohibition or inability to enforce without invalidating the remaining provisions of such provision in any other jurisdiction. (6.010)

9. Applicable Law

This Licence shall be construed and interpreted in accordance with the law of New South Wales. (6.011)

10. Licence a "Holding" for purposes of the Act

The Holder acknowledges that this Licence is a Holding within the meaning of the Act and the Holder is a Holder within the meaning of the Act and the provisions of the Act relating to holdings and holders apply to this Licence and the Holder. (6.012)

11. Performance of Functions etc

Any power authority duty or function conferred or imposed upon the Minister under this Licence may be exercised or performed by any person authorised by the Minister. (6.013)

12. Authorised Officer

Where under this Licence the Minister is empowered to authorise any person to perform or exercise any power authority duty or function under this Licence such person shall be validly authorised if he is authorised to exercise any power authority duty or function conferred by any Licence granted by the Minister or any Licence of a specified type or any Licence within a specified locality. (6.014)

13. Minister as Public Authority

The Minister and Holder acknowledge that nothing in this Licence can in any way restrict or otherwise affect the Minister's unfettered discretion as to the use of the Minister's statutory powers as a public authority. (6.015)

14. Approval by the Minister

(a) In any case where pursuant to this Licence the doing or executing of any act matter or thing by the Holder is dependent upon the approval or consent of the Minister such approval or consent shall not be effective unless given in writing and may be given or withheld by the Minister in the Minister's absolute discretion and may be given subject to such conditions as the Minister may determine unless otherwise herein provided.

(b) The Holder expressly agrees that any failure to comply with a condition imposed by the Minister will constitute a failure by the Holder to comply with a condition of this Licence. (6.016)

15. Opinion of the Minister

Any opinion to be formed by the Minister for the purposes of this Licence may be formed by the Minister on such grounds and material as the Minister determines to be sufficient after consultation if the Minister deems it necessary with any New South Wales Government Department or other public authority Standards Australia or any other body whose objects and functions are relevant. In forming any such opinion the Minister shall be deemed to be exercising merely administrative functions. (6.017)

16. Holder to pay Cost of Work

Whenever the Holder is required in this Licence to do or effect any act matter or thing then the doing of such act matter or thing shall unless this Licence otherwise provides be at the sole risk cost and expense of the Holder. (6.018)

17. Notices

(a) All notices or communications required to be or which may be given or served by the Minister to or upon the Holder under this Licence or which may be convenient to be given or served in connection with this Licence shall be in writing and shall be sufficiently given or served if left at or sent by ordinary post addressed to the Holder at his address specified in Column 2 of Item 1 of Schedule 1 or at the Premises or at such other place as notified in writing by the Holder to the Minister.

(b) All notices or communications required to be or which may be given or served by the Holder to or upon the Minister under this Licence or which may be convenient to be given or served in connection with this Licence shall be in writing and shall be sufficiently given or served if signed by the Holder or if the Holder is a corporation by the Secretary of the Holder or the person acting as such for the time being and if left at or sent by ordinary post addressed to the person specified in Column 2 of Item 2 of Schedule 1.

(c) Any notice or communication given or served by post shall be deemed to have been duly given or served at the time when it would in the ordinary course be delivered. (6.019)

18. Manner of Payment of Rent and Other Moneys

The rent and other moneys payable in accordance with this Licence shall be paid to the Minister at the address specified in Column 2 of Item 3 of Schedule 1 or to such other person or at such other address as the Minister may from time to time direct by notice in writing served on the Holder. (6.020)

19. Time to be of the Essence

The Minister and the Holder expressly agree that where in any provision of this Licence the Holder is given or allowed a specified time within which to undertake or do any act or thing or any power is conferred or any event occurs after the lapsing of a specified time time shall be the essence of the contract in that regard. (6.021)

20. Whole agreement

The conditions covenants and provisions contained in the Licence expressly or by statutory implication and any provision of the Act which apply to this Licence cover and comprise the whole of the agreement between the parties hereto and it is expressly agreed and declared that no further or other covenants or provisions whether in respect of the Premises or otherwise shall be deemed to be implied herein or to arise between the parties hereto by reason of the invitation by the Minister to the Holder to submit a proposal for the redevelopment of the Premises or any document issued by the Minister prior thereto or by reason of the subsequent negotiations between the parties hereto or by reason or any promise representation warranty or undertaking given or made by any party hereto to another on or prior to the execution hereof or during the Term and the existence of any such implication or collateral or other agreement is hereby negatived. (6.022)

21. Permitted Use

(a) This Licence confers on the Holder a right to occupy the Premises for the purpose specified or referred to in Column 2 of Item 4 in Schedule 1.

(b) The Holder will not use the Premises or allow them to be used for any purpose other than the purpose specified in Column 2 of Item 4 in Schedule 1. (6.023)

22. No Exclusive Possession

The Holder acknowledges that this licence does not confer exclusive Possession of the Premises upon the Holder. (6.023A)

23. Holder not to Commit Nuisance etc

The Holder will not at any time during the Term of this Licence:

(a) carry on or permit to be carried on at the premises any noxious nuisance or offensive trade business.

(b) do or permit to be carried on at the premises any act matter or thing which results in nuisance damage or disturbance to the Minister or owners or occupiers of adjoining or neighbouring lands or buildings.

(c) use the premises for any illegal activity. (6.024)

24. Commencement and Revocation of Licence

(a) This Licence shall commence on the date specified or referred to in Column 2 of Item 5 of Schedule 1 and shall continue in force until it is revoked in accordance with the provisions of this clause.

(b) The Minister may in his absolute discretion revoke this Licence at any time by serving on the Holder a notice in writing revoking this Licence.

(c) A revocation made under this clause shall take effect on the date specified in the notice or where no date is specified in the notice on the date on which the notice is served on the Holder.

(d) Except as may be expressly provided for in this Licence the Holder acknowledges and agrees that the Holder will not be entitled to any compensation costs or damages in respect of the revocation of this Licence. (6.027)

25. Licence Granted subject to Aboriginal Land Claim

(a) The Holder is granted this licence subject to a possible Aboriginal Land Claim over this land provided in s36 of the Aboriginal Land Rights Act 1983.

(b) Notwithstanding any other provision of this Licence, this Licence shall terminate or require alteration in the event that the Minister determines that the land is claimable Crown land or a Court determines that the land is claimable Crown land.

(c) Except as may be expressly provided for in this Licence the Holder acknowledges and agrees that the Holder will not be entitled to any compensation costs or damages in respect of the termination or alteration of this Licence by operation of this clause. (6.029C)

26. Transfer upon grant of Aboriginal Land Agreement

(a) Despite anything else in this Licence, the Holder agrees to and approves of the transfer of this Licence as it applies to any or all of this Site (which for the purposes of this clause, includes any access routes associated with use of the Site) without any further notice if an Aboriginal Land Agreement (ALA) within the meaning of section 36AA(1) of the Aboriginal Land Rights Act 1983, affecting the Site or part thereof, provides for the transfer of this Licence as it applies to any or all of this Site.

(b) Except as may be expressly provided for in this Licence, the Holder acknowledges and agrees that the Holder will not be entitled to any compensation, costs or damages in respect of the transfer of this Licence as it applies to any or all of this Site by operation of this clause.

(c) The Holder agrees that the date of transfer under this clause is the date provided for in the ALA, or if it is not so provided, the date the ALA is entered into.

(d) The Minister may give notice to the Holder of the transfer of this Licence as it applies to any or all of this Site under this clause but is not required to do so to effect the transfer. (6.029F)

27. Payment of Rent (CPI)

(a) For the purposes of this clause:

"*Initial Rent*" means the rent specified in Column 2 of Item 11 of Schedule 1.

"Consumer Price Index number" has the same meaning given to that term in the Act.

"*CPI Review Date*" means each anniversary date of the Commencement Date.

"*CPI Review Period*" means the period between each CPI Review Date.

"*Due Date*" means each anniversary date of the Commencement Date.

"*Market Rent Review Date*" means the date of the expiration of each period of years as specified in Column 2 of Item 12 of Schedule 1 calculated from the Commencement Date.

"*Market Rent Review Period*" means the period between each Market Rent Review Date.

(b) The Holder covenants with the Minister that the Holder will during the whole of the Term pay to the Minister in accordance with the provisions of this clause without demand free of exchange and without deduction whatsoever the rent hereinafter provided.

(c) The Holder will pay to the Minister on the commencement Date the Initial Rent and thereafter shall pay on each Due Date rent in advance adjusted as hereinafter provided.

(d) (i) On the CPI Review Date the rent shall be adjusted in accordance with the following formula:

$$R = B \times \frac{C}{D}$$

where:

R represents the adjusted rent;

B represents the annual rent payable during the year preceding the CPI Review Date;

C represents the Consumer Price Index number for the last quarter for which such a number was published before the CPI Review Date; and

D represents the Consumer Price Index number for the last quarter for which such a number was published before the immediately preceding CPI Review Date (or if there is no immediately preceding CPI Review Date then the Commencement Date).

(ii) Any rent adjusted under this subclause shall be adjusted to the nearest whole dollar.

(e) In addition to the indexation review provided for in subclause (d) on the first Market Rent Review Date after commencement and thereafter on each Market Rent Review Date the rent may be redetermined by the Minister pursuant to the provisions of Sections 6.5 and 6.7 of the Act.

(f) A redetermination of rent for the purposes of subclause (e) shall be deemed to have been made on the Market Rent Review Date if it is made at any time within the period of six months before the market Rent Review Date.

(g) Where the Minister does not redetermine the rent as provided for in subclause (e) he may redetermine the rent pursuant to the provisions of Sections 6.5 and 6.7 of the Act at any time prior to the next Market Rent Review Date and no succeeding Market Rent Review Date shall be postponed by reason of the operation of this subclause.

(h) Where the Minister does not redetermine the rent on the First Market Rent Review Date or a Market Rent Review Date as provided for in subclause (e) the Holder may by notice in writing served on the Minister require that the Minister redetermine the rent pursuant to the provisions of Sections 6.5 and 6.7 of the Act. Where the Holder requires the Minister to redetermine the rent under this subclause he shall pay on demand the costs of the Minister (or so much of the cost as the Minister may require) in making that determination.

(i) The Holder may object to a redetermination of rent under Section 6.8 of the Act. A redetermination of rent as provided for in subclauses (e) (g) and (h) shall take effect and be due and payable from the date of issue of the notice of redetermination under Section 6.7 of the Act, even if an objection under that Section 6.8 has been lodged. On the completion of the objection process any necessary adjustments shall be made.

(j) A redetermination of rent made before its relevant Market Rent Review Date as provided for in subclause (f) shall take effect from the relevant Market Rent Review Date even if an objection under Section 6.8 of the Act has been lodged. On the completion of the objection process any necessary adjustments shall be made.

(k) The Holder acknowledges that the Minister may make a direction under Section 12.16 of the Act in respect of any rent payable under this Licence. (6.031)

28. Continuing Obligation

The obligation of the Holder to pay the Rent shall be a continuing one during the term of this Licence and shall not abate in whole or in part or be affected by any cause whatsoever. (6.037)

29. Holder to Pay Rates etc

The Holder will when the same become due for payment pay all (or in the first and last year of the term of this Licence the appropriate proportionate part) rates taxes (including Land Tax) assessments duties charges and fees whether municipal local government parliamentary or otherwise which are at any time during the currency of this Licence lawfully charged upon imposed or levied in respect of the Premises or on the Minister or the Holder on account thereof and will if required by the Minister produce to the Minister the receipts for such payments within ten business days after the respective due dates for payment AND in case such rates taxes duties and fees so covenanted to be paid by the Holder are not paid when the same shall become due the Minister may if the Minister thinks fit pay the same and any such sum or sums so paid may be recovered by the Minister as if such sums were rent in arrears. (6.039)

30. Holder to Pay Other Charges

The Holder will pay all other fees charges and impositions which are at any time during the Term payable in respect of the Premises or on account of the use and occupation of the Premises by the Holder. (6.040)

31. Goods and Services Tax

(a) Definitions

In this clause the expressions "GST", "supply", and "taxable supply" have the meanings given to those expressions in the A New Tax System (Goods and Services Tax) Act 1999.

(b) Amounts GST Exclusive

With the exception of any amount payable under this clause, unless otherwise expressly stated all amounts stated to be payable under this Licence are exclusive of GST.

(c) Responsibility for GST

(i) Despite any other provision in this Licence, if GST is imposed on any supply made under this Licence, the recipient must pay to the supplier an amount equal to the GST payable on the taxable supply.

(ii) The recipient must pay the amount referred to in subclause (c)(i) in addition to and at the time payment for the taxable supply is required to be made under this Licence.

(d) Valuer/Umpire to return GST Exclusive Value

Any valuer or umpire returning a valuation must return a GST exclusive market value for it in any case where the valuation is for the purpose of determining a supply value to which GST is to be added under this Licence. (6.040A)

32. Holder not to Impose Liability on Minister

Subject to any other provision of this Licence the Holder will not without the written consent of the Minister by any act matter or deed or by failure or omission cause or permit to be imposed on the Minister any liability of the Holder under or by virtue of this Licence. (6.042)

33. Holder not to undertake development without consent notwithstanding any other provision of this Licence

The Holder will not undertake any development within the meaning of the Environmental Planning and Assessment Act 1979 contrary to the provisions of that Act or in breach of any restriction condition or prohibition imposed by an Environmental Planning Instrument or condition of a development consent. (6.043)

34. Development Consent

The Holder will not undertake any activity on or within the Premises for which consent is required under the Environmental Planning and Assessment Act 1979 or any Instrument made thereunder without first obtaining such consent and in accordance with any condition or requirement of that consent. (6.044)

35. Compliance with Statutes

(a) The Holder will comply with the requirements of all statutes regulations or by-laws and requirements of all relevant public and local authorities in so far as they apply in relation to the use and occupation of the premises.

(b) The Holder will forthwith on being served with a notice by the Minister comply with any notice or direction served on the Minister by a competent authority relating to the destruction of noxious animals or plants or pests or the carrying out of repairs alterations or works on or to the Premises. (6.045)

36. Work Health and Safety

The Holder must comply with the *Work Health and Safety Act 2011* (NSW), the *Work Health and Safety Regulation 2017* (NSW) and all other requirements of any other legislation or statutory authority in this regard whilst on the Crown Land. (6.046)

37. Holder not to deal with Licence or part with possession of Premises

(a) Subject to any other provision of this Licence the Holder will not during the Term of this Licence transfer or create any interest in the Licence or authorise or permit any person other than its contractors or subcontractors to occupy the Premises.

(b) The Holder is liable for any breach of this Licence by any of its contractors or subcontractors as if that person was the Holder. (6.047)

38. Revocation on the Request of the Holder

The Holder may at any time by notice served on the Minister request that this Licence be revoked and the Minister if he is satisfied that the Holder has complied with the conditions and provisions of this Licence or the Act will as soon as practicable comply with such a request. (6.051)

39. Interest on Overdue Money

The Holder shall pay interest on any money due and payable under this Licence to the Minister at the rate prescribed from time to time under the provisions of Section 12.12 of the Act and any such interest shall for the purposes of this Licence be deemed to be Rent in arrears. (6.052)

40. Failure to pay money or Undertake Works

(a) Where under this Licence the Holder is required to pay any money to a third party and neglects to do so for a period of 14 days after the money became due and payable it shall be lawful for but not obligatory upon the Minister (and without prejudice to any rights and powers arising from such default) to pay such money as if it were the Holder and the Holder will reimburse the Minister in respect of any such payments on demand.

(b) Where under this Licence the Holder is required to do or cause to be done any work or thing and the Holder neglects to do the work or thing for a period of 14 days after that work or thing was due or required to be done it shall be lawful for but not obligatory upon the Minister (and without prejudice to any rights and powers arising from such default) to do or effect such work or thing as if the Minister were the Holder and for that purpose the Minister the Minister's officers agents contractors and workmen may enter upon the whole or any part of the Premises and there remain for the purposes of doing or effecting any such work or thing and the Holder will reimburse the Minister for the cost of the doing or effecting the work or thing on demand. For the purposes of this clause the word cost shall include any sums paid for any insurance indemnities under the laws relating to workers compensation.

(c) The Holder expressly agrees that any money or cost payable to the Minister under this clause shall constitute a debt owed by the Holder to the Minister and may be recovered by the Minister accordingly.

(d) Where the Premises has a common boundary with other land owned leased or held by the Holder (hereinafter called the "other land"). The Holder irrevocably grants to the Minister the Minister's officers agents contractors and workmen a licence to enter upon the said other land for the purpose of gaining access to the Premises or for the purpose of undertaking any work or thing authorised permitted or contemplated by this Clause.

In exercising any power conferred by this subclause the Minister the Minister's servants employees and agents will not be liable for any reasonable damage suffered or occasioned to the other land or anything constructed thereon.

(e) The Holder expressly agrees that the provisions of this clause shall continue after the expiration or sooner determination of this Licence and the Minister may make any payment or effect any work or thing authorised by this clause after the expiration or sooner determination of this Licence as if such expiration or sooner determination had not taken place. (6.053)

41. Indemnity

(a) For the purposes of this clause the term Minister shall include Her Majesty the Queen Her heirs and Successors the State of New South Wales the Minister and the agents servants employees and contractors of Her Majesty Her Majesty's Heirs and Successors the State of New South Wales and the Minister.

(b) The Holder agrees that the Holder will indemnify and keep indemnified the Minister from and against all actions suits claims and demands of whatsoever nature and all costs charges and expenses in respect of any accident or injury to any person or property which may arise out of the use of the Premises or the construction or maintenance of works as may be authorised under the Licence notwithstanding that the conditions of this Licence shall in all respects have been observed by the Holder or that any such accident or injury shall arise from any act or thing which he may be authorised or compelled to do hereunder except to the extent that any such claims and demands arise from any negligence or wilful act or omission on the part of the Minister.

(c) The Holder expressly agrees that the obligations of the Holder under this clause shall continue after the expiration or other determination of this Licence in respect of any act deed matter or thing happening before such expiration or determination except to the extent that any such claims and demands arise from any negligence or wilful act or omission on the part of the Minister. (6.054)

42. Insurance - Public Risk

The Holder will (without in any way limiting the liability of the Holder under any other provision of this Licence) forthwith take out and thereafter during the Term keep current a public liability insurance policy for the amount specified in Column 2 of Item 19 of Schedule 1 for any one claim whereby the Minister shall during the continuance of this Licence be indemnified against claims and demands arising from death or bodily injury or damage to third party property arising out of the Holder's use of the Premises. (6.057)

43. Provisions Re Policies

(a) All insurance policies to be required to be effected by the Holder pursuant to this Licence shall be in place prior to occupying the licensed lands.

(b) The Holder will produce to the Minister, within a reasonable time after receiving a request that it do so, a certificate of insurance or a certificate of currency in respect of the insurance policies required to be effected by the Holder pursuant to this Licence. If the Holder self-insures in respect of risk, then its obligations under this clause will be satisfied by provision of a letter confirming that self-insurance.

(c) The Holder will not at any time during the Term do or bring upon the licensed lands anything which it ought reasonably believe may render void or voidable any policy of insurance taken out by the Holder. If the Holder brings anything onto the licensed lands whereby the rate of premium on such insurance shall be liable to be increased the Holder will obtain insurance cover for such increased risk and pay all additional premiums on the licensed lands (if any) required on account of the additional risk caused by the use to which the licensed lands is put by the Holder.

(d) The Holder will use all reasonable endeavours to ensure that full true and particular information is given to the office or company with which the said insurances are effected of all matters and things the non-disclosure of which might in any way prejudice or affect any such policy or policies of insurance or the payment of all or any moneys thereunder. (6.065)

44. Improvements - No demolition without Consent

(a) For the purposes of this clause "Improvement" means any building structure facility work or pontoon.

(b) The Holder will not demolish destroy remove take away or pull down any Improvements on the Premises without the written consent of the Minister. (6.070)

45. Ownership of Improvements the Act

The Holder acknowledges that the provisions of section 7.16 of the Act apply. (6.074)

46. Ownership of Improvements

(a) For the purposes of this clause "Improvement" means any building structure facility work or pontoon.

(b) The Holder expressly acknowledges that any Improvement constructed erected effected or undertaken on the Premises during the Term shall forthwith become the property of the Minister and the Holder will not be entitled to any compensation in respect thereof. (6.075)

47. General Requirement to repair

Without prejudice to the specific obligations contained in this Licence the Holder will to the satisfaction of the Minister at all times during the Term keep all Improvements now erected or hereafter to be erected on the Land in good repair and properly maintained in all respects. (6.083)

48. Premises to be kept in clean and tidy condition

The Holder will at all times during the Term keep the Premises in a clean and tidy condition and will (subject to any other provision of this Licence) on the Termination Date leave the Premises in a clean and tidy condition. (6.088)

49. Holder May Repair Improvements

(a) For the purpose of this clause "Repair" means to replace part of an Improvement with material of a similar type and size but not so as to enlarge or significantly alter the appearance or structure of the Improvement.

(b) The Holder may from time to time at the Holder's own expense Repair the Improvement.

(c) The Holder shall not undertake any work upon an Improvement which does not involve the painting of the Improvement or is not a Repair as defined in this clause. (6.088A)

50. Minister's Right to Enter Inspect and Repair

The Minister and the Minister's agents may at all reasonable times upon giving to the Holder reasonable notice (except in the case of emergency when no notice shall be required) enter upon the Premises and view the state of repair thereof and may serve upon the Holder a notice in writing of any defect (the repair of which is the Holder's obligation hereunder) requiring the Holder within fourteen days to repair the same. (6.090)

51. Use of Public of Defective Structures

The Holder will not at any time during the Term permit or suffer members of the public to be upon or use any building structure facility installation contrivance or other thing in or upon the Premises which has to the knowledge of the Holder or in the opinion of the Minister the Council or any other public or local authority having jurisdiction in the matter become seriously defective unsafe weakened out of repair or faulty in any way PROVIDED HOWEVER the Minister shall not be held liable or responsible for any failure to notify the Holder of any such defect unsafeness weakness out of repair or fault. (6.092)

52. Holder to erect Barricades etc

Where the Premises or any part of the Premises become unsafe hazardous or dangerous the Holder will forthwith erect such warning signs and barricades as may be necessary until the Premises are rendered safe. (6.093)

53. Breakages

The Holder will immediately at the Holder's expense make good any breakage defect or damage to the Improvements (including but not limited to broken glass) or to any adjoining premises or to any facility or appurtenance of the Minister occasioned by want of care misuse or abuse on the part of the Holder or the Holders sub-tenants or other persons claiming through or under the Holder or otherwise occasioned by any breach or default of the Holder hereunder. (6.096)

54. Carrying out of Alterations

(a) The Holder will not make or undertake any alterations to the Premises unless full and proper plans and specifications shall have been previously submitted to and approved by the Minister in writing and all work in connection thereto shall be carried out by and at the expense of the Holder and to the satisfaction of the Minister using contractors or workmen previously approved by the Minister whose approval shall not be unreasonably withheld and subject thereto the Holder will observe and comply with:

(i) all requirements of the Minister the Local Council and any other statutory authority having jurisdiction over the Premises; and

(ii) the plans and specifications approved by the Minister the Council and any other statutory authority.

(b) The Minister may appoint such consultants as it may reasonably deem proper to inspect any work undertaken by the Holder pursuant to this clause and the Holder will comply with the reasonable directions of such consultants and shall pay the whole of their fees charges and expenses in relation thereto. (6.101)

55. Minister not liable to provide Access

The Holder acknowledges that the Minister is not liable to provide access to the Premises over other land held by the Minister or any other land. (6.121)

56. Exterior Signs

The Holder will not without the consent of the Minister erect paint display affix or exhibit upon the exterior of the Premises or upon the interior of the Premises so as to be visible from the outside of the Premises any signs advertisements lights embellishments names notices or hoarding. (6.189)

57. Holder not to remove Materials

(a) The Holder will not mine remove extract dig up or excavate any sand stone gravel clay loam shell or similar substance or permit any other person to undertake any such action without the prior consent in writing of the Minister and subject to such conditions as the Minister may determine.

(b) Subclause (a) shall not apply to any removal digging up or excavation as may be necessary to construct or undertake any improvement authorised by or under this Licence provided that any such removal digging up or excavation is undertaken in accordance with the requirements of that authority.

(c) The Minister and the Holder expressly agree that a failure by the Holder to comply with any condition imposed pursuant to subclause (a) shall constitute a failure by the Holder to comply with a provision or covenant of this Licence. (6.194)

58. Holder to Yield Up

The Holder will forthwith upon the revocation of this Licence peaceably surrender and yield up to the Minister the Premises in good condition reasonable wear and tear excepted together with all conveniences amenities and appurtenances relating thereto clear and free from rubbish and in good and substantial repair order and condition in every case having regard to the age of what is being surrendered or yielded up. (6.199)

59. No Right to Purchase etc

The Holder expressly acknowledges that the grant of this Licence does not confer a right to purchase the land or to the grant of a lease or to the grant of a further licence. (6.200)

60. Special Conditions

The special conditions specified or referred to in Column 2 of Item 71 of Schedule 1 shall be deemed to be conditions and provisions of this Licence. (6.201)

******** End of Licence Clauses ********

Schedule 1

Item	Column 1 (description of variable particulars)	Column 2 (particulars)
1	Holder's Address for service of notices	LB 10 CASINO NSW 2470
2	Minister's Address for service of notices	Department of Planning, Housing and Infrastructure - Crown Lands PO Box 2185 DANGAR NSW 2309
3	Address for payment of rent	Department of Planning, Housing and Infrastructure - Crown Lands PO Box 2155 Dangar NSW 2309
4	Purpose for which Premises may be used	Footbridge (1)
5	Commencement Date	The date specified on page 1 of the Licence being the date of the execution of the Licence.
11	Initial Rent	$604.00
12	Market Rent Review Period	3 years
19	Insurance - Public Risk	$20 Million
71	Special conditions or provisions	Annexed as Schedule 2

******** **End of Schedule 1** ********

Schedule 2

ADDITIONAL TERMS AND CONDITIONS

1. Native Title*

Native title under the *Native Title Act 1993 (Cth) ("NTA")* may exist with respect to the Land. To the extent that the Holder is permitted to do something under this Licence, then the Holder's right to do the activity prevails over any native title rights and interests and the existence of those native title rights do not prevent the Holder from doing the activity.
In such a case, if the act is wholly inconsistent with the continued existence, enjoyment or exercise of the native title rights and interests, that native title continues to exist in its entirety but the rights and interests have no effect in relation to the act.
For some activities under the Licence, you must first obtain the Minister's Consent. In those cases, the Minister may only be able to consent to those acts if that consent can be given in accordance with the *NTA*.
*These notes do not form part of this Licence's terms and conditions.

2. Relics

a) The Holder must not harm or desecrate any Aboriginal object or Aboriginal place within the Land, unless authorised to do so by Aboriginal Heritage Impact Permit under Section 90 of the National Parks and Wildlife Act 1974 (NSW) and subject to observance and compliance with any conditions imposed on the grant of such permit
b) If the Holder becomes aware of any Aboriginal object or Aboriginal place on the Land, the Holder must:
i. notify Heritage NSW within 24 hours of becoming aware of the Aboriginal object or Aboriginal place;
ii. immediately cease any operations or works on the Land that are likely to harm or desecrate the Aboriginal object or place, unless and until Heritage NSW has given written approval to proceed; and
iii. observe and comply with all requirements of Heritage NSW in relation to the carrying out of the operations or works.
c) Words used in this clause which are defined in the National Parks and Wildlife Act 1974 (NSW) have the same meaning as in that Act.

3. Artefacts

You agree that:
(a) for the purposes of this clause, `artefacts' means and includes all coins, articles of value, articles of antiquity, and other remains or things of historical interest discovered on or under the surface of the Premises;
(b) all artefacts are deemed the property of the Minister;
(c) You must immediately notify the Minister of the discovery of any artefacts;
(d) You must take every precaution not to remove or damage the artefacts;
(e) You must, if required by the Minister, deliver up or dispose of any artefacts at Your expense.

4. Review of Environmental Factors

All Mitigation Measures outlined in the and subsequent or related studies or technical reports, and in the pending CEMP must be adhered to.

5. NSW Fisheries - Permits

All Mitigation Measures set out in any NSW DPIE - Fisheries permit must be adhered to.

6. Work Health and Safety

The Holder is responsible for safety induction of all persons onto the site. The Holder is responsible at all times for ensuring safe systems of work and that the site poses no work, health or safety risks to workers or the public. All persons engaged in the activity relative to this approval must be qualified, trained or appropriately experienced or supervised in the running of the event including the safe operation of associated equipment, tools or machinery. Relevant advice should be obtained from NSW WorkCover.

7. Restoration of any damaged licence area

The licence holder shall ensure the site will be left undisturbed. Any damaged licence area and its immediate environs directly attributed to the event shall be restored to the satisfaction of NSW Department of Industry, Lands and Water at the expense of the Licensee. In the event that the Licensee fails to comply, NSW Department of Industry, Lands and Water reserves the right to arrange the necessary remediation and/or restoration works with all costs payable by the Licensee.

8. Site

The licence holder shall ensure that the sites will be left clean and tidy on completion of works.

9. Review of Environmental Factors (REF)

All works to be undertaken in accordance with the mitigation measures outlined in the Review of Environmental Factors - Casino Footbridge (over the Richmond River) Hickey Street/McAulife Park and Queen Elizabeth Park dated April 2024.

10. Engineer Reports

a) A certified structural engineer must inspect the bridge following the works and every 3 years subsequently to ensure the bridge is safe for public use at the required capacity.
b) Holder is to ensure that the maintenance works are undertaken as per Engineers or similarly qualified tradesperson. A report certifying the works is to be submitted to the department within 7 days of completion of works.
c) The engineer report is to include requirements for future maintenance and an inspection regime.

11. Adjoining Foreshore

The holder agrees to keep the area of foreshore immediately adjoining the premises in a clean and tidy state.

12. Licence

Licence document to be carried by proponent/contractor while works undertaken.

13. NSW Fisheries

Works to be undertaken as per the conditions and requirements of Section 199 Fisheries Management Act - Fisheries reference # C24/537 for dredging and reclamation work associated with the remvoal and replacement of a pedestrian footbridge within the Richmond River. The NSW Fisheries response forms Shedule 4 of the licence document.

14. Erosion/Sediment and dewatering

Applicant is to reduce sediment and apply dewatering techniques as per Soils and Construction volume 1 dated March 2004
https://www.environment.nsw.gov.au/resources/water/BlueBookVol1.pdf

15. Works

Works to be undertaken at periods of low flow to minimise impacts on the aquatic environments.

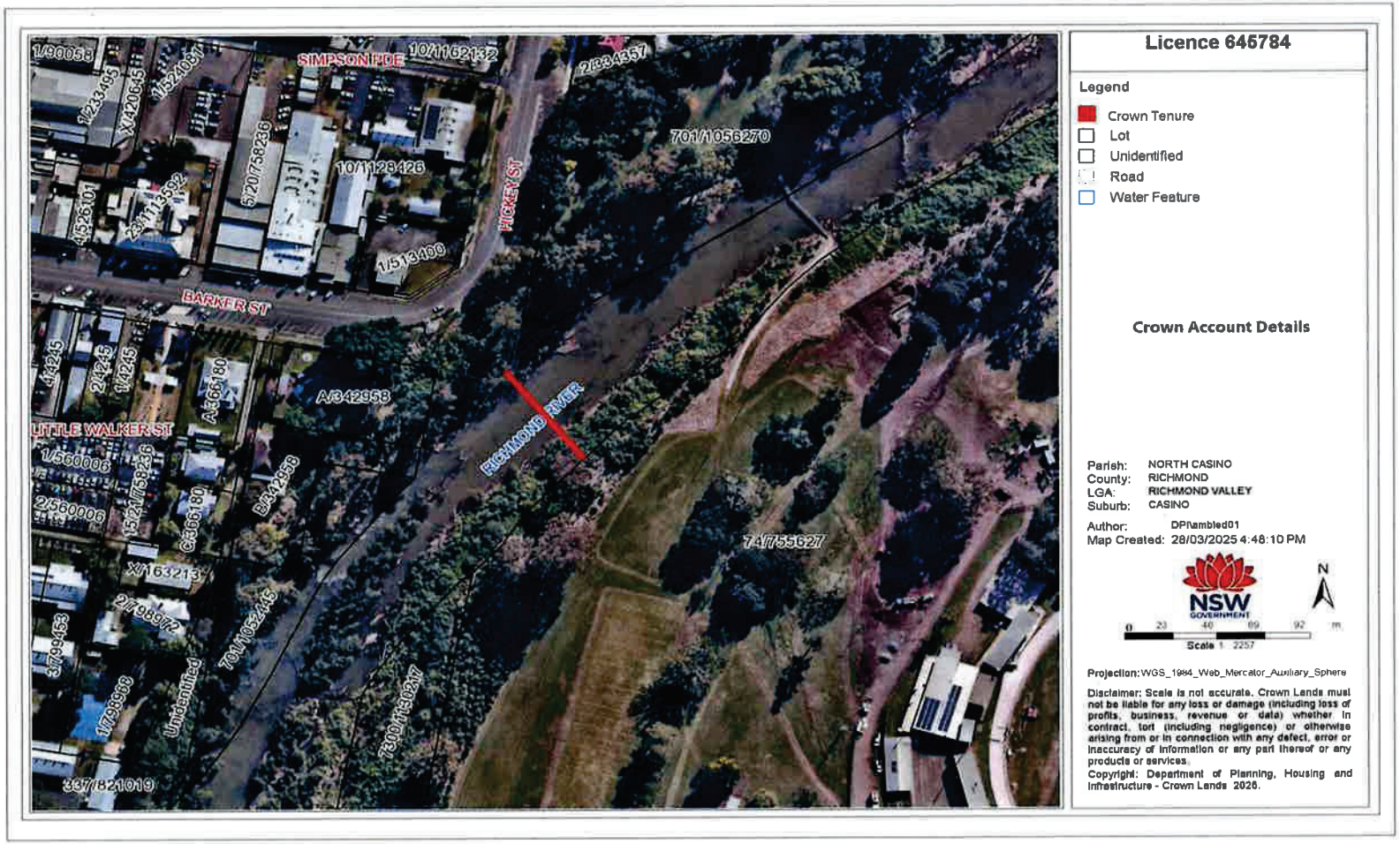
16. Leaks and spills

Any major fluid/contamination spill work is to cease immediately and NSW Environmental Protection Authority to be notified 131 555.

17. Acquisition

Council must acquire the Crown Land subject to Licence 645784.

Schedule 3



* * * * * * * * End of Schedule 3 * * * * * * * *

Schedule 4

Department of Primary Industries
and Regional Development

NSW GOVERNMENT

CM10 REF: C24/537
YOUR REF: 24/03352
10 July 2024

Narelle Hooton
Senior Property Management Officer
Crown Lands
PO Box 2185
DANGAR NSW 2309
Via email: Shannon.powell@crownland.nsw.gov.au

Re: s199 Consultation # C24/537 for dredging and reclamation work associated with the removal and replacement of a pedestrian footbridge within the Richmond River, Crown Land adjacent Lot 701 DP1056270, Casino, Richmond Valley Council LGA

Attention: Mr Shannon Powell

Dear Mr Powell

Reference is made to Crown Lands' pending approval of dredging and reclamation works associated with the above-mentioned project, to be undertaken by Richmond Valley Council, forwarded to Fisheries and Forestry on 21 June 2024.

Fisheries and Forestry, a division within the Department of Primary Industries and Regional Development, assesses applications for dredging and reclamation works, harm marine vegetation, and obstruction of fish passage in accordance with Part 7 of the *Fisheries Management Act 1994* (FM Act) and the *Policy and Guidelines for Fish Habitat Conservation and Management (2013 Update)* (Fisheries and Forestry P&G).

Section 199 of the FM Act (refer to Attachment 1) is applicable to this proposal because it pertains to dredging and reclamation works to be authorised by a public authority. Section 199 requires the proposal to be referred to the Minister for Agriculture and that the public authority considers any matters concerning the proposed works raised by the Minister.

Department of Primary Industries
and Regional Development

Fisheries and Forestry has reviewed the subject project and associated mitigation measures outlined in the application, in particular, the Ardill Payne & Partners document titled *Review of Environmental Factors Casino Footbridge (over the Richmond River) Hickey Street/McAuliffe Park/Queen Elizabeth Park* dated 23 April 2024.

It is understood that the proposal will involve the removal of the existing pedestrian footbridge and construction of a new approximately 120m long by 1.8m wide shared pathway/cycleway suspension bridge inclusive of concrete pylons on the banks, within the Richmond River, Crown Land adjacent Lot 701 DP1056270, Casino, Richmond Valley Council LGA (refer to Attachment 3).

Fisheries and Forestry has no objection to the proposed works. In accordance with Section 199 (1)(b) of the FM Act, the matters raised within Attachment 2 of this notice must be considered. These matters are to ensure that impacts to key fish habitats will be avoided or minimised to a level consistent with the requirements of Fisheries and Forestry P&G and relate to the Department's responsibilities for ensuring fish stocks are conserved and that there is "no net loss" of key fish habitats upon which they depend. The protection of key fish habitats provides for viable commercial fishing and aquaculture, quality recreational fishing and the continuation of Aboriginal cultural fishing within NSW. Should Crown Lands choose not to consider these matters, Crown Lands should contact Fisheries and Forestry prior to authorising the works.

If you have any queries, please contact Fletcher Mingramm, Fisheries Manager Coastal Systems (North Coast) on 0499 689 583 or fletcher.mingramm@dpi.nsw.gov.au.

Yours sincerely

Jonathan Yantsch
Senior Fisheries Manager, Coastal Systems (North Coast)
Marine Estate Management, Primary Industries NSW
Authorised delegate of the Minister for Primary Industries

Cc: fisheries.compliance@dpi.nsw.gov.au

Department of Primary Industries
and Regional Development

Attachment 1

Fisheries Management Act 1994 No 38

Part 7 Division 3 Section 199

199 Circumstances in which a public authority (other than local authority) may carry out dredging or reclamation

(1) A public authority (other than a local government authority) must, before it carries out or authorises the carrying out of dredging or reclamation work:

(a) give the Minister written notice of the proposed work, and

(b) consider any matters concerning the proposed work that are raised by the Minister within 21 days after the giving of the notice (or such other period as is agreed between the Minister and the public authority).

(2) Any such public authority is to notify the Minister of any dredging or reclamation work that it proposes to carry out or authorise despite any matter raised by the Minister. The Minister may, within 14 days after being so notified, refer any dispute to the Minister responsible for the public authority. If the dispute cannot be resolved by those Ministers, it is to be referred to the Premier for resolution.

(3) In this section, public authority includes the Minister administering the *Crown Land Management Act 2016*.

1243 Bruxner Highway,
Wollongbar NSW 2477

02 6626 1375
dpird.nsw.gov.au

Department of Primary Industries
and Regional Development

Attachment 2

MATTERS FOR CONSIDERATION UNDER s199 of the *Fisheries Management Act 1994*

Administration

1. Fisheries and Forestry recommend that a copy of relevant approval documentation be carried by the proponent or their contractor operating on-site.
Reason – A Fisheries and Forestry Compliance Officer may wish to check that the works are being undertaken in accordance with relevant approvals.

2. The subject works, including the construction methodology and final built design, should be consistent with the proposal outlined in the s199 referral to Fisheries and Forestry by Crown Lands on 21 June 2024. Any proposed changes to the methodology or final design should be discussed with Fisheries and Forestry prior to implementation.
Reason – This s199 consultation has been prepared following an assessment of the potential impacts of the described works on the aquatic and neighbouring environments. Other works, which were not described in the referral have not been assessed and may have significant adverse impacts.

Erosion and sediment control

3. Sediment entering waterways can directly impact key fish habitats. Fisheries and Forestry recommends that if Crown Lands authorises the works, the approval incorporates a condition that ensures:
- Erosion and sediment mitigation devices are erected and managed in accordance with all applicable requirements of the Blue Book (i.e. Landcom [2004], *Managing Urban Stormwater: Soils and Construction* [4th Edition]) (https://www.environment.nsw.gov.au/research-and-publications/managing-urban-stormwater-soils-and-construction-volume-1-4th-editon); and
- Stockpiles are located away from adjacent on water land[1], and riparian and aquatic vegetation[2].
Reason – To ensure that sediment generated by the exposure of soil is not transported into the aquatic environment.

[1] "Water land" means land submerged by water:

a) whether permanently or intermittently, or
b) whether forming an artificial or natural body of water,

and includes *wetlands* and any other land prescribed by the regulations.

Wetlands include marshes, mangroves, swamps, or other areas that form a shallow body of water when inundated intermittently or permanently with fresh, brackish, or salt water, and where the inundation determines the type and productivity of the soils and the plant and animal communities.

[2] "Aquatic vegetation" is a term used to describe native vegetation that inhabits freshwater but does not include noxious weeds within the meaning of the *Noxious Weeds Act* 1993.

Instream works

4. Snags are important key fish habitats and Fisheries and Forestry prioritise leaving snags in-situ, realignment, relocation and, only when these opportunities are not possible, removal. Fisheries and Forestry recommends that if Crown Lands authorises the works, the approval incorporates a condition that ensures no snags[3] outside of the immediate works footprint are removed, and that such snags are only realigned or relocated if required.
Reason – "Removal of large woody debris from NSW rivers and streams" is listed as a Key Threatening Process under the provisions of the FM Act. This approval has been granted on the basis that snags are not to be removed.

Avoiding harm to aquatic and riparian vegetation

5. To protect riparian and aquatic vegetation, Fisheries and Forestry recommends that if Crown Lands authorises the works, the approval incorporates a condition that riparian and aquatic vegetation on water land, outside of the immediate works footprint, is identified and appropriately delineated as "No Go" areas (with the aim of avoiding harm to these areas).
Reason – To ensure that impacts on aquatic habitats and the riparian zone are minimised.

Post works rehabilitation of site

6. Fisheries and Forestry recommends that if Crown Lands authorises the works, the approval incorporates a condition that requires the site to be rehabilitated and stabilised at the completion of the works including:
- Removal of surplus construction materials and temporary structures from the site (other than silt fences and other erosion and sediment control devices); and
- Appropriate maintenance of erosion and sediment control devices until the site has stabilised.
Reason – To ensure that habitats are restored as quickly as possible, public safety is not compromised, aesthetic values are not degraded and sediment inputs into the waterway are reduced.

Fish kill contingency

7. Fisheries and Forestry maintains a fish kill database. To limit the potential of a fish kill incident, Fisheries and Forestry recommends that the proponent be advised to undertake a visual inspection of the waterway for dead or distressed fish (indicated by fish gasping at the water surface, fish crowding in pools or at the creek's banks) twice daily during the works. Observations of dead or distressed fish should be immediately reported to the Contact Officer by the approval holder. If a fish kill occurs, Fisheries and Forestry recommend works cease until the issue

[3] "Snags" is a term used to describe large woody debris from trees and shrubs, including whole fallen trees, broken branches and exposed roots that have fallen or washed into a waterway and are now wholly or partially submerged by water. Snags also includes submerged large rocks (of greater than 500 mm in two dimensions).

causing the kill is rectified.
Reason – Fish kills are also potentially contentious incidents from the public perspective. Fisheries and Forestry needs to be aware of fish kills so that it can assess the cause and recommend ways to mitigate further incidents in consultation with relevant authorities. Work practices may need to be modified to reduce the impacts on the aquatic environment.

Attachment 3

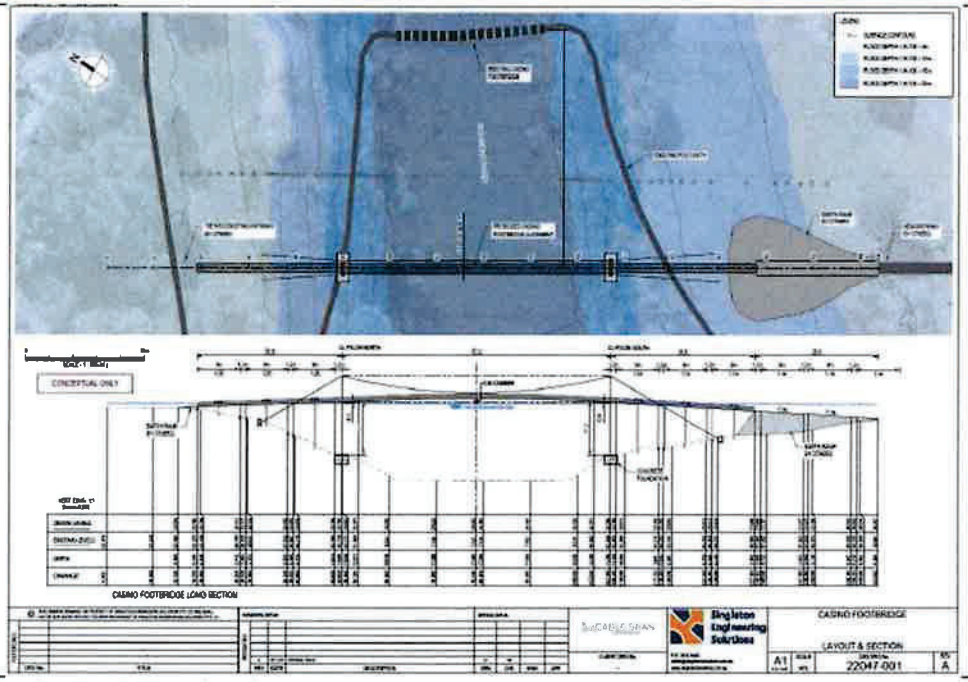


Figure 1: Plan showing design of works.

*** * * * * * * * End of Schedule 4 * * * * * * * ***

Appendix E

Biodiversity Database Search Results

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Licensed Report of all Valid Records of Threatened (listed on BC Act 2016) or Commonwealth listed Entities in selected area [North: -28.82 West: 153.00 East: 153.10 South: -28.92] returned a total of 1,044 records of 49 species.
Report generated on 1/04/2025 1:49 PM

Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records	Info
Animalia	Reptilia	Elapidae	2645	*Cacophis harriettae*		White-crowned Snake	V,P		1	
Animalia	Aves	Anseranatidae	0199	*Anseranas semipalmata*		Magpie Goose	V,P		114	
Animalia	Aves	Anatidae	0216	*Oxyura australis*		Blue-billed Duck	V,P		24	
Animalia	Aves	Anatidae	0214	*Stictonetta naevosa*		Freckled Duck	V,P		19	
Animalia	Aves	Phaethontidae	0107	*Phaethon rubricauda*		Red-tailed Tropicbird	V,P	C,J	1	
Animalia	Aves	Apodidae	0334	*Hirundapus caudacutus*		White-throated Needletail	V,P	V,C,J,K	12	
Animalia	Aves	Ciconiidae	0183	*Ephippiorhynchus asiaticus*		Black-necked Stork	E1,P		143	
Animalia	Aves	Ardeidae	0197	*Botaurus poiciloptilus*		Australasian Bittern	E1,P	E	1	
Animalia	Aves	Ardeidae	0196	*Ixobrychus flavicollis*		Black Bittern	V,P		2	
Animalia	Aves	Accipitridae	0218	*Circus assimilis*		Spotted Harrier	V,P		4	
Animalia	Aves	Accipitridae	0226	*Haliaeetus leucogaster*		White-bellied Sea-Eagle	V,P		51	
Animalia	Aves	Accipitridae	0225	*Hieraaetus morphnoides*		Little Eagle	V,P		2	
Animalia	Aves	Accipitridae	0230	*Lophoictinia isura*		Square-tailed Kite	V,P,3		1	
Animalia	Aves	Accipitridae	8739	*Pandion cristatus*		Eastern Osprey	V,P,3		3	
Animalia	Aves	Burhinidae	0174	*Burhinus grallarius*		Bush Stone-curlew	E1,P		1	
Animalia	Aves	Jacanidae	0171	*Irediparra gallinacea*		Comb-crested Jacana	V,P		191	
Animalia	Aves	Rostratulidae	0170	*Rostratula australis*		Australian Painted Snipe	E1,P	E	8	
Animalia	Aves	Scolopacidae	0161	*Calidris ferruginea*		Curlew Sandpiper	E4A,P	CE,C,J,K	3	
Animalia	Aves	Scolopacidae	0168	*Gallinago hardwickii*		Latham's Snipe	V,P	V,J,K	11	
Animalia	Aves	Scolopacidae	0152	*Limosa limosa*		Black-tailed Godwit	V,P	E,C,J,K	1	
Animalia	Aves	Scolopacidae	0158	*Tringa nebularia*		Common Greenshank	E1,P	E,C,J,K	1	
Animalia	Aves	Turnicidae	0013	*Turnix maculosus*		Red-backed Button-quail	V,P		2	
Animalia	Aves	Cacatuidae	8862	*^^Calyptorhynchus lathami lathami*		South-eastern Glossy Black-Cockatoo	V,P,2	V	3	
Animalia	Aves	Psittacidae	0260	*Parvipsitta pusilla*		Little Lorikeet	V,P		3	
Animalia	Aves	Tytonidae	0252	*Tyto longimembris*		Eastern Grass Owl	V,P,3		1	
Animalia	Aves	Pomatostomidae	8388	*Pomatostomus temporalis temporalis*		Grey-crowned Babbler (eastern subspecies)	V,P		6	
Animalia	Aves	Campephagidae	0428	*Coracina lineata*		Barred Cuckoo-shrike	V,P		1	
Animalia	Aves	Monarchidae	0376	*Carterornis leucotis*		White-eared Monarch	V,P		1	

Animalia	Mammalia	Dasyuridae	1017	*Phascogale tapoatafa*	Brush-tailed Phascogale	V,P		2
Animalia	Mammalia	Phascolarctidae	1162	*Phascolarctos cinereus*	Koala	E1,P	E	47
Animalia	Mammalia	Petauridae	1137	*Petaurus norfolcensis*	Squirrel Glider	V,P		11
Animalia	Mammalia	Macropodidae	1260	*Notamacropus dorsalis*	Black-striped Wallaby	E1,P		2
Animalia	Mammalia	Macropodidae	1234	*Thylogale stigmatica*	Red-legged Pademelon	V,P		1
Animalia	Mammalia	Pteropodidae	1280	*Pteropus poliocephalus*	Grey-headed Flying-fox	V,P	V	336
Animalia	Mammalia	Molossidae	1329	*Micronomus norfolkensis*	Eastern Coastal Free-tailed Bat	V,P		8
Animalia	Mammalia	Vespertilionidae	1336	*Nyctophilus bifax*	Eastern Long-eared Bat	V,P		3
Animalia	Mammalia	Vespertilionidae	1361	*Scoteanax rueppellii*	Greater Broad-nosed Bat	V,P		1
Animalia	Mammalia	Miniopteridae	1346	*Miniopterus australis*	Little Bent-winged Bat	V,P		4
Animalia	Mammalia	Miniopteridae	3330	*Miniopterus orianae oceanensis*	Large Bent-winged Bat	V,P		1
Plantae	Flora	Fabaceae (Faboideae)	15654	*Pedleya acanthoclada*	Thorny Pea	V	V	2
Plantae	Flora	Fabaceae (Faboideae)	3030	*Sophora fraseri*	Brush Sophora	V	V	2
Plantae	Flora	Fabaceae (Mimosoideae)	7757	*Archidendron hendersonii*	White Lace Flower	V		1
Plantae	Flora	Lythraceae	11643	*Rotala tripartita*		E1		2
Plantae	Flora	Myrtaceae	4096	*Eucalyptus glaucina*	Slaty Red Gum	V	V	1
Plantae	Flora	Myrtaceae	11894	*Gossia fragrantissima*	Sweet Myrtle	E1	E	2
Plantae	Flora	Myrtaceae	4255	*Melaleuca irbyana*	Weeping Paperbark	E1		4
Plantae	Flora	Myrtaceae	4284	*Rhodomyrtus psidioides*	Native Guava	E4A	CE	1
Plantae	Flora	Proteaceae	5372	*Grevillea hilliana*	White Yiel Yiel	E1		1
Plantae	Flora	Proteaceae	9680	*Macadamia integrifolia*	Macadamia Nut		V	1

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Licensed Report of all Valid Records of Threatened (listed on BC Act 2016) or Commonwealth listed Communities in selected area [North: -28.82 West: 153.00 East: 153.10 South: -28.92] returned 0 records for 16 entities.
Report generated on 1/04/2025 2:01 PM

Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records	Info
Community				*Coastal Cypress Pine Forest in the New South Wales North Coast Bioregion*		Coastal Cypress Pine Forest in the New South Wales North Coast Bioregion	E3		K	
Community				*Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*		Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		K	
Community				*Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community*		Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community		E	K	
Community				*Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland*		Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland		E	K	
Community				*Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*		Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		K	
Community				*Grey Box-Grey Gum Wet Sclerophyll Forest in the NSW North Coast Bioregion*		Grey Box-Grey Gum Wet Sclerophyll Forest in the NSW North Coast Bioregion	E3		K	
Community				*Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*		Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		K	
Community				*Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions*		Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions	E3		K	
Community				*Lowland Rainforest of Subtropical Australia*		Lowland Rainforest of Subtropical Australia		CE	K	

Community	*Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion*	Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion	E3		K	
Community	*Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion*	Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion	E3		K	
Community	*Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions*	Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions		E	K	
Community	*Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*	Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		K	
Community	*Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		K	
Community	*Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions*	Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions	E3		K	
Community	*White Gum Moist Forest in the NSW North Coast Bioregion*	White Gum Moist Forest in the NSW North Coast Bioregion	E3		K	

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 01-Apr-2025

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	6
Listed Threatened Species:	58
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	14
Commonwealth Heritage Places:	1
Listed Marine Species:	22
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	3
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community may occur within area	In feature area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community likely to occur within area	In buffer area only
Dunn's white gum (Eucalyptus dunnii) moist forest in north-east New South Wales and south-east Queensland	Endangered	Community may occur within area	In buffer area only
Grey box-grey gum wet forest of subtropical eastern Australia	Endangered	Community may occur within area	In buffer area only
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community likely to occur within area	In feature area
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area	In feature area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat may occur within area	In buffer area only
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat may occur within area	In buffer area only
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat may occur within area	In feature area
FISH			
Maccullochella ikei Clarence River Cod, Eastern Freshwater Cod [26170]	Endangered	Species or species habitat likely to occur within area	In feature area
FROG			
Mixophyes fleayi Fleay's Frog [25960]	Endangered	Species or species habitat may occur within area	In feature area
Mixophyes iteratus Giant Barred Frog, Southern Barred Frog [1944]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
INSECT			
Argynnis hyperbius inconstans Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
MAMMAL			
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat may occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area
Notamacropus parma Parma Wallaby [89289]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Petauroides volans Greater Glider (southern and central) [254]	Endangered	Species or species habitat known to occur within area	In feature area
Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Potorous tridactylus tridactylus Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area	In feature area
PLANT			
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bosistoa transversa Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Bulbophyllum globuliforme Miniature Moss-orchid, Hoop Pine Orchid [6649]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Clematis fawcettii Stream Clematis [4311]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Coleus nitidus listed as Plectranthus nitidus Nightcap Plectranthus, Silver Plectranthus [91380]	Endangered	Species or species habitat may occur within area	In buffer area only
Corchorus cunninghamii Native Jute [14659]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat may occur within area	In buffer area only
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Endiandra floydii Floyd's Walnut, Crystal Creek Walnut [52955]	Endangered	Species or species habitat may occur within area	In buffer area only
Eucalyptus glaucina Slaty Red Gum [5670]	Vulnerable	Species or species habitat known to occur within area	In feature area
Floydia praealta Ball Nut, Possum Nut, Big Nut, Beefwood [15762]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Gossia fragrantissima Sweet Myrtle, Small-leaved Myrtle [78867]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat may occur within area	In feature area
Macadamia tetraphylla Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut [6581]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Myrsine richmondensis Purple-leaf Muttonwood, Lismore Muttonwood [83888]	Endangered	Species or species habitat may occur within area	In buffer area only
Owenia cepiodora Onionwood, Bog Onion, Onion Cedar [11344]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Pedleya acanthoclada listed as Desmodium acanthocladum Thorny Pea [93275]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Sophora fraseri [8836]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Syzygium hodgkinsoniae Smooth-bark Rose Apple, Red Lilly Pilly [3539]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Vincetoxicum woollsii listed as Tylophora woollsii [40080]	Endangered	Species or species habitat may occur within area	In buffer area only
REPTILE			
Coeranoscincus reticulatus Three-toed Snake-tooth Skink [59628]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat may occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Australian Postal Corporation		
Commonwealth Land - Australian Postal Commission [11263]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [15420]	NSW	In buffer area only
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [11260]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11257]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11259]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [11262]	NSW	In buffer area only
Defence		
Commonwealth Land - Defence Service Homes Corporation [11261]	NSW	In buffer area only
Defence - CASINO GRES DEPOT (Army Training Depot) ; 41 RNSWR CASINO [10079]	NSW	In buffer area only
Defence - CASINO GRES DEPOT (Army Training Depot) ; 41 RNSWR CASINO [10082]	NSW	In buffer area only
Defence - CASINO GRES DEPOT (Army Training Depot) ; 41 RNSWR CASINO [10080]	NSW	In buffer area only
Defence - CASINO GRES DEPOT (Army Training Depot) ; 41 RNSWR CASINO [10081]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Defence - CASINO GRES DEPOT (Army Training Depot) ; 41 RNSWR CASINO [10077]	NSW	In buffer area only
Defence - CASINO GRES DEPOT (Army Training Depot) ; 41 RNSWR CASINO [10076]	NSW	In buffer area only
Defence - CASINO GRES DEPOT (Army Training Depot) ; 41 RNSWR CASINO [10078]	NSW	In buffer area only

Commonwealth Heritage Places [Resource Information]

Name	State	Status	Buffer Status
Historic			
Casino Post Office	NSW	Listed place	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Sterna striata White-fronted Tern [799]		Migration route may occur within area	In buffer area only
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known to occur within area overfly marine area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat may occur within area overfly marine area	In buffer area only

Extra Information

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
North East NSW RFA	New South Wales	In feature area

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
330 kV Transmission Line, 205km in Length	2010/5326	Controlled Action	Completed	In feature area
Casino Ipswich Pipeline	2007/3877	Controlled Action	Completed	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area

Bioregional Assessments

[Resource Information]

SubRegion	BioRegion	Website	Buffer Status
Clarence-Moreton	Clarence-Moreton	BA website	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Appendix F

Threatened Species Potential Occurrence

Potential of Occurrence Assessment

A potential of occurrence assessment was completed to assess the likelihood of occurrence of each threatened species or population identified with the in the subject site. All threatened biodiversity identified in background research were considered. The assessment is based on the habitat profile for the species and other habitat information in the Threatened Species Profile Database (Environment Energy and Science Group). The assessment also takes into consideration the dates and locations of nearby records and information about species populations in the locality.

Threatened Fauna Potential Occurrence Assessment

For this proposed activity, the likelihood of occurrence of threatened and migratory fauna species and populations was determined based on the criteria shown in **Table D.1**.

Table D.1 Potential of Occurrence Criteria for Threatened Species and Populations of Fauna

Potential of Occurrence	Criteria
Known	The species was observed in the subject site either during the current survey or during another survey less than one year prior.
High	A species has a high likelihood of occurrence if: ■ The subject site contains or forms part of a large area of high-quality suitable habitat. ■ Important habitat elements (i.e. for breeding or important life cycle periods such as winter foraging periods) are abundant within the subject site. ■ The species has been recorded recently in a similar habitat in the locality. ■ The subject site is likely to support resident populations or to contain habitat that is visited by the species during regular seasonal movements or migration.
Moderate	A species has a moderate likelihood of occurrence if: ■ The subject site contains or forms part of a small area of high-quality suitable habitat. ■ The subject site contains or forms part of a large area of marginal habitat. ■ Important habitat elements (i.e. for breeding or important life cycle periods such as winter foraging periods) are sparse or absent within the subject site. ■ The subject site is unlikely to support resident populations or to contain habitat that is visited by the species during regular seasonal movements or migration but is likely to be used occasionally during seasonal movements and/ or dispersal.
Low	A species has a low likelihood of occurrence if: ■ Potentially suitable habitat exists but the species has not been recorded recently (previous 10 years) in the locality despite intensive survey (i.e. the species is considered to be locally extinct). ■ The species is considered to be a rare vagrant, likely only to visit the subject site very rarely, e.g. during juvenile dispersal or exceptional climatic conditions (e.g. extreme drought conditions in typical habitat of inland birds).
None	Suitable habitat is absent from the subject site.

Table F.2 Threatened Fauna Potential Occurrence Assessment*

***Migratory/ pelagic marine species identified in the search results are not assessed as no habitat occurs at the site**

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/ or DPIE Threatened Species Profiles)	Potential of Occurrence	Outcome - Assessment of Significance (AoS)?
		BC Act	EPBC Act			
AMPHIBIANS						
Mixophyes fleayi	Fleay's Barred Frog	E	E	Rainforest and wet eucalypt forest of the escarpment and foothills, close to gravely streams. The species occurs along stream habitats from first to third order streams (i.e. small streams close to their origin through to permanent streams with grades of 1 in 50) but is not found in ponds or ephemeral pools.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.
Mixophyes iteratus	Giant Barred Frog	E	E	Deep, damp leaf litter in rainforests, moist eucalypt forest and near dry eucalypt forest along freshwater streams with permanent or semi-permanent water, generally (but not always) at lower elevation.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.
AVIFAUNA						
Anseranas semipalmata	Magpie Goose	V	-	Shallow wetlands (<1 m deep), large swamps and dams with dense growth of rushes or sedge.	Low	Marginal habitat associated with the site. Not considered further.
Anthochaera phrygia	Regent Honeyeater	CE	CE	Dry open forest and woodland with an abundance of nectar-producing eucalypts, particularly box-ironbark woodland, swamp mahogany forests, and riverine sheoak woodlands.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.
Botaurus poiciloptilus	Australasian Bittern	E	E	Permanent freshwater wetlands with tall dense vegetation, particularly bullrushes and spikerushes.	Low	Marginal habitat associated with the site. Not considered further.
Burhinus grallarius	Bush Stone-curlew	E	-	Lightly timbered open forest and woodland, and partly cleared farmland with woodland remnants, preferring areas with dry leaf-litter, fallen timber and sparse ground cover.	Low	Marginal habitat associated with the site. Not considered further.

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/ or DPIE Threatened Species Profiles)	Potential of Occurrence	Outcome - Assessment of Significance (AoS)?
		BC Act	EPBC Act			
Calyptorhynchus lathami lathami	South Eastern Glossy Black-Cockatoo	V	V	Sheoaks in coastal forests and woodlands, timbered watercourses, and moist and dry eucalypt forests of the coast and the Great Divide up to 1,000 m. Hollow nesters. In central NSW, a very high preference for *E. crebra* among other Eucalyptus, living or dead trees, >8 m above ground, in branches >30 cm diam, steeply angled.	Low	Marginal habitat associated with the site. Not considered further.
Carterornis leucotis	White-eared Monarch	V	-	Rainforest, especially drier types (littoral rainforest) as well as wet and dry sclerophyll forests, swamp forest and regrowth forest. Preferring ecotone between rainforest and other open vegetation types or the edges of rainforest (e.g. along roads).	Low	Marginal habitat associated with the site. Not considered further.
Circus assimilis	Spotted Harrier	V	-	Grassy open woodland, inland riparian woodland, grassland and shrub steppe. Most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands.	Low	Marginal habitat associated with the site. Not considered further.
Climacteris picumnus victoriae	Brown Treecreeper	V	V	Inland plains and slopes of the Great Dividing Range, and less commonly on coastal plains and ranges. Inhabits eucalypt forests and woodlands commonly dominated by stringybarks or other rough-barked eucalypts. Usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (Eucalyptus camaldulensis) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses. Fallen timber is an important habitat component.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.
Coracina lineata	Barred Cuckoo-shrike	V	-	Rainforest, eucalypt woodlands, swamp woodlands and timber along watercourses. Frequently move from tree to tree and can be seen in clearings with secondary growth.	Low	Marginal habitat associated with the site. Not considered further.
Cyclopsitta diophthalma coxeni	Coxen's Fig-parrot	CE	CE	Drier rainforests and adjacent wet eucalypt forest, wetter lowland rainforests. Limited to about five populations	Low	Marginal habitat associated with the site. No BioNet records within

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/ or DPIE Threatened Species Profiles)	Potential of Occurrence	Outcome - Assessment of Significance (AoS)?
		BC Act	EPBC Act			
				scattered between Bundaberg in Queensland and the Hastings River in NSW.		the locality. Not considered further.
Dasyornis brachypterus	Eastern Bristlebird	E	E	High elevation open forest, woodland with dense tussock or sedge understorey adjacent to rainforest or wet eucalypt forest. Typically restricted to upland areas above 600 m within the northern NSW/ QLD population.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.
Ephippiorhynchus asiaticus	Black-necked Stork	E	-	Floodplain wetlands (swamps, billabongs, watercourses and dams) of the major coastal rivers. Secondary habitat includes minor floodplains, coastal sandplain wetlands and estuaries. Build large nests high in tall trees close to water. Trees usually provide clear observation of the surroundings and are at low elevation.	Low	Marginal habitat associated with the site. Not considered further.
Erythrotriorchis radiatus	Red Goshawk	CE	E	Open woodland and forest, preferring a mosaic of vegetation types, a large population of birds as a source of food, and permanent water. Typically found in riparian habitats along or near watercourses or wetlands. In NSW, preferred habitats include mixed subtropical rainforest, Melaleuca swamp forest and riparian Eucalyptus forest of coastal rivers. Population in NSW is naturally small (probably only one pair) and lies at extreme of the natural range of the species in Australia.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.
Falco hypoleucos	Grey Falcon	V	V	The Grey Falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. Frequents timbered lowland plains, particularly Acacia shrublands with watercourses, but also hunts in tussock grassland and open woodland, feeding almost entirely on small birds and rarely small mammals. Nests in tall trees such as *E. camaldulensis* and *E. coolabah*, reusing other raptors nests.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/ or DPIE Threatened Species Profiles)	Potential of Occurrence	Outcome - Assessment of Significance (AoS)?
		BC Act	EPBC Act			
Glossopsitta pusilla	Little Lorikeet	V	-	Forages in open Eucalyptus forest and woodland; also feeds on Angophora, Melaleuca and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. Isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees also help sustain viable populations of the species.	Low	Marginal habitat associated with the site. Not considered further.
Grantiella picta	Painted Honeyeater	V	V	Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. Specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus *Amyema*.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.
Haliaeetus leucogaster	White-bellied Sea-eagle	V	-	Coastal habitats and around terrestrial wetlands characterised by the presence of large areas of open water (larger rivers, swamps, lakes, ocean). Habitats may include freshwater swamps, lakes, reservoirs, billabongs, saltmarsh and sewage ponds in addition to bays and inlets, beaches, reefs, lagoons, estuaries and mangroves.	Low	Marginal habitat associated with the site. Not considered further.
Hieraaetus morphnoides	Little Eagle	V	-	Open eucalypt forest, woodland or open woodland. Sheoak or acacia woodlands and riparian woodlands of interior NSW are also used.	Low	Marginal habitat associated with the site. Not considered further.
Irediparra gallinacea	Comb-crested Jacana	V	-	Among vegetation floating on slow-moving rivers and permanent lagoons, swamps, lakes and dams.	Low	Marginal habitat associated with the site. Not considered further.
Ixobrychus flavicollis	Black Bittern	V	-	Both terrestrial and estuarine wetlands, generally in areas of permanent water and dense vegetation including streams, swamps, tidal creeks and mudflats, particularly amongst swamp sheoaks and mangroves. Where permanent water is present, the species may occur in flooded grassland, forest, woodland, rainforest and mangroves.	Low	Marginal habitat associated with the site. Not considered further.

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/ or DPIE Threatened Species Profiles)	Potential of Occurrence	Outcome - Assessment of Significance (AoS)?
		BC Act	EPBC Act			
Lathamus discolor	Swift Parrot	E	CE	On mainland Australia foraging occurs where eucalypts are flowering profusely or where abundant lerp infestations occur. Favoured feed trees include winter flowering species such as Swamp Mahogany *Eucalyptus robusta*, Spotted Gum *Corymbia maculata*, Red Bloodwood *C. gummifera*, Forest Red Gum *E. tereticornis*, Mugga Ironbark *E. sideroxylon*, and White Box *E. albens*. Commonly used lerp infested trees include Inland Grey Box *E. microcarpa*, Grey Box *E. moluccana*, Blackbutt *E. pilularis* and Yellow Box *E. melliodora*.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.
Lophoictinia isura	Square-tailed Kite	V	-	Variety of timbered habitats including dry woodland and open forest, particularly along major rivers, timbered watercourses and belts of trees in urban or semi-urban areas. Home ranges can extend over at least 100 km2.	Low	Marginal habitat associated with the site. Not considered further.
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	V	E	Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.
Oxyura australis	Blue-billed Duck	V	-	Deep water in large permanent wetlands and swamps with dense aquatic vegetation.	Low	Marginal habitat associated with the site. Not considered further.
Pandion cristatus	Eastern Osprey	V	-	Littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. Typically occur in coastal areas but occasionally travel inland along major rivers. Wetland habitats include inshore waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs and large lakes and waterholes.	Low	Marginal habitat associated with the site. Not considered further.

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/ or DPIE Threatened Species Profiles)	Potential of Occurrence	Outcome - Assessment of Significance (AoS)?
		BC Act	EPBC Act			
Pomatostomus temporalis temporalis	Grey-crowned Babbler	V	-	Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains dominated by mature eucalypts, with regenerating trees, tall shrubs, and an intact ground cover of grass and forbs. Woodlands on fertile soils in coastal regions. Territories range from one to fifty hectares (usually around ten hectares) and are defended all year.	Low	Marginal habitat associated with the site. Not considered further.
Rostratula australis	Australian Painted Snipe	E	E	Well-vegetated shallows and margins of wetlands, dams, sewage ponds, wet pastures, marshy areas, irrigation systems, lignum, tea-tree scrub, and open timber.	Low	Marginal habitat associated with the site. Not considered further.
Stagonopleura guttata	Diamond Firetail	V	V	Grassy eucalypt woodlands, open forest, mallee, temperate grassland, and secondary grassland derived from other communities, riparian areas, and sometimes in lightly wooded farmland.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.
Stictonetta naevosa	Freckled Duck	V	-	Permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. In drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds.	Low	Marginal habitat associated with the site. Not considered further.
Turnix maculosus	Red-backed Button-quail	V	-	Grassland, sedgelands near creeks. Swamps and wetlands.	Low	Marginal habitat associated with the site. Not considered further.
Turnix melanogaster	Black-breasted Button-quail	CE	V	Drier rainforests and vine scrubs, often in association with hoop pine, bottletree scrubs and a deep moist leaf litter layer. During drought it may move to adjacent wetter rainforests.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.
Tyto longimembris	Eastern Grass Owl	V	-	Areas of tall grass, including tussocks in swampy areas, grassy plains, swampy heath, cane grass, sedges on	Low	Marginal habitat associated with the site. Not considered further.

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/ or DPIE Threatened Species Profiles)	Potential of Occurrence	Outcome - Assessment of Significance (AoS)?
		BC Act	EPBC Act			
				flood plains. In NSW they are more likely to be resident in the north-east.		
FISH						
Maccullochella ikei	Eastern Freshwater Cod	E (FM Act)	E	Permanent clear rocky streams with instream cover and deep pools. Native to only the Clarence and Richmond Rivers in northern New South Wales.	Low	Not mapped on NSW DPI Fisheries Spatial Data Portal. No BioNet records within the locality.
INSECTA						
Argynnis hyperbius	Australian Fritillary	E	CE	Open swampy coastal habitat where the caterpillar's food plant, Arrowhead Violet (*Viola betonicifolia*) occurs.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.
MAMMALIA						
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	The species requires a combination of sandstone cliff/ escarpment to provide roosting habitat that is adjacent to higher fertility sites, particularly box gum woodlands or river/ rainforest corridors which are used for foraging. Uses a large range of vegetation types including dry and wet sclerophyll forest; Cyprus Pine dominated forest; tall open eucalypt forest with a rainforest sub-canopy; sub-alpine woodland.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.
Dasyurus maculatus	Spotted-tailed Quoll	V	E	Dry and moist eucalypt forests and rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Large rocky outcrops. Hollow-bearing trees, fallen logs, other animal burrows, small caves and rock outcrops as den sites.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/ or DPIE Threatened Species Profiles)	Potential of Occurrence	Outcome - Assessment of Significance (AoS)?
		BC Act	EPBC Act			
Macropus dorsalis	Black-striped Wallaby	E	-	Dry rainforests and moist eucalypt forest with rainforest understorey or dense shrub layer.	Low	Marginal habitat associated with the site. Not considered further.
Macropus parma	Parma Wallaby	V	V	Moist eucalypt forest with thick shrubby understorey, often with nearby grassy areas and rainforest margins.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V	-	Occurs in dry sclerophyll forest and woodland east of the Great Dividing Range. Roosts in tree hollows.	Low	Marginal habitat associated with the site. Not considered further.
Miniopterus australis	Little Bent-winged Bat	V	-	Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. Little Bentwing-bats roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day. Often share roosting sites with the Common Bentwing-bat and, in winter, the two species may form mixed clusters.	Low	Marginal habitat associated with the site. Not considered further.
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	Forest or woodland, caves are primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Form discrete populations centred on a maternity cave that is used annually in spring and summer.	Low	Marginal habitat associated with the site. Not considered further.
Nyctophilus bifax	Eastern Long-eared Bat	V	-	Lowland subtropical rainforest and wet and swamp eucalypt forest, extending to adjacent moist eucalypt forest. Coastal rainforest and patches of coastal scrub are favoured. Roosts in tree hollows, the hanging foliage of palms, in dense clumps of foliage of rainforest trees, under bark and in shallow depressions on trunks and branches, among epiphytes, in the roots of strangler figs,	Low	Marginal habitat associated with the site. Not considered further.

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/ or DPIE Threatened Species Profiles)	Potential of Occurrence	Outcome - Assessment of Significance (AoS)?
		BC Act	EPBC Act			
				among dead fronds of tree ferns and less often in buildings.		
Petauroides volans	Southern Greater Glider	E	E	Ranges and coastal plains of eastern Australia, where it inhabits a variety of eucalypt forests and woodlands. Feeds on Eucalyptus leaves, with some buds and flowers, favoured species vary regionally. Prefers large hollows in large old trees.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.
Petaurus australis australis	Yellow-bellied Glider	V	V	Tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Dens in tree hollows of large trees, often in family groups. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.
Petaurus norfolcensis	Squirrel Glider	V	-	Blackbutt, bloodwood and ironbark eucalypt forest with heath understorey in coastal areas, and box-ironbark woodlands and River Red Gum forest inland. Prefers mixed species stands with a shrub or Acacia midstorey.	Low	Marginal habitat associated with the site. Not considered further.
Petrogale penicillata	Brush-tailed Rock Wallaby	E	V	North-facing cliffs and dry eucalypt forest and woodland, inhabiting rock crevices, caves, overhangs during the day, and foraging in grassy areas nearby at night.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.
Phascogale tapoatafa	Brush-tailed Phascogale	V	-	Prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter with hollow-bearing trees. Also inhabit heath, swamps, rainforest and wet sclerophyll forest. Tree hollows with entrances 2.5 - 4 cm wide.	Low	Marginal habitat associated with the site. Not considered further.
Phascolarctos cinereus	Koala	E	E	Appropriate food trees in forests and woodlands and treed urban areas. Ideally rainfall 700-1500 mm but can be found in more extreme environments. Home ranges	**Moderate**	**Potential foraging habitat occurs at the site (feed trees). BioNet records within**

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/ or DPIE Threatened Species Profiles)	Potential of Occurrence	Outcome - Assessment of Significance (AoS)?
		BC Act	EPBC Act			
				for individuals vary widely from 3-500ha. Utilise more than 400 species of tree, with localised preferences.		**the locality. AoS undertaken.**
Potorous tridactylus tridactylus	Long-nosed Potoroo	V	V	Inhabits coastal heaths and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of habitat, and may consist of grass-trees, sedges, ferns or heath, or of low shrubs of tea-trees or melaleucas. A sandy loam soil is also a common feature.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.
Pseudomys novaehollandiae	New Holland Mouse	-	V	Occurs in open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes. Social animal, living predominantly in burrows shared with other individuals.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	Subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Feed on the nectar and pollen of native trees, in particular Eucalyptus, Melaleuca and Banksia, and fruits of rainforest trees and vines.	**Known**	**A known camp has historically occupied vegetation on site. AoS undertaken.**
Scoteanax rueppellii	Greater Broad-nosed Bat	V	-	Woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Roosts most commonly in hollows but has been known to utilise building and structures (bridges and culverts).	Low	Marginal habitat associated with the site. Not considered further.
Thylogale stigmatica	Red-legged Pademelon	V	-	Rainforest, vine scrub, moist eucalypt forest with dense understorey and ground cover.	Low	Marginal habitat associated with the site. Not considered further.
REPTILIA						
Cacophis harriettae	White-crowned Snake	V	-	Low to mid-elevation dry eucalypt forest and woodland with well developed litter layer.	Low	Marginal habitat associated with the site. Not considered further.

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/ or DPIE Threatened Species Profiles)	Potential of Occurrence	Outcome - Assessment of Significance (AoS)?
		BC Act	EPBC Act			
Coeranoscincus reticulatus	Three-toed Snake-tooth Skink	V	E	Rainforest and occasionally moist eucalypt forest, on loamy or sandy soils.	Low	Marginal habitat associated with the site. No BioNet records within the locality. Not considered further.

V = Vulnerable; E = Endangered; CE = Critically Endangered

Appendix G

Flora and Fauna Inventory

Table E.1 Flora Inventory

Family	Scientific Name	Common Name
Amaryllidaceae	*Crinum pedunculatum*	Swamp Lily
Apiaceae	*Centella asiatica*	Pennywort
Apiaceae	*Cyclospermum leptophyllum**	Slender Celery
Apocynaceae	*Parsonsia straminea*	Monkey Rope
Araliaceae	*Schefflera actinophylla**	Umbrella Tree
Araucariaceae	*Araucaria cunninghamii*	Hoop Pine
Arecaceae	*Syagrus romanzoffiana**	Cocos Palm
Asparagaceae	*Asparagus plumosus**	Climbing Asparagus Fern
Asteraceae	*Ageratum houstonianum**	Blue Billygoat Weed
Asteraceae	*Bidens pilosa**	Cobbler's Pegs
Asteraceae	*Conyza sp.**	A Fleabane
Asteraceae	*Crassocephalum crepidioides**	Thickhead
Asteraceae	*Emilia sonchifolia**	Purple Sow Thistle
Asteraceae	*Taraxacum officinale**	Dandelion
Caryophyllaceae	*Stellaria media**	Common Chickweed
Casuarinaceae	*Casuarina cunninghamiana*	River Oak
Casuarinaceae	*Casuarina glauca*	Swamp Oak
Commelinaceae	*Commelina benghalensis**	Hairy Commelina
Convolvulaceae	*Ipomoea indica**	Blue Morning Glory
Cyperaceae	*Cyperus gracilis*	Slender Flat-sedge
Euphorbiaceae	*Ricinus communis**	Castor Oil Plant
Fabaceae (Mimosoideae)	*Acacia irrorata subsp. irrorata*	Green Wattle
Fabaceae (Mimosoideae)	*Acacia melanoxylon*	Blackwood
Lauraceae	*Cinnamomum camphora**	Camphor Laurel
Lomandraceae	*Lomandra longifolia*	Spiny-headed Mat-rush
Meliaceae	*Toona ciliata*	Red Cedar
Moraceae	*Ficus coronata*	Creek Sandpaper Fig
Moraceae	*Ficus macrophylla*	Moreton Bay Fig
Moraceae	*Ficus obliqua*	Small-leaved Fig
Moraceae	*Ficus rubiginosa*	Port Jackson Fig
Moraceae	*Maclura cochinchinensis*	Cockspur Thorn
Myrtaceae	*Callistemon salignus*	Willow Bottlebrush
Myrtaceae	*Callistemon viminalis*	Weeping Bottlebrush
Myrtaceae	*Corymbia maculata*	Spotted Gum
Myrtaceae	*Eucalyptus tereticornis*	Forest Red Gum
Myrtaceae	*Melaleuca alternifolia*	Teatree
Myrtaceae	*Melaleuca quinquenervia*	Broad-leaved Paperbark
Oleaceae	*Olea paniculata*	Native Olive
Oxalidaceae	*Oxalis corniculata**	Creeping Oxalis
Oxalidaceae	*Oxalis latifolia**	Broadleaf Woodsorrel
Plantaginaceae	*Plantago lanceolata**	Lamb's Tongues
Poaceae	*Chloris gayana**	Rhodes Grass

Family	Scientific Name	Common Name
Poaceae	*Cynodon dactylon*	Common Couch
Poaceae	*Eragrostis tenuifolia**	Elastic Grass
Poaceae	*Paspalum notatum**	Bahia Grass
Poaceae	*Pennisetum purpureum**	Bana Grass
Poaceae	*Phragmites australis*	Common Reed
Poaceae	*Sorghum halepense**	Johnson Grass
Poaceae	*Sporobolus africanus**	Parramatta Grass
Polygonaceae	*Rumex crispus**	Curled Dock
Proteaceae	*Grevillea robusta*	Silky Oak
Rosaceae	*Rubus rosifolius*	Native Raspberry
Sapindaceae	*Cupaniopsis anacardioides*	Tuckeroo
Solanaceae	*Solanum chrysotrichum**	Giant Devil's Fig
Solanaceae	*Solanum mauritianum**	Wild Tobacco Bush
Solanaceae	*Solanum nigrum**	Blackberry Nightshade
Solanaceae	*Solanum seaforthianum**	Climbing Nightshade
Sterculiaceae	*Commersonia bartramia*	Brown Kurrajong
Verbenaceae	*Lantana camara**	Lantana

*Denotes exotic species

Table E.2 Fauna Inventory

Scientific Name	Common Name	Observation Type
Aves		
Ardea ibis	Cattle Egret	O
Anas superciliosa	Pacific Black Duck	O
Chenonetta jubata	Australian Wood Duck	O
Corvus orru	Torresian Crow	O
Cracticus tibicen	Australian Magpie	O
Dacelo novaeguineae	Laughing Kookaburra	O
Gerygone albogularis	White-throated Gerygone	HC
Malurus cyaneus	Superb Fairy-wren	HC
Manorina melanocephala	Noisy Miner	O
Meliphaga lewinii	Lewin's Honeyeater	O
Ocyphaps lophotes	Crested Pigeon	O
Pardalotus striatus	Striated Pardalote	HC
Rhipidura albiscapa	Grey Fantail	O
Rhipidura leucophrys	Willie Wagtail	O
Strepera graculina	Pied Currawong	O
Trichoglossus haematodus	Rainbow Lorikeet	O
Vanellus miles	Masked Lapwing	O
Reptiles		
Lampropholis delicata	Dark-flecked Garden Sunskink	O

O = Observed
HC = Heard Call

Appendix H

Assessment of Significance

BC Act Five-part Tests for Threatened Species

Tests of significance ('five-part tests') under Section 7.3 of the BC Act have been completed for the following threatened species:

- TECs
  - *Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion.*
- Fauna:
  - Grey-headed Flying-fox.
  - Koala.

The site habitat values and extent of local population per species/ species group are detailed below. To minimise repetition, the responses to the five-part tests are structured as follows:

Part (a), (c), (d) and (e) are answered per species or as a collective group of species depending on the nature of impacts.

Part (b) deals specifically with threatened ecological communities, and hence is not relevant to the subject threatened species assessment.

a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

Grey-headed Flying-fox

Distribution and abundance

Grey-headed Flying-foxes (GHFF) have a distribution that typically extends approximately 200 km from the coast of Eastern Australia, from Rockhampton in Queensland to Adelaide in South Australia.

Ecology

Foraging areas include subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. GHFF feed on the nectar and pollen of native trees, in particular Eucalyptus, Melaleuca and Banksia, and fruits of rainforest trees and vines, as well as from cultivated gardens and orchards.

Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Individual camps may have tens of thousands of animals and are used for mating, and for giving birth and rearing young.

Annual mating commences in January and peaks in March which is followed by a gestation period of six months (Churchill, 2008). Conception occurs in April or May; a single young is born in October or November. GHFF give birth to a single pup, generally in October or November.

GHFF may travel up to 50 km from the camp to forage; commuting distances are more often <20 km.

Study area

For the test of significance, the study area refers to:

- The whole area the ecological field inspection was undertaken within (refer to **Illustration 5.1**) and,

- The entirety of the Flying-fox camp area in vicinity of the site (in yellow) (refer to **Figure 10.1**).

Local population

The “local population” of Grey-headed Flying-fox at the site (the study area) pertains to the Casino flying-fox camp, and is defined as:

- All individuals that roost in the permanent or semi-permanent flying-fox camp within the study area.
- Plus those in adjacent areas that regularly use the camp or its surrounding habitat.
- Any individuals that seasonally or periodically use roosting or foraging sites within the study area—whether they stay a few days, weeks, or the same season each year.

Threatening processes for this species include:

- Clearing of woodlands for agriculture.
- Loss of roosting and foraging sites.
- Electrocution on powerlines, entanglement in netting and on barbed-wire.
- Heat stress.
- Conflict with humans.
- Incomplete knowledge of abundance and distribution across the species' range.

Potential Impacts from the Activity

Direct impacts specific to the Casino flying-fox camp (including Grey-headed Flying-fox) from the Activity include:

- Removal of 0.09 ha of native vegetation (comprising 0.07 ha of PCT 4070 and 0.02 ha of PCT 3428) which:
  - Contains species contributing to the nectar and pollen to the diet of GHFF.
  - Forms part of mapped foraging and roosting habitat for GHFF, LRFF and BFF.
- Potential pruning of branches from one Moreton Bay Fig and one Small-leaved Fig which contribute to the fruit diet of GHFF.
- Potential displacement and stress of flying-fox in the vicinity (within 100 m of the Activity) associated with ongoing and temporary noise, vibration, dust and movements during construction.

Indirect impacts specific to the Casino flying-fox camp (including Grey-headed Flying-fox) from the Activity include:

- Displacement and stress of flying-fox during works in vicinity of the camp associated with ongoing and temporary noise, vibration, dust and movements during construction.
- Potential displacement and stress of flying-fox during the operational phase of the Activity associated with pedestrian disturbance and lighting. Following re-generation of the vegetation, flying-fox may inhabit the area again for roosting and breeding purposes.

It is understood that works for the Activity would be scheduled as follows:

- September to October: excavation/piling and concrete works (at the time of preparation of this REF a methodology was being developed with contractors).
- November: Installation of approach ramps using smaller cranes on the eastern side of the river.
- December to February - Council have instructed that no works are permitted on site (possible GHFF and BFF créching season).
- March to May 2026: all manufacturing and assembly of the components will take place off site and are programmed to be installed with cranes.

No flying-fox species were observed roosting in vegetation within the study area. Additional surveys were undertaken 500 m upstream and 500 m downstream from the study area along Richmond River, with no flying-fox species observed. The current camp location is west of Irvine Bridge.

Vegetation (predominantly PCT 3428) within the study area (previously used by the Casino flying-fox camp) was severely impacted by recent flooding, decimating the understorey, mid-storey and parts of the canopy. Isolated mature Forest Red Gum remain, however are generally spaced 20 – 50m apart, hence canopy connectivity is absent. Bush regeneration work is being undertaken to re-establish all strata (ground, midstorey and canopy). The mid-storey comprises native trees and shrubs ranging from 2 to 4 m. In its current state, PCT 3428 and the adjoining vegetation (PCT 4070 and PCT 3002) on site lack the structural elements required to support a nationally important flying-fox camp. Mature Forest Red Gum continue to provide foraging resources, however it is considered unlikely that flying-fox would utilise this vegetation for roosting and breeding purposes given the depleted state of the PCT.

The population of GHFF that utilise the Casino camp are unlikely to be present on site (or proximate to site [within 100 m] during the works period, given the poor condition of the previously utilised vegetation.

The subject vegetation comprises a small area that provides potential foraging and refuge habitat for Grey-headed Flying-fox in a local context. Six Forest Red Gum (which contribute to the nectar and pollen diet of Grey-headed Flying-fox) will be removed, however large mature Forest Red Gum occur extensively in the locality. Given the extensive occurrence of Forest Red Gum and other suitable foraging habitat within the locality, the Activity represents a negligible reduction of foraging resources utilised by Grey-headed Flying-fox.

With regard to operational impacts (lighting, pedestrian disturbance of Grey-headed Flying-fox) mitigation measures such as modified soft lighting and modification of adjoining vegetation have been proposed to negate operational impacts.

It would be highly unlikely that an adverse effect on the life cycle of the Grey-headed Flying-fox would occur such that a viable local population of the species is likely to be placed at risk of extinction given:

- It is considered unlikely that Grey-headed Flying-fox would utilise vegetation on site for roosting and breeding purposes given its current depleted state.
- The population of GHFF that utilise the Casino camp are unlikely to be present on site (or proximate to site [within 100 m] during the works period, given the poor condition of the previously utilised vegetation.
- The Activity represents a negligible reduction of foraging resources utilised by Grey-headed Flying-fox.
- Potential lighting impacts to Grey-headed Flying-fox would be managed through appropriate light selection (minimal light spill).
- Potential ongoing pedestrian disturbance would be minimised by creating a 20 m buffer between the footbridge and any potential roosting habitat by removing any existing trees above 10 m or any trees with the potential to grow 10 m or higher.
- Adherence to the Flying-fox Safeguards and Mitigation Measures in the subject REF.

Koala

The Koala has a fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In NSW, it mainly occurs on the central and north coasts, with populations on the western side of the Great Dividing Range. Habitat consists of eucalypt woodlands and forests, in which the Koala feeds on more than 70 eucalypt species and 30 non-eucalypt species.

Preferred browse species differ across regions. Koalas are inactive for most of the day and do most of their feeding and moving during the night. Although predominantly arboreal, Koalas will descend and traverse open ground to move between trees. Home range size varies with quality of habitat, ranging from less than 2 ha to several hundred hectares in size. Generally solitary, the Koala has complex social hierarchies based on a dominant male with a territory that overlaps that of several females, with sub-ordinate males on the periphery. Females breed at two years of age and produce one young per year.

Threatening processes for this species include:

- Loss, modification and fragmentation of habitat.
- Predation by feral and domestic dogs.
- Intense fires that scorch or kill the tree canopy.
- Road-kills.
- Human-induced climate change, especially drought.

Potential Impacts from the Activity

The Activity would result in the removal of up to 0.09 ha of suitable habitat for the Koala (in the form of PCT 4070 and PCT 3428). The subject vegetation comprises a small area that provides potential foraging and refuge habitat for Koala in a local context. Some Forest Red Gum (a preferred Koala food tree) may be removed, however large mature Forest Red Gum within the site would be retained. The habitat to be removed or impacted is not regarded as core Koala habitat. Given the occurrence of forests and other potential foraging habitat within the locality, the Activity represents a negligible reduction of foraging resources which may be utilised by the Koala.

The Activity may cause minor indirect impacts to Koala from noise, human activity, machine operations during construction. It is not expected that the existing impacts from maintenance works, including noise and human activity would be significantly exacerbated by the provision of the proposed subdivision.

On this basis it would be highly unlikely that an adverse effect on the life cycle of the Koala would occur such that a viable local population of the species is likely to be placed at risk of extinction.

b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

- TEC: The Activity requires the removal of up to 0.02 ha of the TEC *Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion* (in the form of PCT 3428). Safeguards to minimise impacts to surrounding native vegetation would be implemented. Considering the minor nature of the Activity and that the local occurrence of this TEC extends within the site and the locality; it is unlikely that the Activity would result in an adverse effect of the subject TECs such that it is likely to be placed at risk of extinction.

c) in relation to the habitat of a threatened species or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

- *TEC*: The Activity requires vegetation removal to instal the bridge footings within areas of PCT 3428. The majority of disturbance and clearing would comprise of regenerative small trees, shrubs and groundcover species and would be confined to an area of up to 0.02 ha. The extent of disturbance to the TEC *Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion* is negligible relative to its local occurrence.
- *Koala*: The Activity requires vegetation removal to accommodate the bridge alignment and footings. The majority of disturbance and clearing would be to groundcover vegetation with minimal tree and shrub removal required. This would be confined to an area of up to 0.09 ha. The extent of these impacts would be a negligible loss of potential foraging and dispersal habitat for the Koala.
- *GHFF*: The Activity requires vegetation removal to accommodate the bridge alignment and footings. The majority of disturbance and clearing would be to groundcover vegetation with minimal tree and shrub removal required. This would be confined to an area of up to 0.09 ha. The extent of these impacts would be a negligible loss of potential foraging and dispersal habitat GHFF.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,

- *TECs*: Minor vegetation removal would comprise small regenerating trees, shrubs and groundcover species. No large mature trees would be removed. No habitat important to the long-term survival of the subject TECs would be removed as a result of the Activity.
- *Koala* The majority of disturbance and clearing would be to groundcover vegetation with minimal tree and shrub removal as required. The extent of these impacts would be a negligible loss of potential foraging and dispersal habitat for the Koala. No habitat important to the long-term survival of the Koala would be removed, isolated or fragmented as a result of the Activity.
- *GHFF*: A nationally important flying-fox camp has previously been mapped as occurring at the site. The habitat is considered important and critical to the survival of Grey-headed Flying-fox as:
  - It contains important winter and spring flowering vegetation such as *Eucalyptus tereticornis, C. maculata, G. robusta* and *M. quinquenervia.*
  - It contains native species used for foraging and occurs within a mapped nationally important camp.
  - It contains native and or exotic species used for roosting at the site of a nationally important Grey-Headed Flying-Fox camp.

Habitat impacted by the Activity is important to the long-term survival of the GHFF, however is considered a relatively small reduction of foraging resources and roosting resources (up to 0.09 ha) in the context of the locality.

whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

No areas of outstanding biodiversity value have been declared in Richmond Valley LGA.

d) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

A key threatening process (KTP) is a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species or ecological communities. The current list of KTP under the BC Act, and whether the proposal is recognised as a KTP is shown in **Table H.1**.

Table H.1 Key Threatening Processes

Key Threatening Process (as per Schedule 4 of the BC Act)	Is the development or activity proposed of a class of development or activity that is recognised as a threatening process?		
	Likely	Possible	Unlikely
Aggressive exclusion of birds by noisy miners (*Manorina melanocephala*)			✓
Alteration of habitat following subsidence due to longwall mining			✓
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands			✓
Anthropogenic climate change		✓	✓
Bushrock removal			✓
Clearing of native vegetation	✓		✓
Competition and grazing by the feral European Rabbit (*Oryctolagus cuniculus*)			✓
Competition and habitat degradation by feral goats (*Capra hircus*)			✓
Competition from feral honeybees (*Apis mellifera*)			✓
Death or injury to marine species following capture in shark control programs on ocean beaches			✓
Entanglement in or ingestion of anthropogenic debris in marine and estuarine environments			✓
Forest eucalypt dieback associated with over-abundant psyllids and bell miners			✓
Habitat degradation by Feral Horses, *Equus caballus*			✓
Herbivory and environmental degradation caused by feral deer			✓
High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition			✓
Importation of red imported fire ants (*Solenopsis invicta*)			✓
Infection by *Psittacine circoviral* (beak and feather) disease affecting endangered psittacine species and populations			✓
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis			✓
Infection of native plants by *Phytophthora cinnamomi*			✓
Introduction and Establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae			✓
Introduction of the large earth bumblebee (*Bombus terrestris*)			✓
Invasion and establishment of exotic vines and scramblers			✓
Invasion and establishment of Scotch Broom (*Cytisus scoparius*)			✓

Key Threatening Process (as per Schedule 4 of the BC Act)	Is the development or activity proposed of a class of development or activity that is recognised as a threatening process?		
	Likely	Possible	Unlikely
Invasion and establishment of the Cane Toad (*Bufo marinus*)			✓
Invasion, establishment and spread of Lantana (*Lantana camara*)			✓
Invasion of native plant communities by African Olive (*Olea europaea L. subsp. cuspidata*)			✓
Invasion of native plant communities by *Chrysanthemoides monilifera* (bitou bush and boneseed)			✓
Invasion of native plant communities by exotic perennial grasses			✓
Invasion of the Yellow Crazy Ant (*Anoplolepis gracilipes*) into NSW			✓
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants			✓
Loss of hollow-bearing trees			✓
Loss or degradation (or both) of sites used for hill-topping by butterflies			✓
Predation and hybridisation by feral dogs (*Canis lupus familiaris*)			✓
Predation by the European Red Fox (*Vulpes vulpes*)			✓
Predation by the feral cat (*Felis catus*)			✓
Predation by *Gambusia holbrooki* (Plague Minnow or Mosquito Fish)			✓
Predation by the Ship Rat (*Rattus rattus*) on Lord Howe Island			✓
Predation, habitat degradation, competition and disease transmission by feral pigs (*Sus scrofa*)			✓
Removal of dead wood and dead trees			✓

Anthropogenic climate change: There is evidence that modification of the environment by humans may result in future climate change. Human induced activities as a result of energy use, industrial processes, solvent and other product use, agriculture, land use change and forestry, and waste cause greenhouse gas emissions (OEH 2014). The incremental extent to which the Activity may contribute to anthropogenic climate change is unlikely to be significant.

Clearing of native vegetation: Clearing is defined under the BC Act as the destruction of a sufficient proportion of one or more strata (layers) within a stand or stands of native vegetation so as to result in the loss, or long-term modification, of the structure, composition and ecological function of stand or stands (OEH 2014). Considering the relatively small area of native vegetation requiring removal (disturbance to pastureland that features native species) for the Activity and the minor extent to which the Activity contributes to this threatening process. It is unlikely to significantly affect habitat or negatively affect the long-term survival of the subject species in the locality.

Conclusion

The Activity is unlikely to significantly affect habitat or negatively affect the long-term survival of Grey-headed Flying-fox, Koala or *Subtropical Coastal Floodplain Forest of the New South Wales North Coast* TEC in the locality.

EPBC Significance Assessments

An assessment in accordance with the Matters of National Environmental Significance Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999 (DoE, 2013) has been undertaken for EPBC Act listed threatened species known to occur on the site and whose habitat would be directly and indirectly impacted by the proposed action. These significance assessments have been prepared for the following threatened species:

- Vulnerable Species:
  - Grey-headed Flying-fox
- Endangered Species:
  - Koala

The purpose of the assessment is to determine the requirement to submit a referral to the Australian Government Department of Climate Change, Energy, the Environment and Water (the Department) for a decision by the Australian Government Environment Minister (the minister) on whether assessment and approval is required under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Under the EPBC Act an action will require approval from the minister if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance.

Grey-headed Flying Fox

According to the DotE (2013c) 'significant impact criteria' for vulnerable species, an action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **Lead to a long-term decrease in the size of an important population of a species**

An 'important population' is a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

- *key source populations either for breeding or dispersal*
- *populations that are necessary for maintaining genetic diversity, and/ or*
- *populations that are near the limit of the species range.*

The National Flying-fox monitoring viewer (DCCEEW, 2025) shows one nationally important flying-fox camp proximate to the site (refer to **Figure 5.1**). Past surveys recorded Grey-headed Flying-fox, Little Red Flying-fox and Black Flying-fox utilising this camp.

The Casino camp has been categorised as a nationally important flying-fox camp given the Casino flying-fox camp Management Plan (CFCMP) (Abor Ecological, 2015) notes "the Casino camp is listed as a nationally important flying-fox camp, i.e. it has been occupied by more than 2,500 GHFFs permanently or seasonally every year for the last 10 years (DoE 2014)".

Direct impacts specific to the Casino flying-fox camp (including Grey-headed Flying-fox) from the Activity include:

- Removal of 0.09 ha of native vegetation (comprising 0.07 ha of PCT 4070 and 0.02 ha of PCT 3428) which:

- Contains species contributing to the nectar and pollen to the diet of GHFF.
- Forms part of mapped foraging and roosting habitat for GHFF.

- Potential pruning of branches from one Moreton Bay Fig and one Small-leaved Fig which contribute to the fruit diet of GHFF.
- Potential displacement and stress of flying-fox in the vicinity (within 100 m of the Activity) associated with ongoing and temporary noise, vibration, dust and movements during construction.

Indirect impacts specific to the Casino flying-fox camp (including Grey-headed Flying-fox) from the Activity include:

- Displacement and stress of flying-fox during works in vicinity of the camp associated with ongoing and temporary noise, vibration, dust and movements during construction.
- Potential displacement and stress of flying-fox during the operational phase of the Activity associated with pedestrian disturbance and lighting. Following re-generation of the vegetation, flying-fox may inhabit the area again for roosting and breeding purposes.

It is understood that works for the Activity would be scheduled as follows:

- September to October: excavation/piling and concrete works (at the time of preparation of this REF a methodology was being developed with contractors).
- November: Installation of approach ramps using smaller cranes on the eastern side of the river.
- December to February - Council have instructed that no works are permitted on site (possible GHFF and BFF créching season).
- March to May 2026: all manufacturing and assembly of the components will take place off site and are programmed to be installed with cranes.

No flying-fox species were observed roosting in vegetation within the study area. Additional surveys were undertaken 500 m upstream and 500 m downstream from the study area along Richmond River, with no flying-fox species observed. The current camp location is west of Irving Bridge .

Vegetation (predominantly PCT 3428) within the study area (previously used by the Casino flying-fox camp) was severely impacted by recent flooding, decimating the understorey, mid-storey and parts of the canopy. Isolated mature Forest Red Gum remain, however are generally spaced 20 – 50m apart, hence canopy connectivity is absent. Bush regeneration work is being undertaken to re-establish all strata (ground, midstorey and canopy). The mid-storey comprises native trees and shrubs ranging from 2 to 4 m. In its current state, PCT 3428 and the adjoining vegetation (PCT 4070 and PCT 3002) on site lack the structural elements required to support a nationally important flying-fox camp. Mature Forest Red Gum continue to provide foraging resources, however it is considered unlikely that flying-fox would utilise this vegetation for roosting and breeding purposes given the depleted state of the PCT.

The population of GHFF that utilise the Casino camp are unlikely to be present on site (or proximate to site [within 100 m] during the works period, given the poor condition of the previously utilised vegetation.

The subject vegetation comprises a small area that provides potential foraging and refuge habitat for Grey-headed Flying-fox in a local context. Six Forest Red Gum (which contribute to the nectar and pollen diet of Grey-headed Flying-fox) will be removed, however large mature Forest Red Gum occur extensively in the locality. Given the extensive occurrence of Forest Red Gum and other suitable foraging habitat within the locality, the Activity represents a negligible reduction of foraging resources utilised by Grey-headed Flying-fox.

With regard to operational impacts (lighting, pedestrian disturbance of Grey-headed Flying-fox) mitigation measures such as modified soft lighting and modification of adjoining vegetation have been proposed to negate operational impacts.

It would be highly unlikely that the action would lead to a long-term decrease in the size of an important population of Grey-headed Flying-fox given:

- It is considered unlikely that Grey-headed Flying-fox would utilise vegetation on site for roosting and breeding purposes given its current depleted state.
- The population of GHFF that utilise the Casino camp are unlikely to be present on site (or proximate to site [within 100 m] during the works period, given the poor condition of the previously utilised vegetation.
- The Activity represents a negligible reduction of foraging resources utilised by Grey-headed Flying-fox.
- Potential lighting impacts to Grey-headed Flying-fox would be managed through appropriate light selection (minimal light spill).
- Potential ongoing pedestrian disturbance would be minimised by creating a 20m buffer between the footbridge and any potential roosting habitat by removing any existing trees above 10m or any trees with the potential to grow 10m or higher.
- Adherence to the Flying-fox Safeguards and Mitigation Measures in the subject REF.

Reduce the area of occupancy of an important population.

The proposed action would not reduce the area of occupancy of this highly mobile species. The 0.09 ha of potential foraging habitat that would be impacted would constitute a negligible proportion of the available foraging habitat within the locality and would not create any barriers to movement or isolate any areas of habitat for this mobile species.

- **Fragment an existing important population into two or more populations.**

The proposed action would not isolate or fragment the existing important population of this highly mobile species.

The Grey-headed Flying-fox is a highly mobile species that can access isolated patches of foraging habitat within urban areas. The species is known to regularly travel distances of 50 kilometres from roost sites to access seasonal foraging resources (Eby, 1996). At a local scale, the proposed action would fragment a small area of vegetation within the proposed action area which contains known foraging habitat for this species. However, the resulting gap in vegetation cover would be readily traversed by these highly mobile, aerial species. The action would not prevent Grey-headed Flying-fox individuals from travelling between camps and foraging habitat.

On the basis of the above, the proposed action would not result in the fragmentation of the population of the Grey-headed Flying-fox into two or more populations.

- **Adversely affect habitat critical to the survival of a species.**

Critical habitat for the species is defined in National Recovery Plan for Grey-headed Flying-fox (DAWE, 2021) includes a range of important winter and spring vegetation communities. These communities comprise *Eucalyptus tereticornis*, *E. albens*, *E. crebra*, *E. fibrosa*, *E. melliodora*, *E. paniculata*, *E. pilularis*, *E. robusta*, *E. seeana*, *E. sideroxylon*, *E. siderophloia*, *Banksia integrifolia*, *Castanospermum australe*, *Corymbia citriodora*, *C. eximia*, *C. maculata*, *Grevillea robusta*, *Melaleuca quinquenervia* or *Syncarpia glomulifera*.

The habitat is considered important and critical to the survival of Grey-headed Flying-fox as:

- It contains important winter and spring flowering vegetation such as *Eucalyptus tereticornis, C. maculata, G. robusta* and *M. quinquenervia.*
- It contains native species used for foraging which were previously part of the mapped extent of the subject nationally important camp.
- It contains native and or exotic species that have historically been used for roosting at the site of a nationally important Grey-Headed Flying-Fox camp.

Habitat impacted by the Activity is important to the long-term survival of the GHFF, however is considered a relatively small reduction of foraging resources and roosting resources (up to 0.09 ha) in the context of the locality. Retained riparian habitat proximate to site and within the locality will continue to provide resources for GHFF within the locality.

On this basis the proposed action would affect habitat critical to the survival of the species to a minor extent.

- **Disrupt the breeding cycle of an important population.**

It is considered unlikely that Grey-headed Flying-fox would utilise vegetation on site for roosting and breeding purposes given the depleted state of the PCT.

The population of GHFF that utilise the Casino camp are unlikely to be present on site (or proximate to site [within 100 m] during the works period, given the poor condition of the previously utilised vegetation.

Regarding operational impacts (lighting, pedestrian disturbance of Grey-headed Flying-fox, following regeneration of vegetation) mitigation measures such as modified soft lighting and modification of adjoining vegetation have been proposed to negate operational impacts.

With consideration of the above it is considered unlikely that the proposed action would disrupt the breeding cycle of the subject important population.

- **Modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.**

The proposed action represents a minor reduction (0.09 ha comprising 6 Forest Red Gum) of foraging resources utilised by Grey-headed Flying-fox. This represents a minor proportion of the home range of this highly mobile species. Given the highly mobile nature of this species, the habitat would not become isolated.

There are extensive areas of similar vegetation in adjoining areas and in the broader locality. It is therefore considered unlikely that the removal of 0.09 ha of habitat would result in the decline of the species.

- **Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.**

Flora

Slight increases in the incidence of weeds at the subject site may occur because of vegetation clearing and construction. Weed control measures would be implemented to mitigate this risk. The introduction and/or spread of weeds is not likely to decrease the value of potential foraging habitat for this species as there is already the presence of weeds within the area and the introduction of new infestations is not likely to impact on the foraging resources available to Grey-headed Flying Fox. The proposed action be unlikely to increase introduce new invasive species becoming established in the area.

Fauna

The proposed action is likely unlikely to result in changes that would increase the incidence of invasive predators (cats).

- **Introduce disease that may cause the species to decline.**

Australian flying-foxes, including the GHFF, are natural reservoirs for at least three diseases - Australian Bat Lyssavirus (ABL), Hendra virus and Menangle virus. While injured and orphaned Grey-headed Flying-foxes have a higher chance of testing positive for ABL, it is unlikely the proposed action would result in ecological stresses to any of the nearby flying-fox populations such that the instances of lyssavirus would significantly increase.

- **Interfere substantially with the recovery of the species.**

As discussed above, the site forms part of a previously known nationally important flying-fox camp and foraging habitat within the study area is consistent with the definition of habitat critical to the survival of the Grey-headed Flying-fox as it contains winter flowering feed trees. The proposed action is therefore inconsistent with the following recovery objectives of the National Recovery Plan for Grey-headed Flying-fox (DAWE, 2021):

- Objective 1 - Identify, protect, and increase native foraging habitat that is critical to the survival of the Grey-headed Flying-fox.
- Objective 2 - Identify, protect and increase roosting habitat of Grey-headed Flying-fox camps.

Conclusion

On consideration of the above criteria, the proposed action is unlikely to have a significant effect on the Grey-headed Flying-fox given:

- It is considered unlikely that Grey-headed Flying-fox would utilise vegetation on site for roosting and breeding purposes given its current depleted state.
- The population of GHFF that utilise the Casino camp are unlikely to be present on site (or proximate to site [within 100 m] during the works period, given the poor condition of the previously utilised vegetation.
- The Activity represents a negligible reduction of foraging resources utilised by Grey-headed Flying-fox.
- Potential lighting impacts to Grey-headed Flying-fox would be managed through appropriate light selection (minimal light spill).
- Potential ongoing pedestrian disturbance would be minimised by creating a 20m buffer between the footbridge and any potential roosting habitat by removing any existing trees above 10m or any trees with the potential to grow 10m or higher.
- Adherence to the Flying-fox Safeguards and Mitigation Measures in the subject REF.

Koala

The Koala is listed as Endangered under the EPBC Act. The following assessment has been undertaken following the *Matters of National Environmental Significance, Significant Impact Guidelines 1.1*. Under the Act, populations are:

- a geographically distinct regional population, or collection of local populations, or
- a population, or collection of local populations, that occurs within a particular bioregion.

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will result in one or more of the following:

- **Lead to a long-term decrease in the size of a population.**

Koala

The National Recovery Plan for the Koala (DAWE 2022) defines a population as *'…a set of individuals that live in the same habitat patch and interact with one another, commonly forming a breeding unit within which the exchange of genetic material is more or less unrestricted…*'.

For the purpose of this assessment, the Koala population has been defined as the Richmond Valley Koala population meaning all Koalas within the Richmond Valley LGA.

The EPBC Act PMST report identified the Koala as 'known to occur' in the locality (within a 10km buffer of the site). A search of the BioNet Wildlife Atlas returned a total of 2,498 records of Koala within the Richmond Valley LGA and 47 records of Koala within a 10 km x 10 km grid centred on the site.

The Activity would result in a minor reduction of up to 0.09 ha of native vegetation ha (in the form of PCT 4070 and PCT 3428). Within this area to be impacted, up to six Forest Red Gum (preferred Koala food tree) may be removed. No core Koala habitat will be removed as part of the Activity. The Activity may cause minor indirect impacts to Koala from noise, human activity, machine operations during construction. It is not expected that the existing impacts from residential development, including noise and human activity would be significantly exacerbated by the provision of the proposed subdivision.

On this basis, the Activity would not lead to a long-term decrease in the size of the local Koala population.

- **Reduce the area of occupancy of the species.**

Koala

The Activity would result in a minor reduction of up to 0.09 ha of native vegetation that would provide potential foraging and refuge habitat for the Koala. Areas outside of the site would be retained.

On this basis the Activity would not reduce the area of occupancy of the species.

- **Fragment an existing population into two or more populations.**

Koala

The scope of the Activity would be limited to the within the bridge footprint and no further habitat fragmentation on a landscape scale would occur as a result of the Activity.

On this basis, the Activity would not result in the fragmentation of an existing population into two or more populations.

- **Adversely affect habitat critical to the survival of a species.**

Koala

The Activity would result in a minor reduction of up to 0.09 ha of native vegetation that would provide Potential foraging and refuge habitat for the Koala.

On the basis the Activity will not adversely affect habitat critical to the survival of the species.

- **Disrupt the breeding cycle of a population.**

Koala

The Activity may cause minor indirect impacts to Koala from noise, human activity, machine operations during construction. It is not expected that the existing impacts from residential development, including noise and human activity would be significantly exacerbated by the provision of the proposed subdivision.

On this basis, it is unlikely the Activity would significantly disrupt the breeding cycle of a population of the Koala.

- **Modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.**

Koala

The scope of works for the Activity would not modify, destroy, or isolate or decrease the availability or quality of habitat to the extent that the Koala is likely to decline.

- **Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the critically endangered or endangered species' habitat.**

Koala

No, the Activity would not result in invasive species that are harmful to the species becoming established in the species' habitat.

- **Introduce disease that may cause the species to decline.**

Koala

No, the Activity would not result in the introduction of a diseases (such as Chlamydia) that are harmful the species to cause it to decline.

- **Interfere substantially with the recovery of the species.**

Koala

No, due to the scope of the works and the level of disturbance, the Activity would not interfere substantially with the recovery of the species.

Conclusion

Overall, due to the relatively low extent and magnitude of impacts associated with the Activity and with mitigations put in place where required, it is unlikely that the Activity would result in a significant impact to the Koala.

Assessment of Significance References

Department of Agriculture, Water and the Environment (DAWE) (2021). *National Recovery Plan for the Grey-headed Flying-fox Pteropus poliocephalus*. Commonwealth of Australia.

Department of Agriculture, Water and the Environment (DAWE) (2022). *National Recovery Plan for the Koala Phascolarctos cinereus (combined populations of Queensland, New South Wales and the Australian Capital Territory)*. Commonwealth of Australia.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2025). *National Flying-fox monitoring viewer. Commonwealth of Australia*. https://www.environment.gov.au/webgis-framework/apps/ffc-wide/ffc-wide.jsf [Accessed May 2025].

Appendix I

Contamination Database Search

Cattle dip site locator

This search retrieved 29 dip sites.
For more information about each dip site, click on the name below.

Dip name	Road	Town/Loca
ALLISTERS (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjk4OCZhbGw9MQ%3D%3D)	MYALL CREEK RD	CASINO
BRUTON LAGOON (QLD) (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjE3NzcmYWxsPTE%3D)	BUNDOCK ROAD	CASINO
BULLYS (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjg3OCZhbGw9MQ%3D%3D)	BRUTON STREET	CASINO
CAD (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjg3NCZhbGw9MQ%3D%3D)	REYNOLDS ROAD	CASINO
CARLILLS (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjg5NyZhbGw9MQ%3D%3D)	SHANNON BROOKE ROAD	CASINO
CASINO COMMON (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjg2NiZhbGw9MQ%3D%3D)	SPRINGGROVE ROAD	CASINO
CASINO MUNICIPAL (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjEzMjAmYWxsPTE%3D)	QUEENSLAND ROAD	CASINO
CASINO SALEYARDS (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjExMDMmYWxsPTE%3D)	NAMOONA DRIVE	CASINO
COOKES RESERVE (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjk3OSZhbGw9MQ%3D%3D)	OLD DYRABBA ROAD	CASINO
CROKES (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjg5OSZhbGw9MQ%3D%3D)	BENNS ROAD	CASINO
CROWTHERS (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjg4MCZhbGw9MQ%3D%3D)	SEXTONVILLE ROAD	CASINO
GREENRIDGE (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjEwMjgmYWxsPTE%3D)	TOMKI BIGHT ROAD	CASINO
IBIS (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjk3MiZhbGw9MQ%3D%3D)	OLD DYROOBO CREEK RD	CASINO
IMESONS (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjEwMzMmYWxsPTE%3D)	IMESONS ROAD	CASINO
JUNIOR (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjk0OCZhbGw9MQ%3D%3D)	555 BACKMEDE ROAD	CASINO
LAWRENCE ROAD (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjEwNDEmYWxsPTE%3D)	SUMMERLAND WAY	CASINO
MARSDENS (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjk4MCZhbGw9MQ%3D%3D)	OLD DYROABA ROAD	CASINO
MURRAYS (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjk4NCZhbGw9MQ%3D%3D)	OLD DYRAABA ROAD	CASINO

REYNOLDS ROAD (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjg2OCZhbGw9MQ%3D%3D)	REYNOLDS ROAD	CASINO
ROLANDS (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjkwMCZhbGw9MQ%3D%3D)	BENNS ROAD	CASINO
ROSENEATH (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjEwNTQmYWxsPTE%3D)	CORAKI ROAD	CASINO
RUNNYMEDE (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjk0OSZhbGw9MQ%3D%3D)	JUNIOR ROAD	CASINO
SANCTUARY (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjk3NyZhbGw9MQ%3D%3D)	DYRAABA STATION ROAD	CASINO
SOUTH CASINO (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjg3MiZhbGw9MQ%3D%3D)	WEST STREET	CASINO
TAILING PADDOCK (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjk3NiZhbGw9MQ%3D%3D)	DYRAABA STATION	CASINO
THE STRIP PADDOCK (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjk3OCZhbGw9MQ%3D%3D)	DRYOABA STATION	CASINO
VIKING (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjk2OCZhbGw9MQ%3D%3D)	TCK SEXTONVILLE ROAD	CASINO
WINIFRED (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjEwMDgmYWxsPTE%3D)	SUMMERLAND WAY	CASINO
WOODLANDS (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator?sq_content_src=%2BdXJsPWh0dHBzJTNBJTJGJTJGYnRjLmRwaS5uc3cuZ292LmF1JTJGRGlwJTJGRGV0YWlscyUyRjg2NCZhbGw9MQ%3D%3D)	KYOGLE ROAD	CASINO

Find dip sites

Dip name

Road

Town/Locality: casino

Council: —select all—

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The information contained in this web page is based on knowledge and understanding at the time of writing. However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of Industry& Investment NSW or the user's independent adviser.

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Your search for:Suburb: CASINO

Matched 4 notices relating to 1 site.

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Suburb	Address	Site Name	Notices related to this site
CASINO	86 Johnston STREET	Casino Roadhouse	4 former

Page 1 of 1

14 May 2025

Appendix J

Aboriginal Heritage (Due Diligence) Assessment



CASINO SUSPENSION FOOTBRIDGE
QUEEN ELIZABETH PARK, CASINO

ABORIGINAL HERITAGE (DUE DILIGENCE) ASSESSMENT

August 2025

RICHMOND VALLEY COUNCIL

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ABBREVIATIONS

AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
Code of Practice	*Due diligence code of practice for the protection of Aboriginal objects in NSW (DEECW 2010)*
DCP	Development Control Plans
DECCW	Department of Environment, Climate Change and Water (now Heritage NSW)
EPA	Environmental Planning and Assessment
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
NPW	National Parks and Wildlife
PAD	Potential Archaeological Deposit
Project	Construction of a suspension footbridge across the Richmond River between Queen Elizabeth Park and the corner of Hickey and Barker Streets, Casino.
Proponent	Richmond Valley Council
OEH	Office of Environment and Heritage (now Heritage NSW)
Subject Site	Part of the road reserve of Barker and Hickey Streets, the Richmond River and part of Queen Elizabeth Park (Lot 74 DP755627).
REF	Review of Environmental Factors

1. INTRODUCTION

1.1 Project Background

Heritage Management & Planning Pty Ltd has been commissioned by Richmond Valley Council to undertake a Aboriginal cultural heritage (Due Diligence) assessment to support the proposed construction of a suspension footbridge across the Richmond River between Queen Elizabeth Park and the corner of Hickey and Barker Streets, Casino NSW (the Proposal). The Proposal includes part of the road reserve of Barker and Hickey Streets, the Richmond River and part of Queen Elizabeth Park (Lot 74 DP755627).

The Project is being assessed by Richmond Valley Council under Part 5 of the *Environmental Planning and Assessment Act* (1979) (NSW) (EPA Act). A Due Diligence assessment meets the investigation and reporting requirements of the *NSW National Parks and Wildlife Act* (NSW) (1974) (NPW Act) for activities which are approved under Part 5 of the EPA Act and establishes a defense against prosecution under Section 87 (2) of the NPW Act in the event of an allegation of harm to Aboriginal objects.

1.2 Project Brief & Methodology

The brief for this project was to undertake an Aboriginal cultural heritage assessment in accordance with the *Due diligence code of practice for the protection of Aboriginal objects in NSW* (DECCW 2010A) ('Code of Practice'). The methods employed in this assessment include:

- a summary of the Proposal to understand the nature of potential ground disturbance
- a desktop assessment including:
    i. a search of the Aboriginal Heritage Information Management System (AHIMS)
    ii. a desktop review of environmental information relevant to consider the likelihood the works are in a landform with an elevated potential to comprise Aboriginal objects, and
    iii. a review of historical land use and disturbance as it may affect the distribution of Aboriginal sites
- a site inspection, where required, to confirm the findings of the desktop assessment to inform the requirement for additional archaeological investigation and consultation with the Aboriginal community, and
- a report documenting the outcomes of the Due Diligence assessment, including:
    i. statements on the likelihood that the Proposal will impact on Aboriginal objects to determine if the landslip remediation works are permissible under the Due Diligence approval pathway (being Section 87(2) of the *National Parks and Wildlife Act* (1974) (NSW) (NPW Act))
    ii. statements on the requirement for additional archaeological excavation to inform the requirements of an application under Section 90 of the NPW Act, being and Aboriginal Heritage Impact Permit (AHIP), prior to commencement of works, and
    iii. management recommendations to mitigate impacts to Aboriginal heritage values to avoid impacts to Aboriginal cultural heritage, including an unexpected find procedure.

1.3 Report Authorship

The study was undertaken by Tim Hill (BA. Hons. Archaeology and Palaeoanthropology, University of New England (1998)).

1.4 Description of the Subject Site

The subject site includes the river bank/ road reserve in the vicinity of the corner of Barker and Hickey Streets west of the Richmond River. The suspension footbridge will span the bed of the Richmond River- the eastern pilons and footpath will be located within Queen Elizabeth Park (Lot 74 DP755627) to the east of the Casino greyhound racing club.

1.5 Legislative and Planning Context

1.5.1 *National Parks and Wildlife Act* (1974) (NSW) and *Regulations* (2019) (NSW)

The *National Parks and Wildlife Act 1974* (NSW) is the primary legislation concerning the identification and protection of Aboriginal cultural heritage in New South Wales. Section 86 of the NPW Act provides offense provisions for Aboriginal objects, Aboriginal skeletal remains and Aboriginal places in NSW.

Three key definitions in the NPW Act which are relevant to this assessment include:

- ***Aboriginal object*** means any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.
- ***Aboriginal*** remains means the body or the remains of the body of a deceased Aboriginal person, but does not include—

  (a) a body or the remains of a body buried in a cemetery in which non-Aboriginal persons are also buried, or

  (b) a body or the remains of a body dealt with or to be dealt with in accordance with a law of the State relating to medical treatment or the examination, for forensic or other purposes, of the bodies of deceased persons.
- ***harm*** an object or place includes any act or omission that—

  (a) destroys, defaces or damages the object or place, or

  (b) in relation to an object—moves the object from the land on which it had been situated, or

  (c) is specified by the regulations, or

  (d) causes or permits the object or place to be harmed in a manner referred to in paragraph (a), (b) or (c),

  but does not include any act or omission that—

  (e) desecrates the object or place, or

  (f) is trivial or negligible, or

  (g) is excluded from this definition by the regulations.

Section 87 of the NPW Act outlines defences against prosecution relating to Aboriginal objects, skeletal remains and Aboriginal places. These include:

- acting in accordance with an Aboriginal Heritage Impact Permit (AHIP)
- demonstrating that the "defendant exercised due diligence to determine whether the act or omission constituting the alleged offence would harm an Aboriginal object and reasonably determined that no Aboriginal object would be harmed"
- the activity was prescribed as a "low Impact' activity or an "omission" under the NPW Regulations (2019), and
- was undertaken in compliance with a Code of Practice adopted or prescribed by the NPW Regulations (2019).

The *National Parks and Wildlife Regulation* (2019) (NSW) provides additional guidance for activities which are considered 'Low Impact Activities'. The effect of the provisions is that works which are consistent with 'Low Impact Activities' do not require further assessment to determine whether they are permissible under the Due Diligence approval pathway or by a AHIP. Section 58 of the NPW Regulations (2019) include the following activities:

58 Defence of low impact acts or omissions to the offence of harming Aboriginal objects

(1) It is a defence to a prosecution for an offence under section 86(2) of the Act, if the defendant establishes that the act or omission concerned—

(a) was maintenance work of the following kind on land that has been disturbed—

(i) maintenance of existing roads, fire and other trails and tracks,

(ii) maintenance of existing utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines),

(e) was an activity on land that has been disturbed that comprises exempt development or was the subject of a complying development certificate issued under the Environmental Planning and Assessment Act 1979, or

The Proposal does not meet the definition of a 'Low Impact Activity' as defined by the NPW Regulation (2019), as such a Due Diligence assessment is required.

1.5.2 *Environmental Planning and Assessment Act* (1979) (NSW)

The EPA Act provides a framework to environmental assessment and approvals in NSW. The EPA Act includes three parts relevant to the Aboriginal cultural heritage assessments:

Part 3- Planning instruments which include Local Environmental Plans (LEPs), Development Control Plans (DCPs) and other strategic planning controls.

Part 4- Development assessment and consent controls including approvals by local Councils and Regional Planning Panels.

Part 5- Self assessment and approvals by a government agencies, or determining authorities, for infrastructure and environmental proposals, and for the approval of State Significant Infrastructure by the Planning Minister.

The Project is being assessed via by Richmond Valley Council under Part 5 of the EPA Act by a Review of Environmental Factors (REF).

1.5.3 Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (DEECW 2010)

The assessment has been undertaken in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DEECW 2010A). The purpose of this Code of Practice is to establish a defence against prosecution in the event that Aboriginal objects may be inadvertently harmed during an activity (DEECW 2010A: 1 & 2). The Code of Practice:

> …sets out the reasonable and practicable steps which individuals and organisations need to take in order to:
>
> 1. identify whether or not Aboriginal objects are, or are likely to be, present in an area
> 2. determine whether or not their activities are likely to harm Aboriginal objects (if present)
> 3. determine whether an AHIP application is required (DEECW 2010A:2).

The Code of Practice makes the following statement on the requirement for an AHIP (DECCW 2010A:2):

> If Aboriginal objects are present or likely to be present and an activity will harm those objects, then an AHIP application will be required.

However, the practical application of the Code of Practice is that it is a process of establishing whether additional assessment is required. In the event that the Due Diligence assessment concludes that harm to Aboriginal objects is likely, additional archaeological investigation, including Aboriginal community consultation, in accordance with the *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW* (DEECW 2010 B) (CoPAI) is required. A key limitation of the Code of Practice and the CoPAI is that they do not clearly define the thresholds of "likely" or "highly likely". To assist the assessment, the Merriam Webster dictionary definition (www.merriam-webster.com/dictionary) of "likely" is:

> "Having a high probability of occurring or being true: very probable" (www.merriam-webster.com/dictionary).

As such, where the Due Diligence assessment concludes that there might be a residual possibility that the activity might impact on Aboriginal objects and measures are put in place to avoid or reduce the likelihood of Harm then documentation of the assessment process would still provide a defense against prosecution for the activity under the Due Diligence approval pathway (NPW Act section 87(2)).

The Code of Practice makes an additional statement which removes the requirement to undertake additional investigation where there has been significant ground disturbance that would reasonably reduce the potential that Aboriginal objects would be subject to additional harm. The Code of Practice includes the following definition of 'disturbed land' (DECCW 2010A: 12, 18).

> "Land is disturbed if it has been the subject of a human activity that has changed the land's surface, being changes that remain clear and observable".
>
> "Examples include ploughing, construction of rural infrastructure (such as dams and fences), construction of roads, trails and tracks (including fire trails and tracks and walking tracks), clearing vegetation, construction of buildings and the erection of other structures, construction or installation

of utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines, stormwater drainage and other similar infrastructure) and construction of earthworks".

The application of the previous disturbance provisions of the NPW Act/ Code of Practice must be considered on a case-by-case basis. However, the general application of the previous disturbance defence outlined in the Code of Practice is that the ground disturbance must have removed the portion of the soil profile likely to contain Aboriginal objects from the local area or be of a nature whereby the ground disturbance would significantly reduce the likelihood of finding Aboriginal objects as part of an archaeological investigation. This is primarily because the procedures set out by the Code of Practice assume that the likelihood an activity will impact Aboriginal objects can be determined using standard archaeological investigation methods. Archaeological investigation involves a sample survey to determine and/or infer the likelihood that Aboriginal objects are present - the confidence in results from archaeological investigations is significantly reduced where the land has been subject to ground disturbance.

1.5.4 State Environmental Planning Policy (Transport and Infrastructure) (2021)

The purpose of the *State Environmental Planning Policy (Transport and Infrastructure) (2021) (SEPP (Transport and Infrastructure)) Policy* (2021) is to enable the effective delivery of infrastructure in NSW through identification of particular types of infrastructure that either require consent, can be undertaken without consent or are exempt development. In accordance with Division 17, Subdivision 1, Clause 2.109 of the SEPP (Transport and Infrastructure), states:

"Development for the purpose of a road or road infrastructure facilities may be carried out by or on behalf of a public authority without consent on any land".

As this proposal includes extraction road base material for local roads, it can be assessed under the Part 5 of the EPA Act. Section 3.2.1 of the SEPP (Transport and Infrastructure) provides 'General conditions of complying development certificates' and includes the following general condition relating to Aboriginal objects:

(10) If any Aboriginal object (including evidence of habitation or remains) is discovered during the course of the work—

(a) all excavation or disturbance of the area must stop immediately in that area, and

(b) the Secretary of the Department of Planning and Environment must be advised of the discovery in accordance with section 89A of the National Parks and Wildlife Act 1974.

The suspension footbridge is permissible without consent under the *(SEPP (Transport and Infrastructure)) Policy* (2021).

2. DUE DILIGENCE ASSESSMENT

2.1 Description of the Proposal (Code of Practice Step 1)

The Proposal includes a single span suspension footbridge across the Richmond River between Barker/ Hickey Street and Queen Elizabeth Park, including footpaths to access the bridge (**Figure 1**- **Figure 3**). The suspension footbridge includes bridge pilons above the Richmond River on the steep bank and abutments above the bank which will be connected via footpaths.

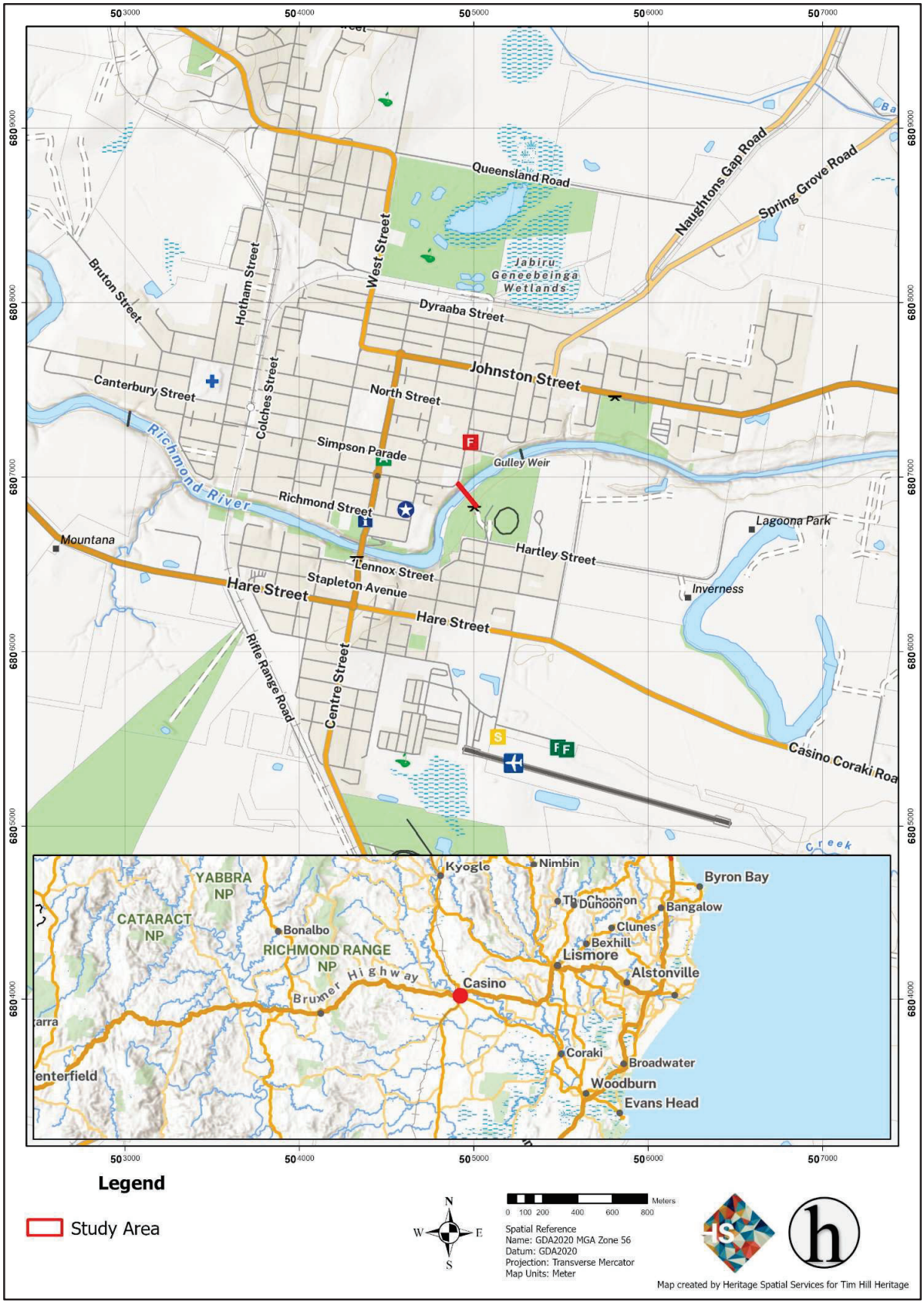


Figure 1: Casino Suspension Foot bridge- Location of the Subject Site



Figure 2: Casino Suspension Footbridge- Elevation (Queen Elizabeth Park looking to Barker- Hickey Streets)

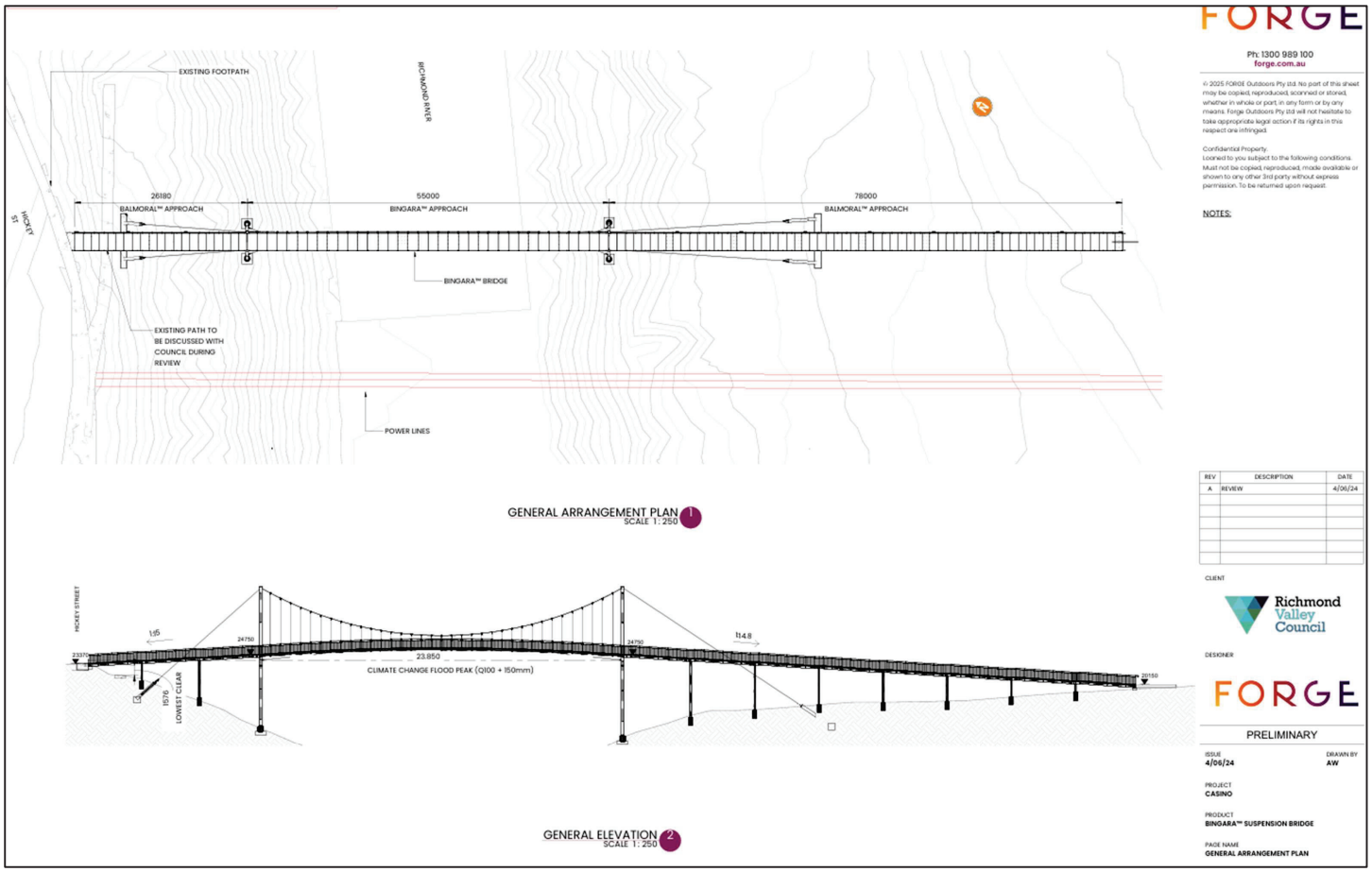
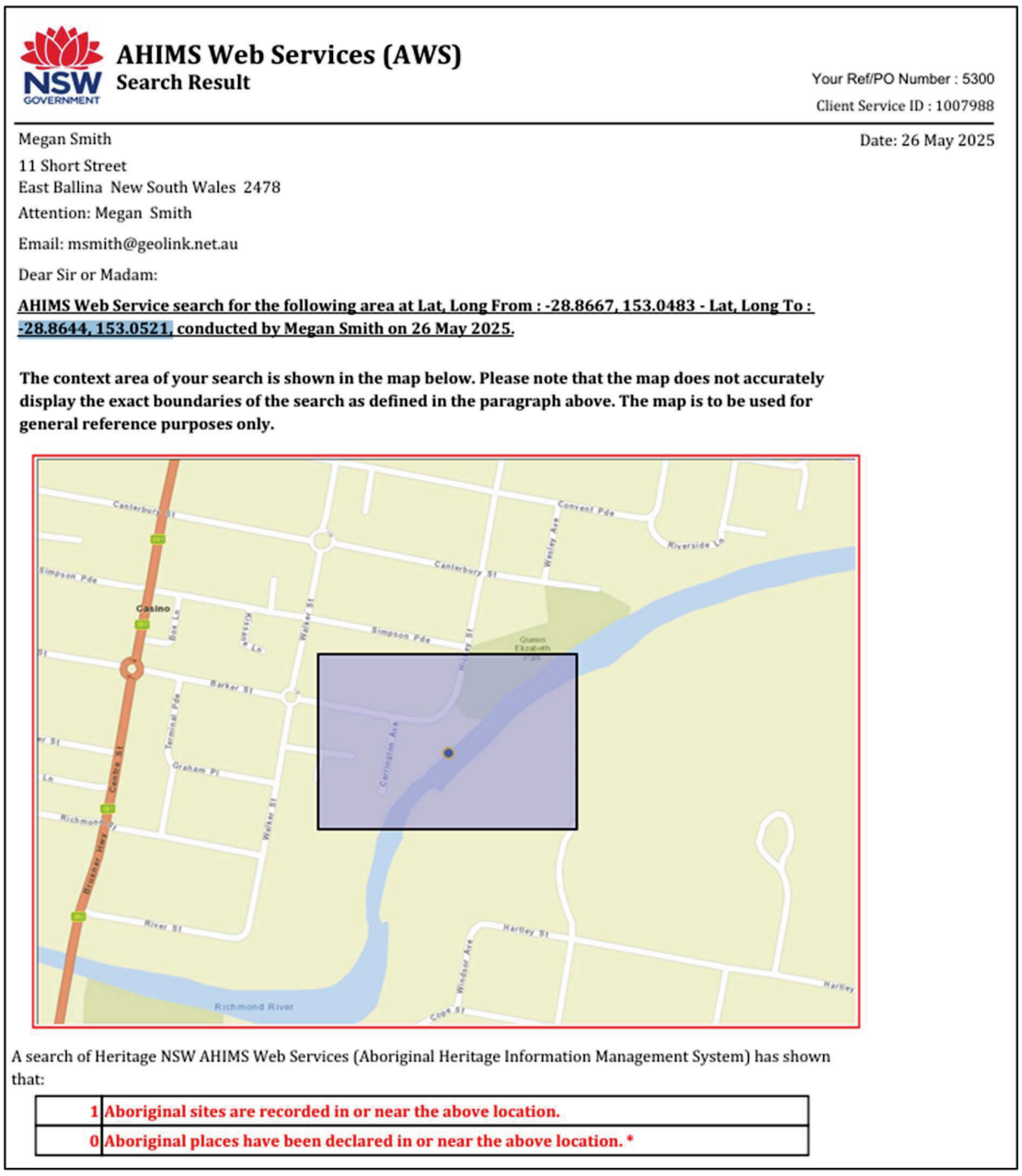


Figure 3: Casino Suspension Footbridge- General arrangement plan

2.2 AHIMS Search (Code of Practice Step 2A)

The Aboriginal Heritage Information Management System (AHIMS) provides a list of previously recorded Aboriginal sites in NSW. A search of the AHIMS database is a condition of compliance with the Due Diligence Code of Practice and provides information on the types of sites which will likely be located within and around the Subject Site. A search of AHIMS was undertaken on 26 May 2025 (#1007988) for the area "Lat, Long To: -28.8667, 153.0483 Lat, Long To: -28.8644, 153.0521," which returned 1 previously recorded Aboriginal site, being the 'Richmond River Grinding Grooves 01 (#04-4-0354) (**Figure 4**). Th site record form locates the grinding grooves on the lower bank of the northern side of the river, south of Barker Street and Hickey Street (see **Figure 5**). Based on the plan provided in the site record form the grooves are located upstream (south) of the powerline crossing- the site is therefore not within the Subject Site.



AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : 5300
Client Service ID : 1007988

Megan Smith
11 Short Street
East Ballina New South Wales 2478
Attention: Megan Smith
Email: msmith@geolink.net.au

Date: 26 May 2025

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -28.8667, 153.0483 - Lat, Long To : -28.8644, 153.0521, conducted by Megan Smith on 26 May 2025.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.

A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

1	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

Figure 4: Casino Suspension Footbridge- AHIMS search results

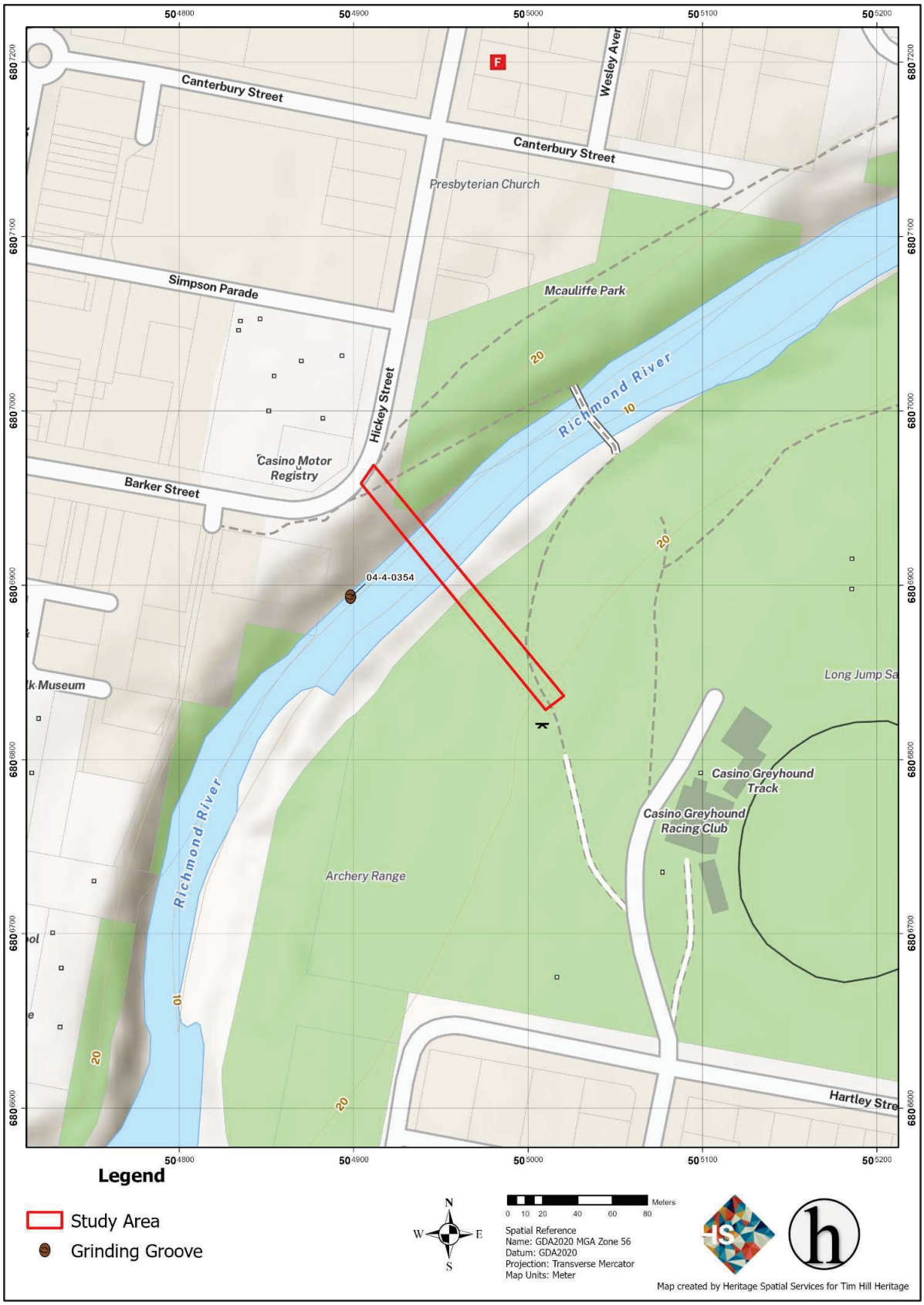


Figure 5: Casino Suspension Footbridge- Richmond River Grinding Grooves 01 site location

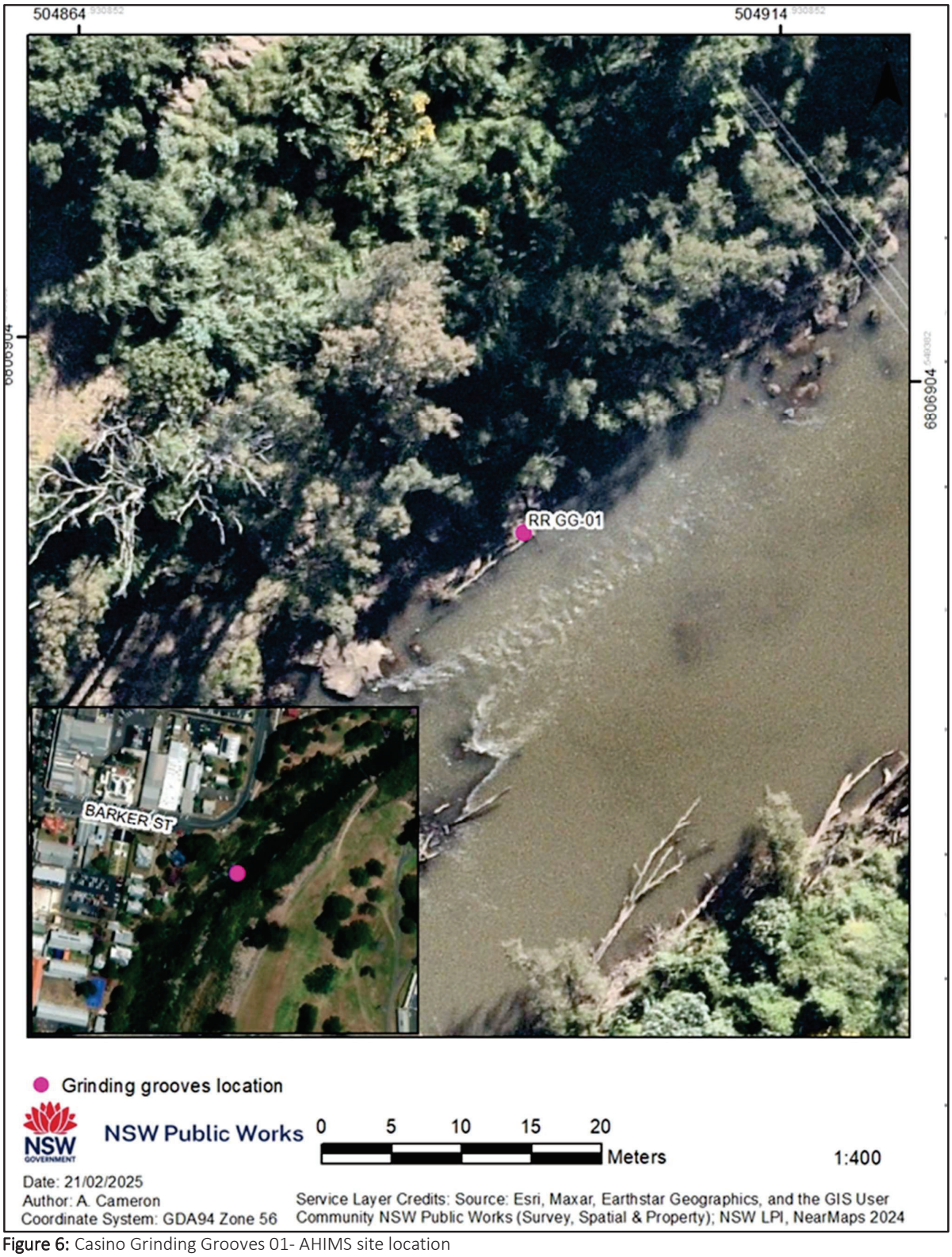


Figure 6: Casino Grinding Grooves 01- AHIMS site location

2.3 Environmental Context (Code of Practice Step 2B)

2.3.1 Topography and hydrology

The Code of Practice (Step 2b) identifies some landforms as having an increased potential to contain Aboriginal objects.

Aboriginal objects are often associated with particular landscape features as a result of Aboriginal people's use of those features in their everyday lives and for traditional cultural activities. Examples of such landscape features are rock shelters, sand dunes, waterways, waterholes and wetlands. Therefore it is essential to determine whether the site contains landscape features that indicate the likely existence of Aboriginal objects (DEECW 2010A:12).

Based on the assessment of topography and hydrology the Subject Site is located on a landform with an elevated potential for Aboriginal archaeological sites, being the Richmond River (**Table 1** and **Figure 7**).

Table 1: Casino Suspension Footbridge- Landform summary (Code of Practice Step 2b)

Landform	Comment in relation to the Subject Site
Within 200m of waters	Yes- the Proposal is on the banks of the Richmond River
Located within a sand dune system	No
Located on a ridge top, ridge line or headland	No
Located within 200m below or above a cliff face	No
Within 20m of or in a cave, rock shelter, or a cave mouth	No

2.3.2 Soil landscape summary

The Subject Site is mapped as part of the Leycester soil landscape, being "level to gently undulating broad to extensive (500–>1 500 m) alluvial plains of extremely low relief, draining the MacKellar Hills." (**Table 2** and **Figure 8**). The geology of the Subject Site is mapped as Quaternary alluvial valley in-fill sediments (**Figure 9**).

Table 2: Casino Suspension Footbridge- Summary of soil landscape model

Soil landscape	Landscape summary
Leycester	**Topography-** Level to gently undulating broad to extensive (500–1 500 m) alluvial plains and backplains of extremely low relief. Slope ranges from 0–2%, with local steeper areas on channel scours, ox-bows and terrace faces. **Soils-** deep (>200 cm), poorly to moderately well drained alluvial Black Earths (Ug5.15, Ug5.17) and Structured Clays (Uf6.42) occur throughout the floodplains. Wetter areas, such as ox-bow floors, have deep (>200 cm), poorly drained Weisenboden (Ug5.15, Ug5.17). Deep (>200 cm), well-drained Earthy Sands (Uc5.21) line channels **Geology**- Quaternary alluvial valley in-fill sediments—dominantly alluvial clay with minor sand and river gravels. Fine grained sediments of the less intensely weathered basalt areas predominate. **Vegetation**- Extensively cleared open-forest (wet sclerophyll). Current vegetation consists of a closed sod grassland ground cover with isolated trees. Main grasses are kikuyu (*Pennisetum clandestinum*), paspalum (*Paspalum dilatatum*) and setaria (*Setaria sphacelata*). *Juncus spp.* occurs in wetter areas. Forest red gum (*Eucalyptus teriticornis*), cabbage gum (*Eucalyptus amplifolia*) and broad-leaved apple (*Angophora subvelutina*) occur as isolated trees throughout the landscape. Stands of open-forest line channels and are dominated by river oak (*Casuarina cunninghamiana*), silky oak (*Grevillea robusta*) and less commonly hoop pine (*Araucaria cunninghamii*).

2.4 Disturbance History (Code of Practice Step 2C)

The impacts of previous ground disturbance is an important consideration in the Due Diligence assessment, particularly where ground disturbance removes Aboriginal objects from the soil profile or disturbs the objects

to a degree that the interpretation of the archaeological survey results is significantly compromised. The Due Diligence Code of Practice provides the following advice on the application of the definition of 'disturbed lands'.

> Examples include ploughing, construction of rural infrastructure (such as dams and fences), construction of roads, trails and tracks (including fire trails and tracks and walking tracks), clearing vegetation, construction of buildings and the erection of other structures, construction or installation of utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines, stormwater drainage and other similar infrastructure) and construction of earthworks (DECCW 2010A:18).

The following comments summarise historical plan and aerial photos for the Subject Site:

1882 the Crown Plan includes the layout of Queen Elizabeth Park, Hickey and Barker Street- there is a annotation of 'Apple and Gum' and 'Pine Scrub' along the eastern bank of the River (**Figure 10**)

1957 the aerial photo shows the Subject Site as cleared river bank- there appear to be some walking tracks meandering across the banks and through Queen Elizabeth Park (**Figure 11**)

1971 the aerial shows ground disturbance consistent the current layout of tracks and paths- the abutment at Barker/ Hickey Street and track down to the river ae clearly visible (**Figure 12**)

1986 the aerial photo is substantially unchanged (**Figure 13**)

Based on the available aerial photos and plans it is reasonable to proceed with the assessment on the basis that the Subject Site has been disturbed in a manner which has resulted in clear and observable modification of the ground surface- this includes the clearing of native vegetation, construction of roads and paths, maintenance of Queen Elizabeth Park and accumulation/ erosion of soils during flooding events. The history of ground disturbance would be clear and observable and would either remove Aboriginal objects or displace them in a manner whereby standard archaeological investigation/ sampling strategies would be compromised by the ground disturbance.

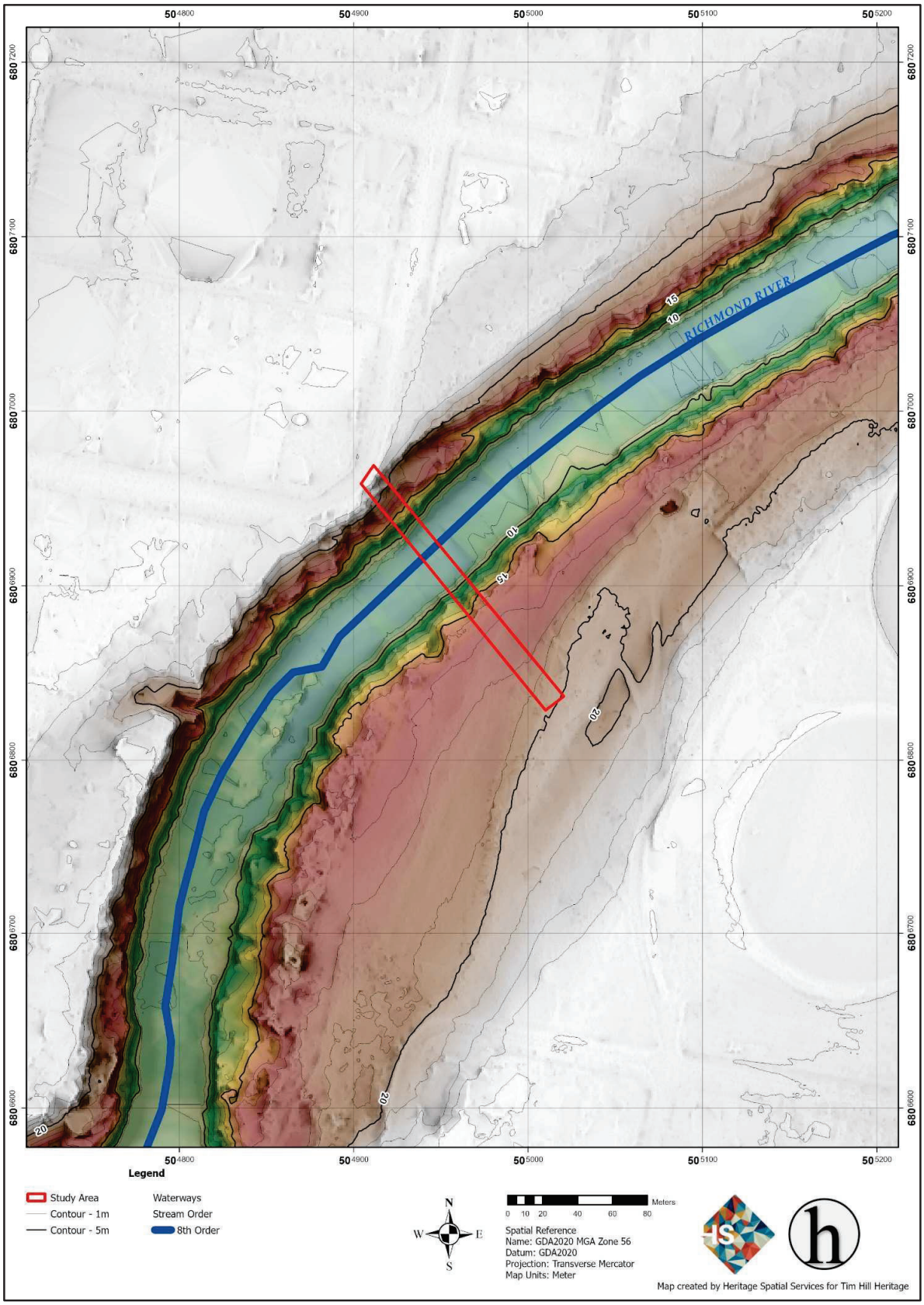


Figure 7: Casino Suspension Footbridge- Topography and hydrology

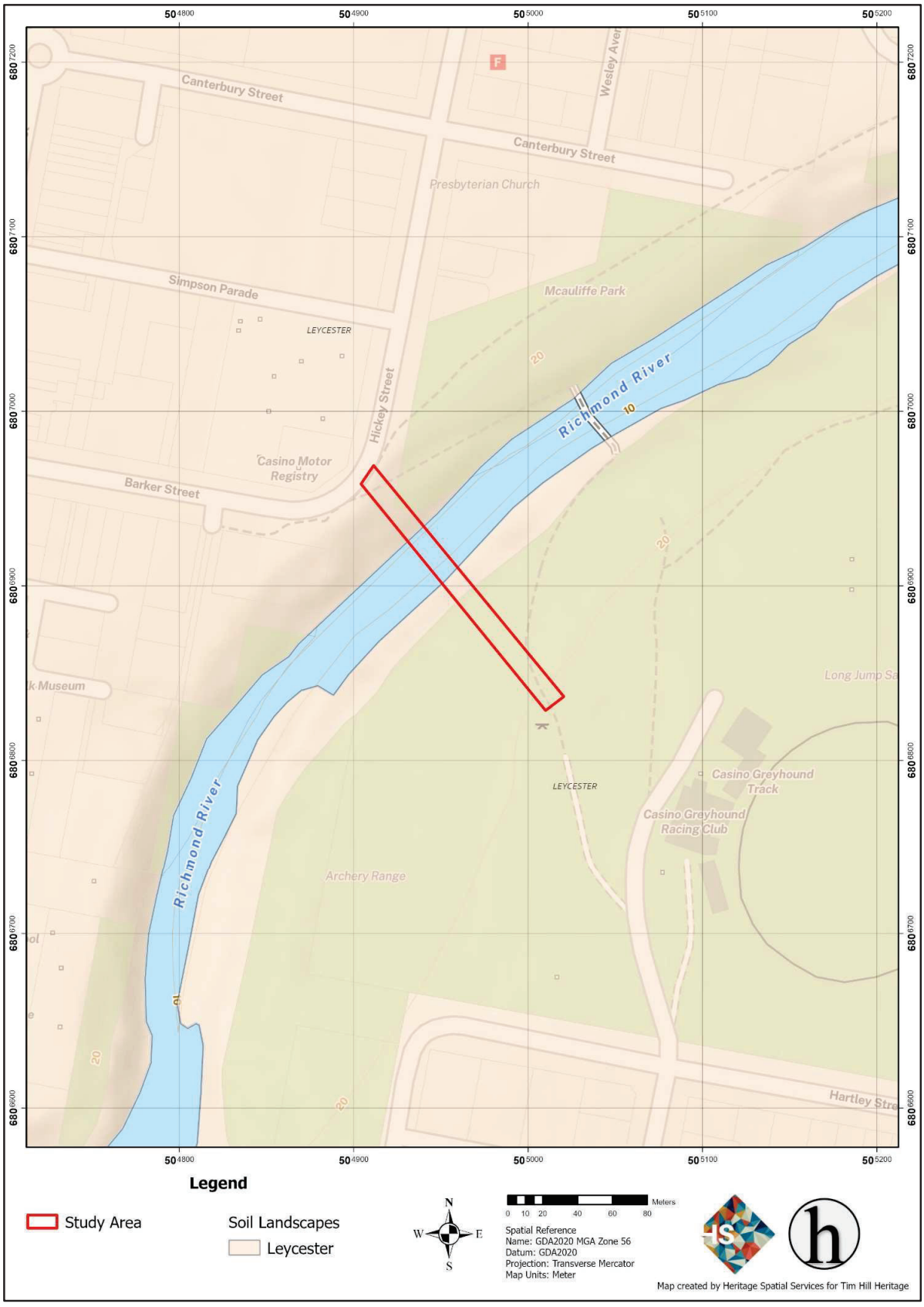


Figure 8: Casino Suspension Footbridge – Soil landscape

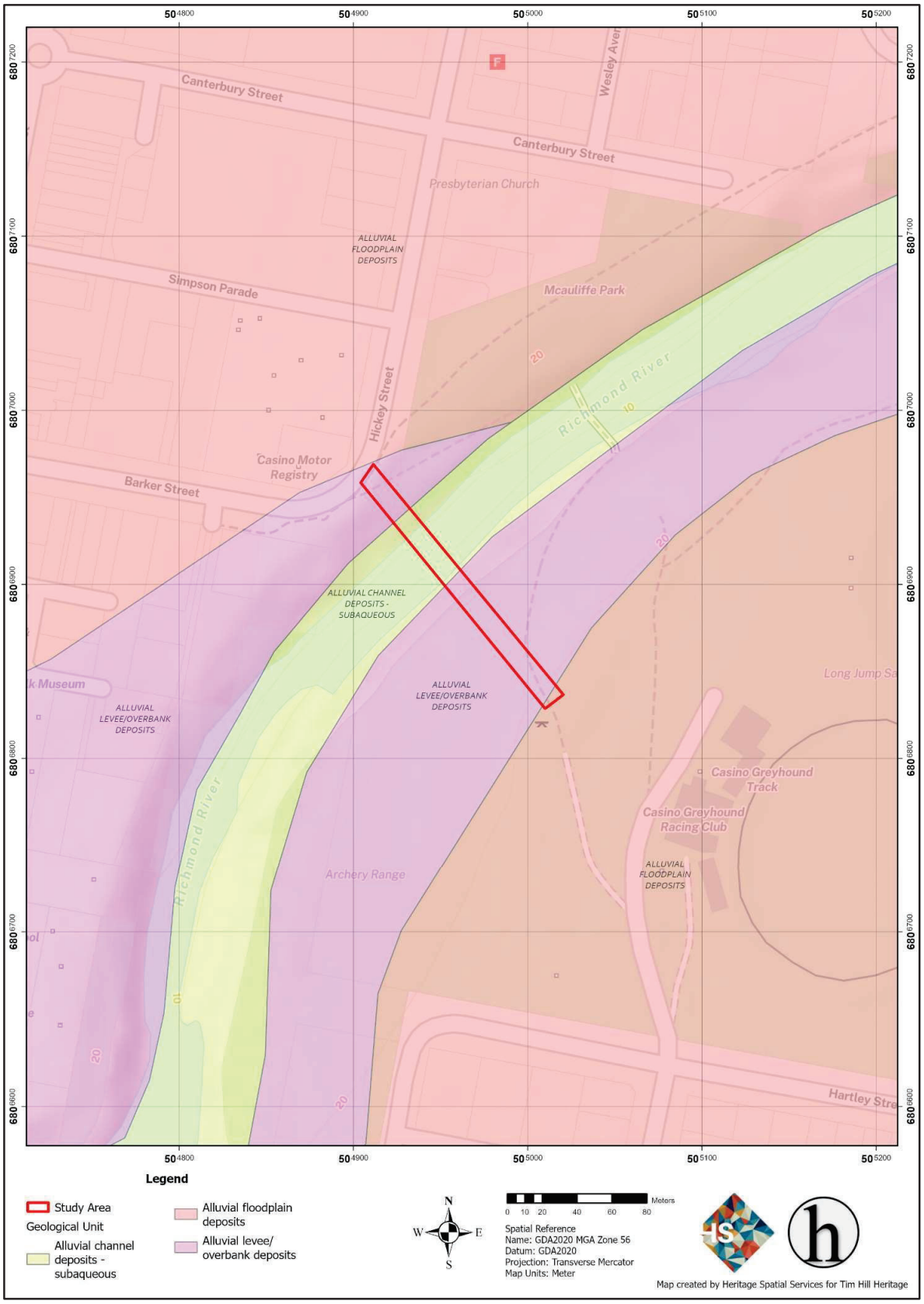


Figure 9: Casino Suspension Footbridge – Geology

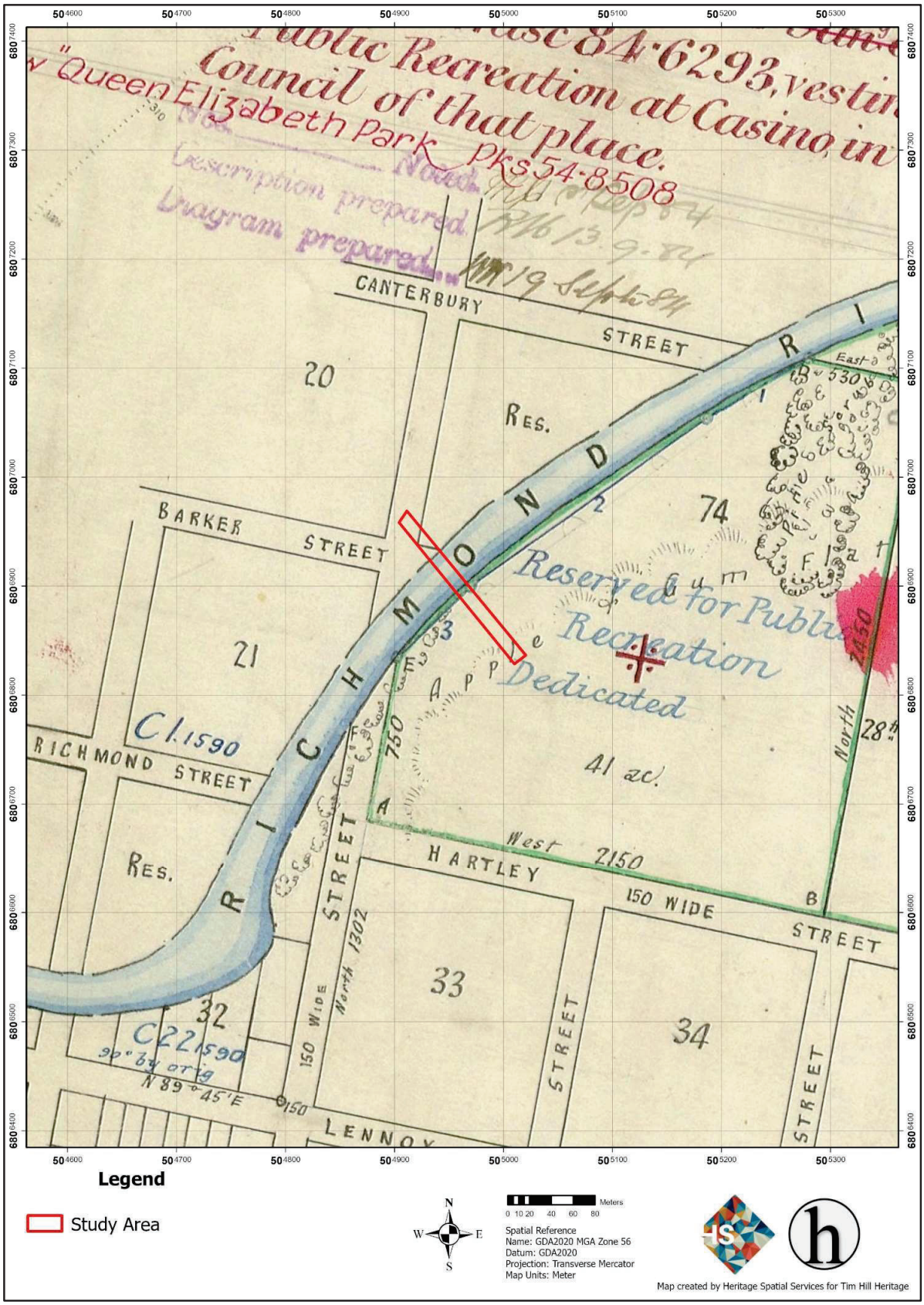


Figure 10: Casino Suspension Footbridge – 1882 Crown Plan

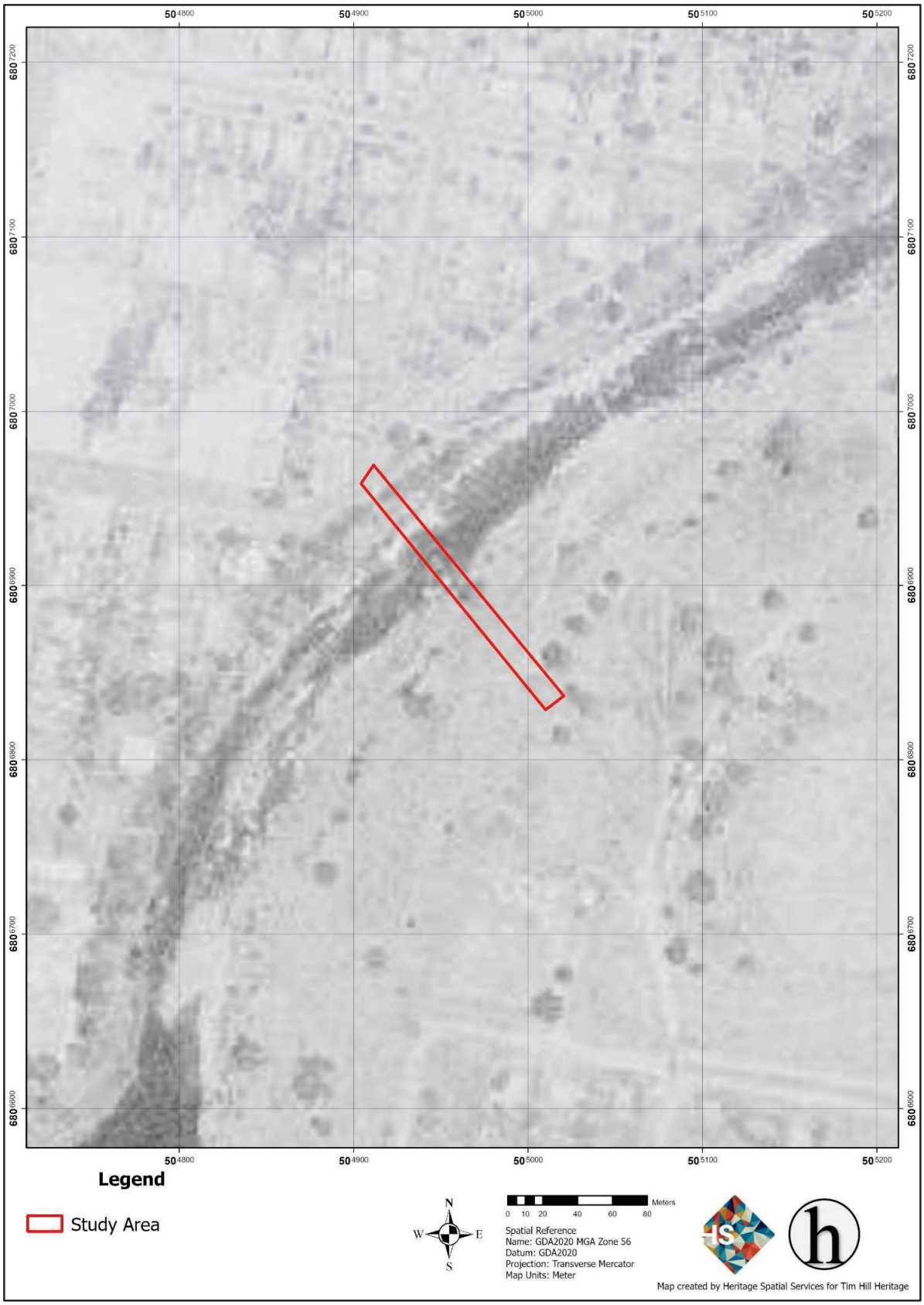


Figure 11: Casino Suspension Footbridge- 1957 aerial photo



Figure 12: Casino Suspension Footbridge - 1971 aerial photo



Figure 13: Casino Suspension Footbridge - 1986 aerial photo

2.5 Requirement for Additional Assessment (Due Diligence Step 3)

Step 3 of the Code of Practice provides guidance around the decision to revise the works proposal to avoid Aboriginal sites, if present, or to undertake additional investigations. However, the Code of Practice makes the following statements on the requirement for additional assessment on disturbed lands (DEECW 2010A:12):

> This step only applies if your activity is on land that is not disturbed land or contains known Aboriginal objects.
>
> Where as a result of step 2a you think it is likely that there are Aboriginal objects present in the area of the proposed activity, you need to decide whether you can avoid the harm to those objects.
>
> Where as a result of step 2b you have concluded that the landscape features listed are present, you need to decide whether you can move your activity away from the area with the landscape feature(s) so as to avoid disturbing any Aboriginal objects which may be present.
>
> If you can't avoid harm to the object or disturbance of the landscape feature(s) you must go to step 4. If you can avoid harm to the object and disturbance of the landscape feature(s) you can proceed with caution without applying for an AHIP.

The following statements summarise the outcomes of the desktop assessment:

- the Casino Grinding groove 01 site is a discrete group of grinding grooves on the sandstone rock shelf upstream of the subject site- grinding groove sites are uncommon in the Richmond Valley and occur on moderately soft sandstone outcrops near the water line of the Richmond River
- the design of the suspension footbridge will completely avoid the immediate riverbed and rocky shelves along the lower river bank
- the moderate-steep river bank has been subject to flood erosion and disturbance from the construction and maintenance of both the footpath and Queen Elizabeth Park - the Subject Site is disturbed in a manner which is clear and observable
- the suspension bridge has an overall limited footprint, being the four pilons located on the upper river bank- in the event of an unexpected find the footbridge design can be amended to avoid harm to Aboriginal objects.

Based on the outcomes of the desktop assessment additional investigations are not required to comply with the Code of Practice.

2.6 Due Diligence Statements

The application of the Due Diligence approval pathway requires that the "defendant exercised due diligence to determine whether the act or omission constituting the alleged offence would harm an Aboriginal object and *reasonably determined that no Aboriginal object would be harmed*".

Having consideration for the desktop assessment the development the suspension footbridge is permissible under the Due Diligence approval pathway (NWP Act Section 87(2)). The results of the desktop assessment are within the range of 'normal' for archaeological investigations on the NSW north coast where the ability to identify sites closely correlates with landforms, the amount of grass cover and the extent of disturbance to topsoils. Archaeological test excavation in the Casino and upper Richmond Valley have demonstrated that

topsoils do contain Aboriginal artefacts which are consistent with the manufacture and maintenance of hunting tools. However, the nature of the landform, being a steep-moderate slopes and alluvial soils associated with the Richmond River and the history of ground disturbance from the existing paths and flooding means that there is not a 'high probability' that the Proposal will impact Aboriginal archaeological sites. Stone artefacts, if they occurred, would typically be classified as 'isolated artefacts' and result from the discard of tools and waste material in an ad hoc manner during hunting activities- this pattern of archaeological discard is difficult to identify and interpret using standard archaeological investigation and sampling strategies.

Additionally, in northern NSW, sites which are considered to have 'conservation value' include, for example, bora/ stone arrangement sites, modified trees, rock art, historic sites associated with former Aboriginal reserves and missions and Aboriginal burials. Stone artefact scatters are relatively common and would not be considered to be of high conservation value. In the unlikely event that these site did occur within the Subject Site the nature of the Proposal means it would be easy to redesign around the finds.

As such a Aboriginal Heritage Impact Permit is not required and the Due Diligence approval pathway (NPW Act Section 87 (2)) is the default defense against prosecution for the Proposal (see below):

> 87 Defences (2) It is a defence to a prosecution for an offence under section 86 (2) if the defendant shows that the defendant exercised due diligence to determine whether the act or omission constituting the alleged offence would harm an Aboriginal object and reasonably determined that no Aboriginal object would be harmed.

In accordance with the requirements of the Code of Practice the implementation of a Unexpected Finds Procedure is the minimum requirement for the Proposal (see below).

2.7 Management Recommendations

2.7.1 Recommendation 1: Aboriginal Objects Find Procedure

It is recommended that if it is suspected that Aboriginal objects have been uncovered as a result of the Project:

a) work in the surrounding area is to stop immediately and records are made of the finds via project incident reporting procedures
b) a temporary fence is to be erected around the site and appropriate controls put in place to ensure that no additional ground disturbance happens in the vicinity of the find
c) an appropriately qualified archaeological consultant and a representative of the Casino Boolangle Local Aboriginal Land Council are to be engaged to identify the material and provide an initial assessment of the significance of the object and the likely nature and extent of any associated archaeological sites
d) if the material is found to be of Aboriginal origin, the find must be reported on the AHIMS database
e) In the event that the Aboriginal objects are considered to have been damaged or disturbed, the incident must be reported through the NSW Enviro Hotline, and
f) Works may only recommence after advice from Heritage NSW on the requirement for an AHIP or where design, engineer or construction measures are identified to mitigate further damage to the Aboriginal site.

2.7.2 Recommendation 2: Aboriginal Human Remains

Although it is unlikely that Human Remains will be located within the Subject Site, should this event arise it is required that all works must halt in the immediate area to prevent any further impacts to the remains. The site should be cordoned off and the remains themselves should be left untouched. The nearest Police Local Area Command (Casino), Casino Boolangle Local Aboriginal Land Council and the Heritage NSW (Parramatta) are all to be notified as soon as possible. If the remains are found to be of Aboriginal origin and the police do not wish to investigate the site for criminal activities, the Aboriginal community and the Heritage NSW should be consulted as to how the remains should be dealt with. Work may only resume after agreement is reached between all parties, provided it is in accordance with all parties' statutory obligations.

3. REFERENCES

Australian Government Bioregional Assessments
Clarence Morton Bioregion
<https://www.bioregionalassessments.gov.au/assessments/11-context-statement-clarence-moreton-bioregion/1132-stratigraphy-and-rock-type>

Department of Environment, Climate Change and Water (DECCW)
2010 *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*

Espade.nsw.gov.au
Leycester Soil Landscape
<https://espaderesources.environment.nsw.gov.au/resources/SPADE/reports/9540le.pdf >

NSW Spatial Collaboration Portal
1957 aerial photo
<https://portal.spatial.nsw.gov.au/download/historic/213/213_06_037.jp2.jpeg>
1971 aerial photo
<https://portal.spatial.nsw.gov.au/download/historic/1966/1966_05_025.jp2.jpeg>
1986 aerial photo
<https://portal.spatial.nsw.gov.au/download/historic/3584/3584_06_243.jp2.jpeg>

Richmond Valley Council
2012 Local Environmental Plan
<https://legislation.nsw.gov.au/view/whole/html/inforce/current/epi-2012-0098>

Appendix K

State Emergency Service Consultation

7 May 2025
Ref No: 5300-1004

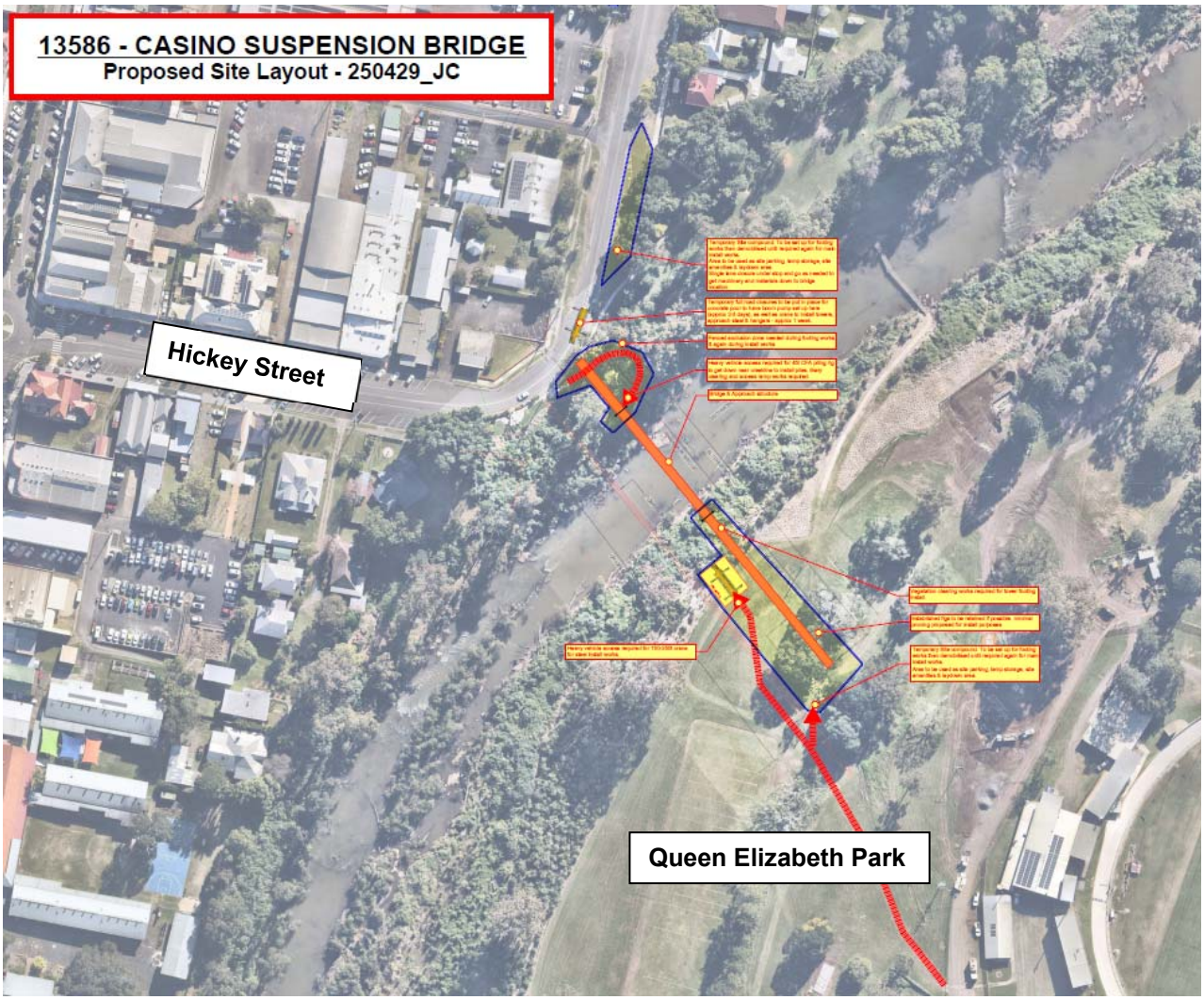
New South Wales State Emergency Service

Via email: rra@ses.nsw.gov.au

To whom it may concern

State Environmental Planning Policy (Transport and Infrastructure) 2021: Casino Pedestrian Suspension Bridge

GeoLINK has been engaged by Richmond Valley Council (RVC) to prepare a Review of Environmental Factors (REF) for the construction of a pedestrian suspension bridge in Casino.



Casino Suspension Bridge Location

PO Box 119
Lennox Head
NSW 2478
Bundjalung Nation
02 6687 7666

PO Box 1446
Coffs Harbour
NSW 2450
Gumbaynggir Country
02 6651 7666

PO Box 1267
Armidale
NSW 2350
Nganyaywana Country
02 6772 0454

PO Box 229
Lismore
NSW 2480
Bundjalung Nation
02 6621 6677

Under the State Environmental Planning Policy (Transport and Infrastructure) 2021, we are required to consult with NSW State Emergency Services (SES) under Section 2.13 due to the development being on flood liable land.

The proposed work involves constructing a pedestrian suspension bridge to provide connectivity between the Casino town centre on the north bank and Queen Elizabeth Park on the south bank. Since approximately 1888 there has been a pedestrian bridge over the Richmond River near the location of the proposed new bridge. The old pedestrian bridge has required numerous repairs as it is subject to damage in most flood events and is currently closed due to damage.

The new pedestrian bridge will a far greater level of flood immunity. The 1 in 100 year (including climate change) flood level at the site is approximately 20 m AHD. The northern bridge landing will have a finished height of 23.3 m AHD, the centre of the bridge will have a finished height of 25.59 m AHD and the southern bridge landing will have a finished height of 20 m AHD.

We do not expect any changes to flood regimes as a result of the proposed works. The bridge has been designed to be a strong but minimalistic structure, that would present a minimal obstruction to water flows. Preliminary drawings of the proposed bridge are attached.

GeoLINK (on behalf of RVC) is currently preparing the REF, as per the requirements under Part 5 of the *Environmental Planning and Assessment Act 1979*. It would be appreciated if you could provide any comments State Emergency Service may have within 21 days of receipt of this letter.

If any further information is required, please do not hesitate to contact me by telephone on 02 6687 7666, or by email msmith@geolink.net.au.

Yours sincerely

GeoLINK



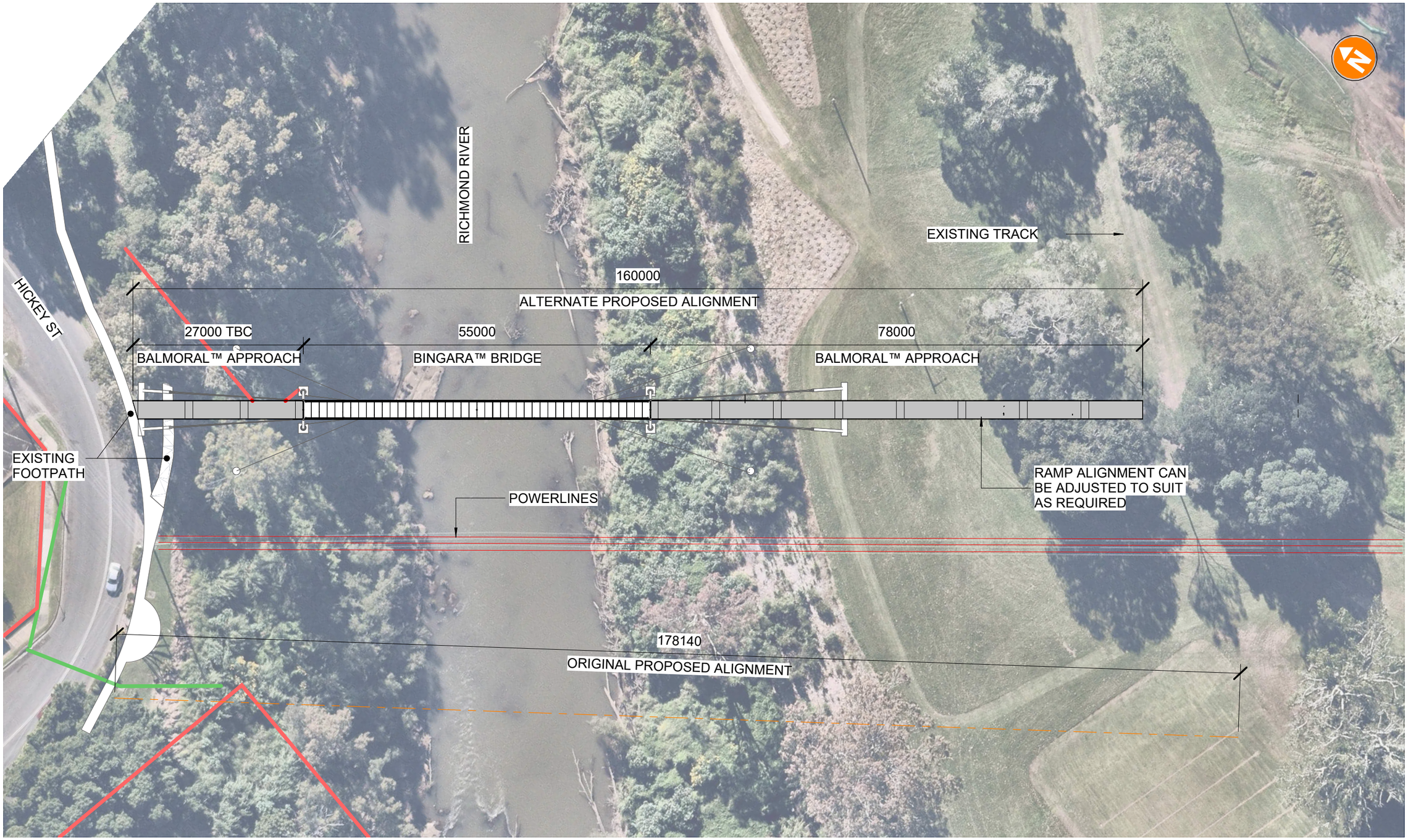
Megan Smith
Environmental Planner

Attach: Casino Suspension Bridge – 3D Product Drawing Design Scoping Package

Casino Suspension Bridge – Proposed Site Layout

DESIGN NOTES

- DESIGN STANDARD AS 2156
- 3kPa LIVE LOAD
- ASSUMED 1 IN 100 LEVEL AT 23.70 (TBC IN DETAILED DESIGN)
- 600 FREEBOARD



SITE PLAN

SCALE: 1 : 600

FORGE

ph: 1300 989 100

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DRAWN BY: AW

ISSUE: 18/02/25

REV	DESCRIPTION	DATE
B	CONCEPT	14/04/25

CLIENT

Richmond Valley Council

DESIGNER

PROJECT

CASINO SUSPENSION BRIDGE

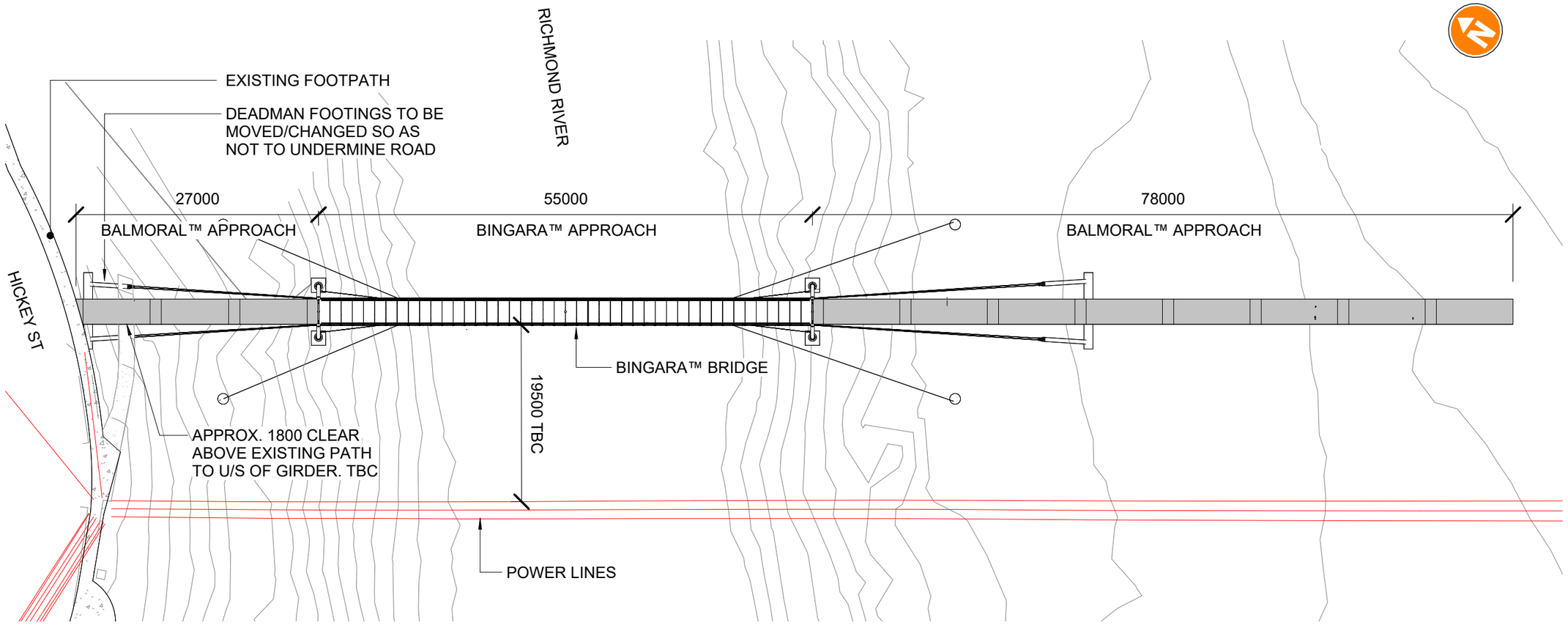
PRODUCT

BINGARA™ SUSPENSION BRIDGE & BALMORAL™ APPROACHES

PAGE NAME

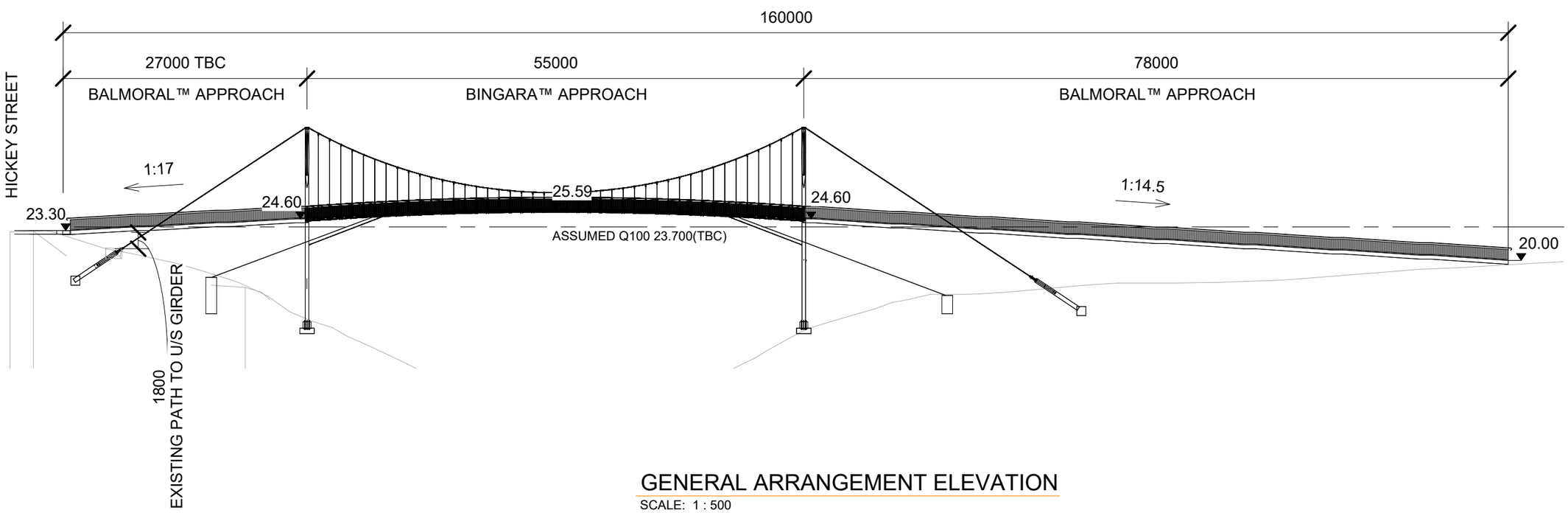
SITE PLAN

3D PRODUCT DRAWING
DESIGN SCOPING PACKAGE



GENERAL ARRANGEMENT PLAN

SCALE: 1 : 500



GENERAL ARRANGEMENT ELEVATION

SCALE: 1 : 500

FORGE

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DRAWN BY: AW

ISSUE: 18/02/25

REV	DESCRIPTION	DATE
B	CONCEPT	14/04/25

CLIENT

Richmond Valley Council

DESIGNER

PROJECT

CASINO SUSPENSION BRIDGE

PRODUCT

BINGARA™ SUSPENSION BRIDGE & BALMORAL™ APPROACHES

PAGE NAME

GENERAL ARRANGEMENT PLAN & ELEVATION

3D PRODUCT DRAWING
DESIGN SCOPING PACKAGE

13586 - CASINO SUSPENSION BRIDGE

Proposed Site Layout - 250429_JC



Our Ref: ID 3092
Your Ref: 5300-1004

28 May 2025

Megan Smith
GeoLINK
PO Box 229
Lismore NSW 2480
Via email

email: msmith@geolink.net.au
CC: elena.palamara1@ses.nsw.gov.au

Dear Megan,

Notification under section 2.13 of the State Environmental Planning Policy (Transport and Infrastructure) 2021 in relation to the proposed Casino Pedestrian Suspension Bridge

Thank you for the notification under section 2.13 of the *State Environmental Planning Policy (Transport and Infrastructure) 2021* in relation to the proposed replacement of Casino Pedestrian Suspension Bridge. It is understood that the proposed work involves constructing a pedestrian suspension bridge to provide connectivity between the Casino town centre on the north bank and Queen Elizabeth Park on the south bank.

The NSW State Emergency Service (NSW SES) is the agency responsible for dealing with floods, storms and tsunami in NSW. This role includes planning for, responding to and coordinating the initial recovery from floods. As such, the NSW SES has an interest in the public safety aspects of the development of flood prone land, particularly the potential for changes to land use to either exacerbate existing flood risk or create new flood risk for communities in NSW.

It is understood that the existing pedestrian bridge over the Richmond River is subject to damage in most flood events and is currently closed due to damage. The new pedestrian bridge will have an improved flood immunity. The 1 in 100-year (including climate change) flood level at the site is approximately 20 m AHD. The northern bridge landing will have a finished height of 23.3 m AHD, the centre of the bridge will have a finished height of 25.59 m AHD and the southern bridge landing will have a finished height of 20 m AHD.

Further, it is noted that the bridge has been designed to be a strong but minimalistic structure, that would present minimal obstruction to water flows, and there are no expected changes to flood regimes as a result of the proposed works.

We have reviewed the proposed upgrade and the flood risk information available to the NSW SES (such as the Richmond Valley Flood Study, 2023 and the Richmond Valley Flood Emergency Sub Plan, 2023). Based on this review, we:

- **Support** infrastructure upgrades that provide improved flood resilience. Any improvements that can be made to reduce flood risk will benefit the community.
- **Recommend considering** the impact of flooding on the infrastructure and people using it up to and including the Probable Maximum Flood (PMF), along with the impact of climate change on the flood risks.
- **Recommend ensuring** that workers and people using the bridge during and after construction are aware of the flood risk, for example through site inductions and by using signage.
- **Recommend considering** closing the worksite and securing all materials and equipment prior to the start of the working day if there is a risk of riverine flooding, on receipt of advice from the Bureau of Meteorology (BoM), or when other evidence leads to an expectation of flooding. During site works, check the BoM website prior to start of the workday for any Flood Warnings.
- **Recommend noting** that the Casino River height gauge (located further west of the proposed works site) is an official gauge that the Bureau of Meteorology provides flood warning to enable the NSW SES to ensure safety of the surrounding at-risk communities. Therefore, in undertaking any proposed remediation works, it will be necessary to ensure that the river height gauge remains unaffected, or if it is, then the NSW SES and the Bureau of Meteorology should be provided with relevant information to understand what the impact on the river height gauge is.

To provide additional support in doing the above, we direct you to the online resources which are available to the community on the www.ses.nsw.gov.au website which include helpful pages such as:

- Know Your Risk | NSW State Emergency Service
- Local Plans and Guides (enter your town or postcode) - which includes locally endorsed NSW SES Flood Emergency Sub Plans and Local Flood Insights
- Business Continuity Plan - online tool which steps you through the process of developing your own Business Emergency Plan.

Please feel free to contact Ana Chitu via email at rra@ses.nsw.gov.au should you wish to discuss any of the matters raised in this correspondence. The NSW SES would also be interested in receiving future correspondence regarding the outcome of this referral via this email address.

Yours sincerely,

Gill S. Webber

Gillian Webber
Coordinator Emergency Risk Assessment
NSW State Emergency Service

Appendix L

DPI Fisheries Consultation

Schedule 4

Department of Primary Industries
and Regional Development

CM10 REF: C24/537
YOUR REF: 24/03352
10 July 2024

Narelle Hooton
Senior Property Management Officer
Crown Lands
PO Box 2185
DANGAR NSW 2309
Via email: Shannon.powell@crownland.nsw.gov.au

Re: s199 Consultation # C24/537 for dredging and reclamation work associated with the removal and replacement of a pedestrian footbridge within the Richmond River, Crown Land adjacent Lot 701 DP1056270, Casino, Richmond Valley Council LGA

Attention: Mr Shannon Powell

Dear Mr Powell

Reference is made to Crown Lands' pending approval of dredging and reclamation works associated with the above-mentioned project, to be undertaken by Richmond Valley Council, forwarded to Fisheries and Forestry on 21 June 2024.

Fisheries and Forestry, a division within the Department of Primary Industries and Regional Development, assesses applications for dredging and reclamation works, harm marine vegetation, and obstruction of fish passage in accordance with Part 7 of the *Fisheries Management Act 1994* (FM Act) and the *Policy and Guidelines for Fish Habitat Conservation and Management (2013 Update)* (Fisheries and Forestry P&G).

Section 199 of the FM Act (refer to Attachment 1) is applicable to this proposal because it pertains to dredging and reclamation works to be authorised by a public authority. Section 199 requires the proposal to be referred to the Minister for Agriculture and that the public authority considers any matters concerning the proposed works raised by the Minister.

1243 Bruxner Highway,
Wollongbar NSW 2477

02 6626 1375
dpird.nsw.gov.au

Department of Primary Industries and Regional Development

Fisheries and Forestry has reviewed the subject project and associated mitigation measures outlined in the application, in particular, the Ardill Payne & Partners document titled *Review of Environmental Factors Casino Footbridge (over the Richmond River) Hickey Street/McAuliffe Park/Queen Elizabeth Park* dated 23 April 2024.

It is understood that the proposal will involve the removal of the existing pedestrian footbridge and construction of a new approximately 120m long by 1.8m wide shared pathway/cycleway suspension bridge inclusive of concrete pylons on the banks, within the Richmond River, Crown Land adjacent Lot 701 DP1056270, Casino, Richmond Valley Council LGA (refer to Attachment 3).

Fisheries and Forestry has no objection to the proposed works. In accordance with Section 199 (1)(b) of the FM Act, the matters raised within Attachment 2 of this notice must be considered. These matters are to ensure that impacts to key fish habitats will be avoided or minimised to a level consistent with the requirements of Fisheries and Forestry P&G and relate to the Department's responsibilities for ensuring fish stocks are conserved and that there is "no net loss" of key fish habitats upon which they depend. The protection of key fish habitats provides for viable commercial fishing and aquaculture, quality recreational fishing and the continuation of Aboriginal cultural fishing within NSW. Should Crown Lands choose not to consider these matters, Crown Lands should contact Fisheries and Forestry prior to authorising the works.

If you have any queries, please contact Fletcher Mingramm, Fisheries Manager Coastal Systems (North Coast) on 0499 689 583 or fletcher.mingramm@dpi.nsw.gov.au.

Yours sincerely

Jonathan Yantsch
Senior Fisheries Manager, Coastal Systems (North Coast)
Marine Estate Management, Primary Industries NSW
Authorised delegate of the Minister for Primary Industries

Cc: fisheries.compliance@dpi.nsw.gov.au

Department of Primary Industries
and Regional Development

Attachment 1

Fisheries Management Act 1994 No 38

Part 7 Division 3 Section 199

199 Circumstances in which a public authority (other than local authority) may carry out dredging or reclamation

(1) A public authority (other than a local government authority) must, before it carries out or authorises the carrying out of dredging or reclamation work:

(a) give the Minister written notice of the proposed work, and

(b) consider any matters concerning the proposed work that are raised by the Minister within 21 days after the giving of the notice (or such other period as is agreed between the Minister and the public authority).

(2) Any such public authority is to notify the Minister of any dredging or reclamation work that it proposes to carry out or authorise despite any matter raised by the Minister. The Minister may, within 14 days after being so notified, refer any dispute to the Minister responsible for the public authority. If the dispute cannot be resolved by those Ministers, it is to be referred to the Premier for resolution.

(3) In this section, public authority includes the Minister administering the *Crown Land Management Act 2016*.

Department of Primary Industries
and Regional Development

Attachment 2

MATTERS FOR CONSIDERATION UNDER s199 of the *Fisheries Management Act 1994*

Administration

1. Fisheries and Forestry recommend that a copy of relevant approval documentation be carried by the proponent or their contractor operating on-site.
Reason – A Fisheries and Forestry Compliance Officer may wish to check that the works are being undertaken in accordance with relevant approvals.

2. The subject works, including the construction methodology and final built design, should be consistent with the proposal outlined in the s199 referral to Fisheries and Forestry by Crown Lands on 21 June 2024. Any proposed changes to the methodology or final design should be discussed with Fisheries and Forestry prior to implementation.
Reason – This s199 consultation has been prepared following an assessment of the potential impacts of the described works on the aquatic and neighbouring environments. Other works, which were not described in the referral have not been assessed and may have significant adverse impacts.

Erosion and sediment control

3. Sediment entering waterways can directly impact key fish habitats. Fisheries and Forestry recommends that if Crown Lands authorises the works, the approval incorporates a condition that ensures:
- Erosion and sediment mitigation devices are erected and managed in accordance with all applicable requirements of the Blue Book (i.e. Landcom [2004], *Managing Urban Stormwater: Soils and Construction* [4th Edition]) (https://www.environment.nsw.gov.au/research-and-publications/managing-urban-stormwater-soils-and-construction-volume-1-4th-editon); and
- Stockpiles are located away from adjacent on water land[1], and riparian and aquatic vegetation[2].
Reason – To ensure that sediment generated by the exposure of soil is not transported into the aquatic environment.

---

[1] "Water land" means land submerged by water:

a) whether permanently or intermittently, or
b) whether forming an artificial or natural body of water,

and includes *wetlands* and any other land prescribed by the regulations.

Wetlands include marshes, mangroves, swamps, or other areas that form a shallow body of water when inundated intermittently or permanently with fresh, brackish, or salt water, and where the inundation determines the type and productivity of the soils and the plant and animal communities.

[2] "Aquatic vegetation" is a term used to describe native vegetation that inhabits freshwater but does not include noxious weeds within the meaning of the *Noxious Weeds Act* 1993.

Instream works

4. Snags are important key fish habitats and Fisheries and Forestry prioritise leaving snags in-situ, realignment, relocation and, only when these opportunities are not possible, removal. Fisheries and Forestry recommends that if Crown Lands authorises the works, the approval incorporates a condition that ensures no snags[3] outside of the immediate works footprint are removed, and that such snags are only realigned or relocated if required.
Reason – "Removal of large woody debris from NSW rivers and streams" is listed as a Key Threatening Process under the provisions of the FM Act. This approval has been granted on the basis that snags are not to be removed.

Avoiding harm to aquatic and riparian vegetation

5. To protect riparian and aquatic vegetation, Fisheries and Forestry recommends that if Crown Lands authorises the works, the approval incorporates a condition that riparian and aquatic vegetation on water land, outside of the immediate works footprint, is identified and appropriately delineated as "No Go" areas (with the aim of avoiding harm to these areas).
Reason – To ensure that impacts on aquatic habitats and the riparian zone are minimised.

Post works rehabilitation of site

6. Fisheries and Forestry recommends that if Crown Lands authorises the works, the approval incorporates a condition that requires the site to be rehabilitated and stabilised at the completion of the works including:
- Removal of surplus construction materials and temporary structures from the site (other than silt fences and other erosion and sediment control devices); and
- Appropriate maintenance of erosion and sediment control devices until the site has stabilised.
Reason – To ensure that habitats are restored as quickly as possible, public safety is not compromised, aesthetic values are not degraded and sediment inputs into the waterway are reduced.

Fish kill contingency

7. Fisheries and Forestry maintains a fish kill database. To limit the potential of a fish kill incident, Fisheries and Forestry recommends that the proponent be advised to undertake a visual inspection of the waterway for dead or distressed fish (indicated by fish gasping at the water surface, fish crowding in pools or at the creek's banks) twice daily during the works. Observations of dead or distressed fish should be immediately reported to the Contact Officer by the approval holder. If a fish kill occurs, Fisheries and Forestry recommend works cease until the issue

[3] "Snags" is a term used to describe large woody debris from trees and shrubs, including whole fallen trees, broken branches and exposed roots that have fallen or washed into a waterway and are now wholly or partially submerged by water. Snags also includes submerged large rocks (of greater than 500 mm in two dimensions).

causing the kill is rectified.
Reason – Fish kills are also potentially contentious incidents from the public perspective. Fisheries and Forestry needs to be aware of fish kills so that it can assess the cause and recommend ways to mitigate further incidents in consultation with relevant authorities. Work practices may need to be modified to reduce the impacts on the aquatic environment.

Attachment 3

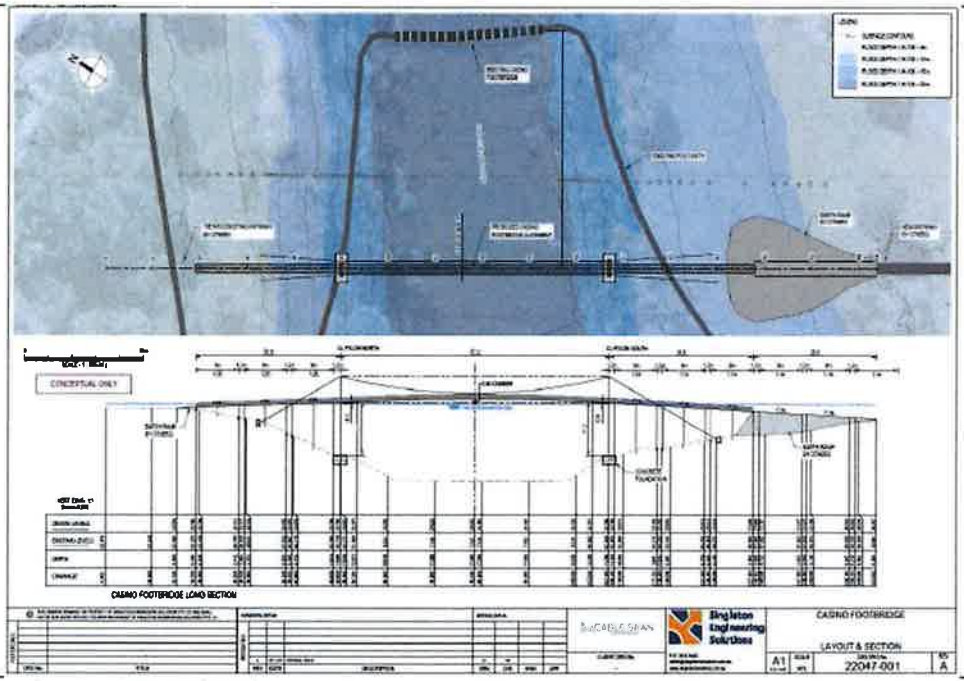


Figure 1: Plan showing design of works.

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