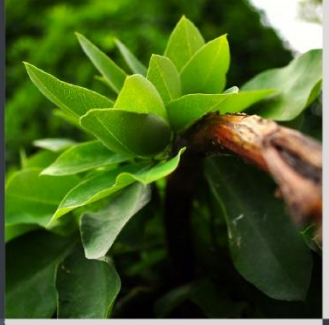
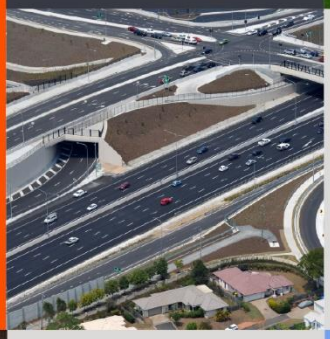
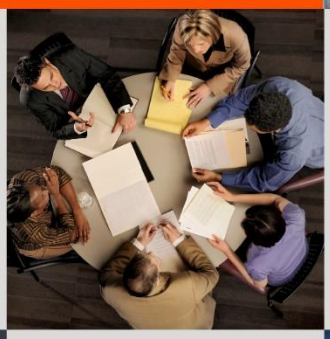
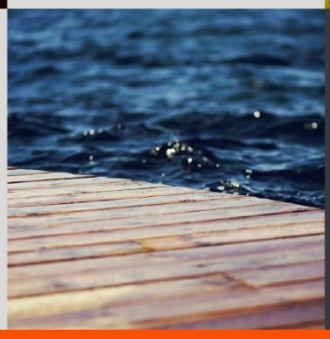






REVIEW OF ENVIRONMENTAL FACTORS

Northern Rivers Rail Trail – Casino to Bentley

Prepared for Richmond Valley Shire Council
By Planit Consulting Pty Ltd

August 2022 – Version A
Job No. J6805



CONSULTING

This report has been written by

Planit Consulting Pty Ltd
ABN 20 099 261 711

9a/80-84 Ballina St,
Lennox Head 2487

PO Box 161, Lennox Head NSW 2478

Telephone: (02) 6687 4666

Email: info@planitconsulting.com.au
Web: www.planitconsulting.com.au

Document Control

Version	Date	Document Type	Prepared By	Reviewed By
A	03.08.2022	REF	SC	LB

Quality Assurance

This is to certify that the REF:

- examines and takes into account all matters affecting or likely to affect the environment as a result of activities associated with the proposal
- is accurate and does not omit any material information
- subject to the implementation of the safeguards identified in this REF, it is unlikely that there will be any significant environmental impacts associated with the proposal
- The design and construction contractors on behalf of Richmond Valley Council are responsible for undertaking the proposal as described, and implementing the safeguards as identified in the REF, and managing construction risks.

Disclaimer

Contents

List of Figures

List of Tables

Executive Summary

This Review of Environmental Factors (REF) has been prepared to consider the environmental effects of a proposed 'activity', within a 13.4km stretch of non-operational rail line owned and managed by Transport for NSW. The activity being considered includes the construction and operation of a 13.4km stretch of pedestrian and cycling 'rail trail' including associated rail infrastructure facilities, parking, amenities and the like within the Richmond Valley Council area between the Old Casino Station (south) and Bentley (north).

The activity forms part of the broader Northern Rivers Rail Trail (NRRT) and associated facilities, proposed to reinvigorate the former and non-operational rail line between Old Casino Station and Murwillumbah, contributing to an overall 130km stretch of rail trail which crosses 4x Council areas (Richmond Valley, Lismore City, Byron Shire and Tweed Shire). The historic rail line was originally conceived in the 1880's and constructed between 1890 and 1905, remaining operational until 2004. The NRRT proposes to adaptively reuse the disused rail line corridor as a publicly accessible rail trail with interactive, education, recreational and historical experiences along its 130km alignment. The trail will provide an extensive track that will draw tourists and enthusiasts to experience the countryside, providing an immersive and active interaction at destination points and through the generally rural environment.

Development consent is not required for the proposal in accordance with Clause 2.92, Division 15 (Railways) of State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&ISEPP). The proposal is consistent with rail infrastructure facilities as defined under Clause 2.91 of T&ISEPP. The proposal becomes an 'activity' for the purposes of Part 5 of the *Environmental Planning and Assessment Act 1979 (EP&A Act*).)

This environmental assessment has identified the activity is not a prescribed activity and not requiring an Environmental Impact Statement (EIS) in accordance with Section 5.7 of the *EP&A Act 1979*. The proposed activity is also not likely to significantly affect threatened species and therefore does not require a Species Impact Statement (SIS) in accordance with Section 7.8 of the *Biodiversity Conversation Act 2016*.

In order to ensure appropriate environmental outcomes, the identified mitigation methods and safeguards in this REF are to be followed and implemented as part of the Activity.

1 Introduction

This Review of Environmental Factors (REF) has been prepared by Planit Consulting Pty Ltd on behalf of Richmond Valley Council (RVC) to consider potential environmental effects associated with the construction and operation of 13.4km stretch of the NRRT from Old Casino Station to Bentley within the RVC area. The activity broadly relates to the construction and operation of rail infrastructure facilities within this section of the rail corridor. The general alignment and concept scope for the activity is shown at **Figure 1.1**.

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

1.1 Location & Ownership

The activity is located across 6 lots that form the rail corridor within the Richmond Valley Local Government Area (LGA), following the rail corridor from near the Old Casino Station in Casino to the northeast through Nortons Gap to Bentley for a distance of approximately 13.4 km. The rail line has been nonoperational in regard train use since 2004.

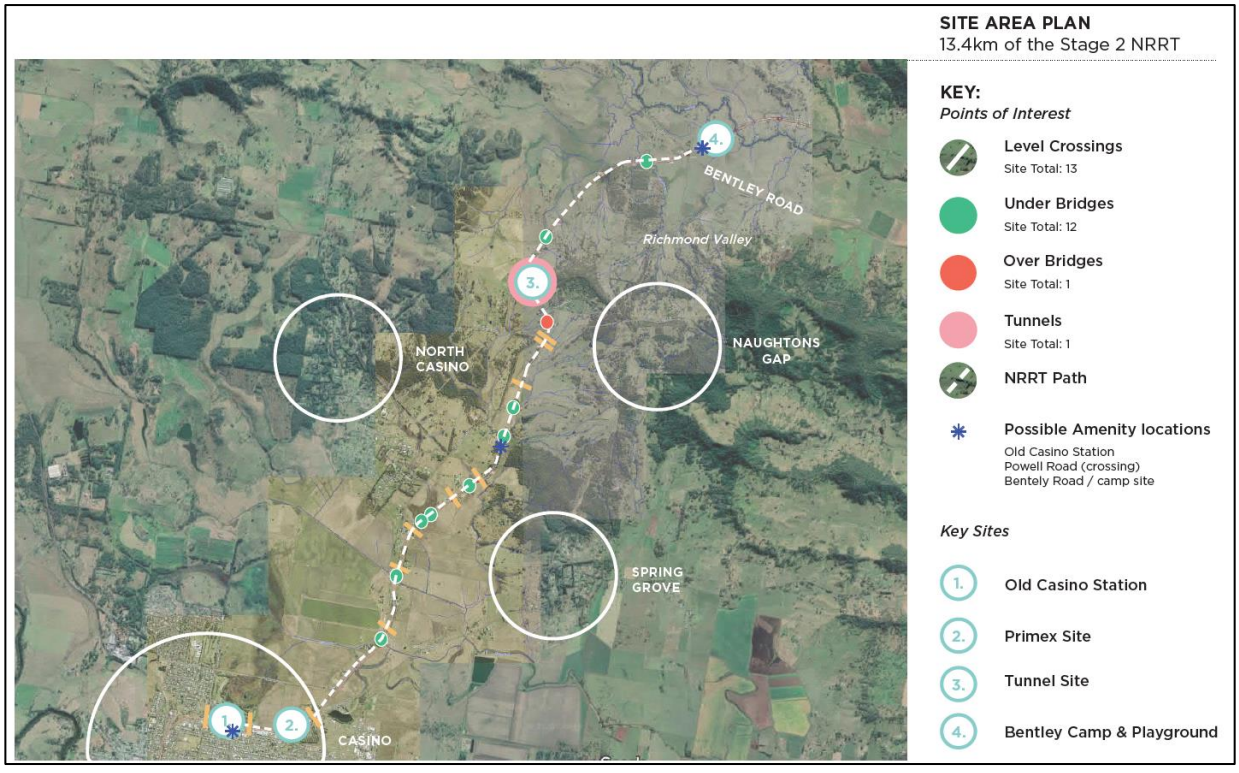


Figure 1.1 Concept Alignment (Source: Planit Consulting NRRT Masterplan 2020)

The activity encompasses seven lots identified and owned as below:

Lot and DP	Registered Land Owner
Lot 1 on DP945360	State Rail Authority for NSW
Lot 2 on DP1010688	Transport for NSW
Lot 3 on DP 1010688	Transport for NSW
Lot 12 on DP927738	State Rail Authority for NSW
Lot 14 on DP927156	State Rail Authority for NSW
Lot 4701 on DP1222175	Transport for NSW
Lot 4703 on DP1222201	Transport for NSW

The rail corridor is a NSW State Government owned asset and RVC has secured a long term lease with the NSW Government's Transport Asset Holding Entity (TAHE) to manage the 13.4 section of the rail corridor to enable construction and operation of the activity.

The activity area is bordered by a combination of industrial and rural lots along its alignment. The alignment also follows Dyraaba Street, Spring Grove Road and Naughtons Gap Road as well as intersecting several lower order roads and small waterways/drainage paths at thirteen level crossings, twelve bridges, one road over bridge and one tunnel. Complete extent of the activity alignment, specialists reports and other supporting documentation accompanying this REF package is attached.

1.2 History, Need & Options for the Project

The historic rail line was originally conceived in the 1880's and constructed between 1890 and 1905, remaining operational until 2004. Since 2004 the rail infrastructure has been in steady decline and disrepair.

Following community request for the investigation into passenger train services to the rail line, Transport for NSW completed the Casino to Murwillumbah Transport Study in 2013. The Study comparatively reviewed feasibility, benefits and costs of reinstating passenger services on the disused Casino to Murwillumbah rail line in the context of current and future transport needs of the study area, and the potential connections to the South East Queensland public transport network.

The Study found that the rail line will not meet current or future transport needs and there were no significant opportunities with freight or tourism that will improve its viability. It determined that the rail infrastructure had deteriorated significantly, identifying more than $900 million upgrade and repair works to align the rail line to current safety and operating standards for frequent and reliable train services.

The Study recommended investigating improving bus services to provide more people with frequent, cost-effective public transport to key destinations, rather than reinstating the rail line. Improvements could include:

- increased services on key routes,
- better integration of timetables between services,
- changing other routes to include key destinations such as education campuses and hospitals,
- introducing new express services on the Pacific and Bruxner Highways, and
- improving passenger information.

It recommended that the rail remain closed. The study noted that there is community interest in using sections of the rail line for a rail trail and, subject to stakeholder interest, this could be investigated further to test costs, benefits and feasibility.

In 2013 the not-for-profit community group Northern Rivers Rail Trail Association committee was formed to explore the potential for the 130km stretch of non-operational rail line to accommodate a community centred rail trail. The planning and consultation process to date has been comprehensive in determining how best to adaptively reuse the disused rail line corridor as a publicly accessible rail trail with interactive, education, recreational and historical experiences along its 130km alignment. In addition, several studies have been commissioned including a Rail Trail Feasibility Study (December 2013) and Casino to Murwillumbah Rail Study Final Report (May 2014) which identified significant economic benefit associated with the development of a multi-purpose rail trail incorporating cycling, walking, horse riding, rail bike and new innovative transport modes as they emerge.

The NRRT will provide an extensive track that will draw tourists and enthusiasts to experience the countryside, providing an immersive and active interaction at destination points and through the generally rural environment.

The NRRT and associated facilities will reinvigorate the former and non-operational rail line between Old Casino Station and Murwillumbah, contributing to an overall 130km stretch of rail trail which crosses four Council areas (Richmond Valley, Lismore City, Byron Shire and Tweed Shire).

This REF therefore focusses on the possible construction, operation and maintenance of the 13.4km stretch of pedestrian and cycling 'rail trail' including associated facilities, parking, amenities and the like within the RVC area between the Old Casino Station (south) and Bentley (north).

1.3 Project Boundary

This REF assesses the impact of the proposed NRRT based on a nominated Project Boundary that limits the design and construction impact extent for the activity. The Project Boundary has been developed based on the Master Plan concept previously prepared for the activity. Any detailed design for the project that occurs outside the Project Boundary will require an update or addendum to this approved REF to document any variation in environmental impact or ancillary approvals. The extent of the environmental assessment as undertaken for the activity under this REF and defined by the Project Boundary as shown at Appendix A.

2 Proposed Activity

2.1 Scope of Works

The activity comprises the construction and operation of a 13.4km rail trail including associated rail infrastructure facilities, parking, amenities and the like. The concept for trail uses along the 13.4km Casino to Bentley section is outlined below. Four key nodes have been identified along the alignment comprising (in concept) the below:

- **Start/end of Rail Trail – Old Casino Station**
  - Car parking
  - Interactive facilities/ features
  - Excluding State Heritage Rail boundary

- **Primex Site**
  - Carparking, bus stop and drop off/pick up
  - Recreational facilities, seating
  - Maintenance trail
  - Feature road crossing
- **Naughtons Gap Rail Tunnel (Tunnel Site)**
  - Ecological protection area (bat tunnel, koalas, vegetation etc)
  - Key rest area (educational facilities, lookout, seating, rest stop, water refill, etc)
- **Bentley Camp and Playground (stage termination)**
  - Car parking area

In general, a 3m wide pathway constructed at grade or raised (either by earthwork and embankment or suspended boardwalk) is anticipated between these nodes. In part, this will comprise decomposed and compacted gravel, sealed bitumen and concrete and contains ability for an adjacent maintenance track/trail which will function as a horse trail along the entire alignment. Decomposed gravel will make up much of the linkage alignment between nodes to maintain the natural and low impact nature, promoting slower (walking/cycling) and discouraging higher speed travel (i.e. road cycling). Sealed areas will generally focus around the key nodes and as required for steeper grades and safety.

Along the entire alignment are stop points, rest areas, seating and vegetated shade areas. In addition, directional, way finding, interactive and educational signage line the pathway.

The key components of the proposed activity are described below. The scope of work described here is the basis for the impact assessment in this REF.

Table 2.1 - Scope of Works

Scope Item	Details / Requirements
Site Investigation & Design	• Detailed survey; • Geotechnical investigation; • Ecological identification; • Complete detailed design; • Heritage Impact Assessment
Pre-Construction	• Vegetation clearing • Construction management plans • Formalise construction contract
Construction	• Preliminaries and site mobilisation • Removal of track and sleepers • Bulk Earthworks and grading of ballast • Import and compact road base • Asphalt/spray seal surface treatments • Timber bridge modification works • Fencing • Carpark pavements works • Signage and line marking • Landscaping treatments including planting and turfing • Hardscape landscaping including seating/tables/benches • Amenities • Play equipment • Water fill points

Scope Item	Details / Requirements
Operation	• Open space maintenance including mowing, weeding and trimming • Rail trail path maintenance • Cleaning and amenity maintenance

2.2 Machinery and Equipment

Equipment to be used during construction is likely to include:

- excavator and bobcat
- crane
- roller
- wacker packer
- chainsaw, stump grinder and woodchipper
- elevated work platforms and scaffolding
- welding equipment
- concrete truck and pumpers
- tip truck
- concrete vibrator
- asphalt machine
- delivery and waste removal truck
- power tools and hand tools.
- firefighting equipment
- generator

2.3 Access and traffic management

Construction access points to the activity will occur from the existing public road network intersecting the rail alignment including Naughtons Gap Road, Whittons Road, Powells Road and Bentley Road. Construction access will also occur along the alignment of the rail corridor.

Where the construction of the rail trail and site access is required adjacent to live traffic; traffic control will be required to ensure safety for construction staff and road users. Similarly, the construction of the rail trail will in sections be located within a narrow construction alignment and management of internal vehicle movements, parking and construction staff is required to ensure workers safety.

A Traffic Control Plan (TCP) will be required where works are adjacent to live traffic and shall be prepared by a suitable qualified person (orange card) and implemented for the works in accordance with the requirements of the Traffic Control at Worksites Manual (RTA 2010 V4) and AS1742.3 (or as updated). Licensed traffic controllers will assist with traffic control during the Project.

An Access Management Plan shall be prepared to manage internal site traffic and pedestrian movements to ensure the safety of workers and public within the site.

2.4 Construction Duration and Working Hours

The construction phase of the Activity is estimated to take approximately 12 months to complete.

Construction working hours will be limited to the follow:

- 7 am to 6 pm Monday to Friday.
- 8 am to 1 pm Saturdays.
- No works will be undertaken on Sundays or Public Holidays.

Works may be undertaken outside these hours where:

- The delivery of materials is required outside these hours by the Police or other authorities.
- It is required in an emergency to avoid the loss of life, damage to property and/or to prevent environmental harm.
- Variation is approved in advance in writing by the Regulatory Authority (i.e. Council, or public authority on behalf of Council).
- Residents likely to be affected by the works are notified in writing of the timing and duration of these works at least 18 hours prior to the commencement of works (with the exception of emergency work).

2.5 Asbestos Management

Two zones within the activity area have been identified as containing asbestos materials including:

- **Zone 1**: Sample 50740-2 location - behind Richmond Dairies - to a distance of five (5) metres in either direction along the corridor.
- **Zone 2**: From south of the driveway to the residence approximately 3.9kms from Casino (Sample 50740-7 location) through to approximately 500m north of the Naughton's Gap Road Overpass (Sample 50740-19 location). Asbestos was found to be present in six (6) samples taken within this area of the track. As a result, it is recommended that the whole area be classed as asbestos contaminated as the safest and best practice option for the site.

An Asbestos Management Plan has been prepared to address removal of the asbestos materials during construction phase of the project. The plan is provided at Appendix C.

2.6 Vegetation Clearing

The activity has potential to result in the loss of up to 2.11 hectares of native vegetation from seven Plant Community Types based on the Project Boundary footprint as outlined in the Biodiversity Assessment prepared by GeoLINK (2022) and provided at Appendix B of this REF. Vegetation clearing beyond that identified in the GeoLINK report is not approved under this REF. Clearing limits are required to be defined prior to construction activities to avoid damage to retained vegetation. Pre-clearing ecologist inspections are required prior to commencement of clearing to identify sensitive features within the works footprint.

2.7 Naughton's Gap Tunnel Exclusion

A significant microbat roost is located within the Naughton's Gap tunnel that requires protection. Preliminary planning of the rail trail included referral to NSW Environment, Energy and Science (EES) for advice. EES stated that public access through the tunnel will result in an unacceptable impact on the microbat roost. EES also identified that rail trail shall avoid the tunnel entirely and the trail design must include secured tunnel exclusion infrastructure to prevent trail users entering the tunnel.

In response to the potential impact on the microbat roost, the trail has been diverted around the Naughton's Gap tunnel and secured tunnel exclusion infrastructure shall be erected at the tunnel entrances to restrict public entry into the tunnel and protect the microbat roost.

The final design for the tunnel exclusion infrastructure shall be designed to enable microbats free dispersal to and from the tunnel and restrict human access. The barrier design shall be prepared with input and liaison with NSW Environment, Energy and Science (EES) and a microbat expert. Signage shall be installed at the tunnel entrance stating 'Hazardous conditions – do not enter' or words of similar intent.

2.8 Construction Environmental Management Plan (CEMP)

A CEMP shall be prepared prior to any construction works commencing. The CEMP shall include relevant REF safeguards identified in Section 6 of this REF and include any standalone environmental or construction plans identified in the REF.

2.9 Environmental Plans

The following plans are required for the activity prior to construction phase and must be included in the CEMP:

- A Microbat Management Plan (MMP) to be developed by an ecologist with microbat management experience to guide construction works within 200 m of the Naughton's Gap tunnel.
- A Weed and Pathogen Management Plan for suppression of weeds, meeting Biosecurity Act 2015 obligations and preventing the introduction or spread of weeds and pathogens from construction works

2.10 Ancillary Facilities

Temporary ancillary facilities will be established within the alignment of the existing rail corridor and the boundary of the activity area. Construction parking, material laydown, material stockpiles and worker amenities shall be established within the ancillary facility areas.

These facilities shall be established under the following general locational criteria:

- A minimum distance of 50 m from any waterway;
- A minimum distance of 200m from any residence;
- Not within private land;
- Not within an area that will require additional clearing outside of areas proposed to be cleared for rail trail infrastructure.

3 Existing Environment and Impact Assessment

3.1 Landform, Geology and Soils

3.1.1 Existing Environment

The activity area is predominantly highly modified, traversing areas of the existing rail corridor between Casino and Bentley across undulating rural landscape. Soil landscape relevant to the activity alignment is presented at **Table 3.1.** Due to the location of the activity the site is not subject to acid sulfate soils.

Table 3.1 Soil Landscapes within the Activity Area

General location	Soil landscape	Soil limitations
Casino to Upper Springrove and northern extent of Naughtons Gap	Leycester	Moderately erodible, moderately plastic soils with low wet bearing strength, moderate shrink-swell and localised waterlogging. Flooding, stream bank erosion
Springgrove	North Casino	Low wet bearing strength, high shrinks well, highly plastic soils, flooding, permanently high watertables, waterlogging/seasonal water-logging
Upper Springgrove and Naughtons Gap	Yorklea	Highly erodible, hardsetting, dispersible, slowly permeable, seasonally waterlogged soils of low fertility. Localised salinity.
Naughtons Gap and Bentleys Road	Nammoona	Hard setting, highly erodible and moderately dispersible soils of low fertility with localised shallow occurrences. Localised high mass movement hazard (generally at basalt boundaries) and steep slopes.

Source : NSW SEED Mapping

3.1.2 Impact Assessment

Earthworks will be required to establish buildings, structures and trails. Clearing and grubbing is also required for construction of the Activity.

Soil erosion and sedimentation may potentially occur due to the proposed activity as soil will be disturbed to enable construction activities. Soils dispersed from construction activities also have potential to impacts adjoining wetlands and waterways identified in **Table 3.3.**

New toilet buildings, playground equipment and other structures will need to consider the specific subsoil conditions and appropriate foundations required for the structures including further geotechnical assessment.

The following safeguards are recommended to prevent, minimise and mitigate the potential impacts.

Does the project involve the disturbance of large areas (e.g. >2ha) for earthworks?	Yes	☒	No	☐
Does the site have constraints for erosion and sedimentation controls such as steep gradients or narrow corridors?	Yes	☐	No	☒
Is the project footprint in or nearby a highly sloping landform?	Yes	☐	No	☒

Are there any sensitive receiving environments that are located in or nearby the likely project footprint or that will likely receive stormwater discharge from the project?	Yes	☒	No	☐

Landform, Geology and Soils - Recommended Safeguards:

- *Prior to finalising detailed designs, geotechnical investigations shall be undertaken for all new buildings and other significant structures to inform suitable foundations for each structure.*
- *Site management will incorporate best management erosion and sediment control practices such as those found in the Department of Housing's "Blue Book (4th Edition) on erosion and sediment control and Safe Work Australia 'Excavation Code of Practice (March 2015).*
- *Overburden will be placed in the form of a bund upslope of the site where necessary to reduce surface water entering the site.*
- *All erosion and silt control devices will be visually inspected weekly and before forecast rain events to ensure effectiveness as well as after each rainfall event.*
- *Excavated areas will be stabilised and returned to grass cover as soon as possible.*

3.2 Contaminated Land

3.2.1 Existing Environment

The NSW Environment Protection Authority's (EPA) Contaminated Lands Register was searched on 29 March 2022, returning no results within or adjoining the Activity area.

Preliminary site investigations were undertaken by North Coast Occupational Hygiene in 2020 (refer to Appendix C) due to Council concerns regarding the potential for asbestos being present within the rail corridor. Sampling was undertaken in April and June 2020 and asbestos was identified in areas within the rail alignment. Key findings of the investigation included:

- Chrysotile of asbestos were found to be present in seven (7) locations along the rail corridor;
- The asbestos found consisted of a mixture of loose fibres of asbestos within the soil/ballast and loose fragments of asbestos cement sheeting;
- An assessment in accordance with Code of Practice: How to Safely Remove Asbestos [SafeWork NSW, 2019] has determined this asbestos as friable.

The site is not identified as being subject to acid sulfate soils under the Richmond Valley Local Environmental Plan 2012 acid sulfate soils mapping or NSW SEED acid Sulfate Soil risk mapping.

3.2.2 Impact Assessment

The preliminary site investigations undertaken by North Coast Occupational Hygiene in 2020 identified two asbestos contaminated zones requiring management throughout the construction phase of the activity as identified in Table **3.2**.

Table 3.2 Asbestos Zones in the Activity alignment.

zone	Description
Zone 1	• Sample 50740-2 location - behind Richmond Dairies - to a distance of five (5) metres in either direction along the corridor.
Zone 2	• From south of the driveway to the residence approximately 3.9kms from Casino (Sample 50740-7 location) through to approximately 500m north of the Naughton's Gap Road Overpass (Sample 50740-19 location).

zone	Description
	• Asbestos was found to be present in six (6) samples taken within this area of the track • As a result, it is recommended that the whole area be classed as asbestos contaminated as the safest and best practice option for the site.

Construction activities to establish the rail trail will encounter asbestos as identified in **Table 3.2**. Asbestos dispersed into the environment has potential to impact human health and may result in asbestosis, lung cancer and Mesothelioma.

An asbestos management plan has been prepared for the activity to manage disturbance and removal of asbestos during construction (Appendix C). This plan will be incorporated into the CEMP required for the Activity. Further testing and investigations will be undertaken following the removal of asbestos to ensure that the site does not present health and environmental risk to rail trail users during operation.

The following safeguards are recommended to prevent any adverse impacts on the site and surrounds by way of contamination or disturbance of asbestos.

Is there any evidence within or nearby the likely footprint of potential contamination?	Yes	☒	No	☐
Are there any known occurrences of salinity or acid sulfate soils in the area?	Yes	☐	No	☒
Are the works likely to result in more than 2.5ha (area) of exposed soil?	Yes	☒	No	☐
Contaminated Land and Acid Sulfate Soils - Recommended Safeguards: • *The CEMP will include the Asbestos Management Plan prepared by North Coast Occupational Hygiene.* • *Further testing and investigations will be undertaken by an EPA approved Occupational Hygienist following the removal of asbestos to ensure that the site does not present health and environmental risk to rail trail users during operation.* • *The CEMP is to contain suitable unexpected finds protocols and waste handling procedures for managing contaminated soils. This shall include, as a minimum:* - *Works to proceed with caution and cease immediately if any potential source of contamination in encountered.* - *If unexpected contamination is encountered, a suitably qualified environmental consultant shall be engaged to address the contamination issue and develop a suitable management plan in accordance with NSW Legislation.* - *Excess spoil to be disposed offsite from the proposed works will need to be classified pursuant to the EPA Waste Classification Guidelines. Relevant permits may need to be obtained for such waste in accordance with the POEO Act 1997 and the relevant guidelines.*				

3.3 Water Quality and Hydrology

3.3.1 Existing Environment

The site is located within the Richmond River catchment area. According to RVC flood mapping the southern extent of the activity area is subject to flooding (low hazard) around the area associated with the Old Casino Railway Station. RVC flood mapping does not extend further north of the railway station area, however localised flooding may also occur during wet weather events in low lying wetland areas and

where the rail alignment traverses waterways and drainage lines. A number of named waterways intersect or adjoin the rail alignment as shown at **Table 3.3**.

Table 3.3 Waterways within the Activity Area

General location	Waterway
Casino	Jabiru Geneebeinga Wetland
Springgrove	Barlings Creek and associated wetland and tributaries
Naughtons Gap	Tributaries associated with Barlings Creek
	Post Office Creek and associated wetland and tributaries (Key Fish Habitat)
	Back Creek and associated wetland and tributaries (Key Fish Habitat)

3.3.2 **Impact Assessment**

Construction activities have potential to impact water quality within adjoining waterways including:

- Sediment can be transported from the construction areas (including stockpiles) into drainage lines and waterways causing turbidity.
- Chemical spills from construction activities disperse into drainage line entering and polluting waterways
- Tannins from mulched stockpiles of vegetation entering drainage lines waterways increase the biological oxygen demand (BOD) of the receiving environment and decreasing available dissolved oxygen within the waterway impacting aquatic plants and animals.

To ensure the potential water quality impacts of the activity are prevented, minimised or mitigated, the following safeguards are recommended.

Are the works located within, adjacent to or near a waterway or body of water?	Yes	☒	No	☐
Is the location known to flood or be prone to water logging?	Yes	☒	No	☐
Will the proposed works be undertaken on a bridge?	Yes	☒	No	☒
Are the works likely to require the extraction of water from a local water course?	Yes	☐	No	☒

Water Quality and Hydrology - Recommended Safeguards:

- *In stream controls including silt booms and the like will be installed where works will expose soils and has potential to impact a nearby waterway in accordance with the Department of Housing's "Blue Book (4th Edition) on erosion and sediment control and Safe Work Australia 'Excavation Code of Practice*
- *Fuel for construction equipment is to be stored in a bunded container. Refuelling of plant is to be undertaken within a designated bunded area.*
- *Visual monitoring of local water quality (i.e. turbidity, hydrocarbon spills/slicks) is to be undertaken on a regular basis to identify any potential spills or deficient erosion and sediment controls.*
- *Wash down, if undertaken at the site, must be undertaken in a designated and controlled (bunded and plastic lined) area within the site. Wash down shall use potable water and excess debris removed using hand tools. Wash down waste must be filtered before release.*
- *All stockpiles will be located on elevated land, outside of drainage lines and flood prone areas, and not within 50 metres of a waterway.*

- *Water to be used efficiently and conserved where possible.*
- *Stormwater from roof surfaces is to be appropriately managed in accordance with Richmond Valley Council's Design Guidelines D7 and the Northern Rivers Local Government Development & Design Manual.*
- *Contractors shall monitor weather forecasts daily and ensure that works are scheduled so that construction is not impacted by flooding where possible.*

3.4 Biodiversity

3.4.1 Existing Environment

Biodiversity impact assessment has been undertaken for the activity and is provided at Appendix B. The environment within the rail corridor has been identified as predominantly comprising a highly disturbed and modified landscape which is subject to high levels of weed infestation. The corridor lies within a similarly modified landscape formerly cleared and modified for grazing, agricultural and urban settlement. The rail corridor also contains some areas of biodiversity value including adjoining areas of native vegetation and habitat for a diverse range of fauna, particularly birds. One threatened flora species (Thorny Pea) and two threatened fauna species (Little Bent-winged Bat and Large Bent-winged Bat) were recorded within and adjoining the activity area; with potential for several other additional threatened fauna species to utilise habitat within the rail corridor on an opportunistic or seasonal basis. Three threatened ecological communities (TECs) occur in localised areas within the railway corridor adjacent to the railway formation. These coastal floodplain TECs are mainly in fragmented low condition regrowth states. A fourth coastal floodplain TEC occurs adjacent to the railway corridor. An overview of key biodiversity value associated with the Activity area is provided at Table 3.4. Weed infestations were also identified throughout the extent of the rail corridor.

Table 3.4 Key Biodiversity Value within and adjoining the Activity Area

Biodiversity item	Description
Naughton's Gap Tunnel Bat Roost	A significant roost site for microchiropteran bats at Naughton's Gap tunnel that includes two threatened fauna species (Little Bent-winged Bat and Large Bent-winged Bat). Both species are listed as Vulnerable under the *Biodiversity Conservation Act 2016 (BC Act)*. The two species are co-roosting with an estimate population of >5000 individuals and is determined to constitute a significant population.
Threatened flora (Thorny Pea) Back Creek	Threatened flora: one species, Thorny Pea was recorded at Back Creek in two locations on the western side of the waterway outside the rail corridor.
Native vegetation	Fragmented stands of native vegetation on the railway formation have regrown since 2004 and are generally of limited biodiversity value.
	Adjoining the rail corridor are stands of better quality vegetation with conservation values including threatened ecological communities and localised areas with mature/moderate condition vegetation. BC Act listed TECs adjoining the rail corridor includes Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion; Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South-East Corner Bioregions; and Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions.

Biodiversity item	Description
	Riparian areas associated with Post Office Creek and Back Creek are mapped Biodiversity Values Land under the *BC Act*.
Key fish habitat (Barlings Creek and Back Creek)	Barlings Creek and Back Creek are mapped as potential habitat for the Purple Spotted Gudgeon (Mogurnda adspera) as per the Fisheries NSW Spatial Data Portal

3.4.2 **Impact Assessment**

Impacts of the rail trail establishment and operation are expected to be relatively low on the basis that the rail corridor typically comprises weedy regrowth with minimal native vegetation or significant habitat; and in the context of the modified agricultural landscape.

A significant microbat roost is located within the Naughton's Gap tunnel that requires protection. The rail trail has been designed to avoid the tunnel entirely and the trail design includes secured tunnel exclusion infrastructure to prevent trail users entering the tunnel. This will in effect limit any impact on the microbat roost associated with the trail operation.

The rail trail has also been designed to avoid the area associated with the threatened flora (Thorny Pea) and limit impact of the trail operation on the species.

General potential biodiversity impacts associated with the rail trail construction phase includes:

- Potential disturbance to the large roosting colony of Bent-winged bats within the Naughtons Gap rail tunnel during the construction and operation stages of the project. It is noted that the CBRT has be designed to divert around the rail trail and will exclude human visitation into the tunnel.
- Loss of up to 2.11 ha of native vegetation from seven Plant Community Types although it is noted that actual vegetation clearing is likely to be less than this, given that most vegetation is to be retained to contribute to the amenity of the rail trail.
- Loss of up to 0.42 ha of vegetation representative of three Threatened Ecological Communities.
- Removal/ disturbance of potential habitat for the following threatened fauna species:
  - Forest/ woodland birds: Dusky Woodswallow, Little Lorikeet, Glossy Black-Cockatoo, Grey-crowned Babbler.
  - Birds of prey: Spotted Harrier, Eastern Grass Owl.
  - Wetland/ floodplain birds: Brolga, Black-necked Stork, Comb-crested Jacana.
  - Microbats: Eastern Coastal Freetail-bat, Little Bent-winged Bat, Large Bent-winged Bat, Yellow-bellied Sheathtail-bat, Greater Broad-nosed Bat, Southern Myotis.
  - Mammals: Squirrel Glider, Brush-tailed Phascogale, Koala.
  - Flying-foxes: Grey-headed Flying-fox.
- Localised disturbance in or near Barlings Creek and Back Creek and associated riparian zone which provides potential habitat for the Fisheries Management Act 1994 (FM Act) listed threatened fish species, Southern Purple Spotted Gudgeon Potential for impacts to waterways during works (e.g. spills, erosion/ sedimentation etc) or impacts to aquatic fauna where instream works are required (e.g. temporary crossings).

Potential operational impacts of the proposed rail trail include:

- Disturbance to microbat roost habitat at Naughton's Gap tunnel from rail trail users.
- Rubbish/ waste dumping or entering waterways.
- Increased dispersal opportunities for feral animals such as wild dogs and foxes.

- Introduction or spread of weeds.

In the context of the disturbance history and condition of the railway corridor and local landscape, and through design, construction and operation phase management measures, the activity can be established and operate with relatively low biodiversity impact.

The following recommended safeguards have been provided to mitigate biodiversity impacts associated with the activity.

Have relevant database searches been carried out?	Yes	☒	No	☐
Did the database searches identify any endangered ecological communities, threatened flora and/or threatened or protected fauna within the vicinity of the proposed works?	Yes	☒	No	☐
Will the proposed works require the removal of any vegetation?	Yes	☒	No	☐
Will the proposed works affect any tree hollows or hollow logs?	Yes	☐	No	☒
Are there any known areas of critical habitat, coastal wetland or littoral rainforest area within the vicinity of the proposed works?	Yes	☐	No	☒
Will the proposed works provide any additional barriers to the movement of wildlife?	Yes	☐	No	☒
Will the proposed works disturb any natural waterways or aquatic habitat?	Yes	☒	No	☐
Will the proposed works disturb any crevices or other locations (such as on bridges and culverts) for potential bat habitat?	Yes	☒	No	☐
Will there be impact on any vegetation or land that is part of an offset or is protected under a condition of approval from a previous project?	Yes	☐	No	☒

Biodiversity - Recommended Safeguards:

Detailed design

- *During* detailed design/ construction aim to avoid vegetation removal where possible. Priority would be given to avoiding removal of:
  - Threatened ecological communities (TECs).
  - Areas of mapped native vegetation.
  - Mature trees, particularly Forest Red Gums.

  Where vegetation removal is unavoidable vegetation removal would be minimised.

Construction

- *A Microbat Management Plan (MMP) would be developed by an ecologist with microbat management experience to guide works within 200 m of the Naughton's Gap tunnel. The Plan would provide a suite of proven safeguards to minimise disturbance to the roosting colony during construction, giving due consideration to the final design, construction methodologies and site conditions. The need for construction timing restrictions for high-risk activities during the peak bent-winged bat overwintering period (March and September, inclusive) would be considered. The Plan would include a construction and operation phase monitoring program (including collection of baseline data prior to construction commencing) to determine if bats are being adversely impacted by the project, with contingency triggers and corrective actions clearly defined*
- *Native vegetation removal would be avoided/ minimised where possible.*
- *Clearing limits would be clearly delineated to avoid damage to retained vegetation.*
- *Vegetation would be directionally cleared into existing cleared areas to prevent damaged to adjacent retained vegetation.*
- *Temporary no-go fencing would be installed when working in proximity to sensitive areas including TECs, patches of Thorny Pea at Back Creek, waterways and microbat habitat.*
- *Pre-clearing ecologist inspections would be undertaken prior to commencement of clearing to identify sensitive features within the works footprint (e.g. bird nests; waterways that require instream works and provide potential aquatic fauna habitat; potential microbat roosts). Advice would be provided by the ecologist for the management of these features to reduce potential impacts to fauna based on the conditions at the time of the works. The ecologist would belicenced under the BC Act and undertake fauna rescue and relocation as appropriate during removal of sensitive features.*
- *Where an ecologist is not required to be on site during clearing, final inspections for fauna would be undertaken by the contractor. Should arboreal fauna be detected, the works would stop and appropriate temporary buffers established based on advice from the ecologist.*
- *A Weed and Pathogen Management Plan would be developed and implemented by the construction contractor. This would focus on suppression of weeds, meeting Biosecurity Act 2015 obligations and preventing the introduction or spread of weeds and pathogens from construction works. Incorporation of relevant measures would include ensure all plant, vehicles and equipment (including clothing) are clean before coming to site, and are weed and propagule free before leaving the site.*
- *Should dewatering of any waterways be required, an aquatic ecologist would be engaged to guide the dewatering process and undertake aquatic fauna salvage and relocation.*

Operation

- *Final designs of rail trail infrastructure in the vicinity of the Naughton's Gap Tunnel roost site would be development in consultation with a microbat expert and BCD. The objective of this collaboration is to ensure the rail trail designs 1) prevent microbat and human interactions;*

and 2) avoid and minimise indirect impacts during both the construction and operation phases of the project. This would include:

- *Diverting the rail trail around the tunnel and not to the tunnel entrances to minimise indirect visitor disturbance. Viewpoints of the tunnel entrances may still be provided (e.g. from viewing platform with interpretive signage located off the side of the trail as it ascends the hill). Simple guide/barrier fence (e.g. timber post and rail fence) could be used to direct trail users to stay on the trail rather than proceeding towards the tunnel entrances.*
- *Locating infrastructure (e.g. picnic tables, bike racks, etc) away from the tunnel entrances so as to not encourage the congregation of people near the tunnel entrances.*
- *Signage should be installed at the tunnel entrance stating 'Hazardous conditions – do not enter' or words of similar intent.*
- *Making the focal point of the trail tunnel feature the viewpoint from the hill above the tunnel with signage, picnic facilities, view points away from the tunnel entrances*

- *Should use of the trail by feral animals (wild dogs, foxes) become an issue, rail trail management may be required to participate in baiting programs run by North Coast Local Land Services. This measure should be included in a biosecurity management plan.*
- *Provisions of the Companion Animals Act 1998 would be implemented to minimise domestic pet interactions with native fauna as a result of rail trail usage. Key provisions include:*
  - *Pet owners must ensure that their companion animal does not threaten or harm a person or animal and is prevented from straying or causing other nuisance.*
  - *Council officers are able to enforce the Act and manage stray and aggressive dogs*

Biosecurity Management

- *Effective biosecurity management during the construction and operation phases of the project is essential and should be planned during the project planning phase and encompass:*
  - *Weed management.*
  - *Maintaining livestock fencing and ensuring separation between livestock on adjacent grazing land and rail trail users.*
  - *Encouraging users of the rail trail to implement good biosecurity management hygiene.*
  - *Providing clean down facilities at strategic access points.*
  - *Bollards at entrance points to prevent unauthorised vehicle access.*
- *Users of the rail trail should be educated on good biosecurity management hygiene to reduce the spread of weeds and pathogens. This would include:*
  - *Ensuring bikes, clothing and equipment is clean of soil and plant material before accessing the site or going to other areas.*
  - *Staying on the rail trail (not venturing into weed infestations and native vegetation).*
  - *Avoiding contact with livestock and wildlife.*
  - *Take out what you take in (i.e. no littering).*
  - *If walking pets, they must be on a leash.*

3.5 Aboriginal Heritage

3.5.1 Existing Environment

The activity area is located within the boundary of the Casino Local Aboriginal Land Council. There are no determined Native Title claims within the activity area. One Native Title Claim proximate to the site being NCD2013/002 Bandjalung People #2 v. Attorney General of NSW. A determination has been made in the Federal Court in regard to this claim (NSD6107/1998). The determination found that Native Title exists in parts

of the determination area. Of note, the closest part of the determination area is east of Spring Grove Road approximately 200m east of the rail trail alignment. While not preclusive, works shall be undertaken with awareness of cultural significance in the area. One active claim yet to be determined (NC2013/005 Widjabul Wia-bal People) is located within the northern extent of the activity area near Bentley Road. A search of the NSW AHIMS found that there are a number of Aboriginal cultural places within surrounding landscape but none located within the activity area (refer to Appendix D),

The activity area is predominantly located within the rail corridor which is extensively disturbed as a result of prior construction of rail infrastructure and the Old Casino Railway Station and include regrowth vegetation. Similarly, sections of the activity area that intersect public roads are also extensively disturbed. In these areas a clear and observable change of natural ground surface has occurred and is therefore consistent with '*disturbed land*' as defined under the under the NSW Government's 'Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales'.

The following sections of the activity area deviate from the rail corridor and do not meet the definition of '*disturbed land*' as defined under the NSW Government's 'Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales'.

- Naughtons Gap lookout: This section of the trail deviates from the rail corridor to avoid impacts associated with the bat roost at Naughtons Gap rail tunnel. The landform features undulating rural land that does not present sufficient evidence of significant disturbance.
- Bentley Road site: This area adjoins the rail corridor and there is potential that parts of this area have been disturbed as a result of both rail and road construction activities, but it is difficult to conclude that the entire activity area is disturbed land.

Parts 1 and 2 of the Generic Due Diligence Process under the NSW Government's 'Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales' has been completed below.

Table 3.5 – Part 1: Generic Due Diligence Review

Due Diligence Process Step	Comment
1. Will the activity disturb the ground surface or any culturally modified trees?	As discussed above, the activity area is predominantly disturbed land however some sections of the activity area are considered disturbed land as outlined above. The activity will require excavation and removal of trees within areas that are not considered disturbed land.
2a. Are there any relevant confirmed site records or other associated landscape feature information on AHIMS? and/or	A search of the NSW AHIMS found that there are a number of Aboriginal cultural places within surrounding landscape but none located within the activity area. The activity occurs within 200m of water and along a ridge top including Naughtons Gap lookout area and the Bentley Road site; both considered not to be disturbed land.

2b. Are there any other sources of information of which a person is already aware? and/or	Not that the REF author, nor Council, is aware of.
2c. Are there any landscape features that are likely to indicate presence of Aboriginal objects? - within 200m of waters? - located within a sand dune system? - located on a ridge top, ridge line or headland? - located within 200m below or above a cliff face? - within 20m of or in a cave, rock shelter, or a cave mouth	The activity occurs within 200m of water and along a ridge top including Naughtons Gap lookout area and the Bentley Road site; both considered not to be disturbed land.

3.5.2 **Impact Assessment**

Parts 3 - 5 of the Generic Due Diligence Process under the NSW Government's 'Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales' has been completed below.

Table 3.6 – Part 2: Generic Due Diligence Review

Due Diligence Process Step	Comment
If after completing steps identified in Table 3.5 above and no information indicates site importance, it is reasonable to conclude that there are no known Aboriginal objects or a low probability of objects occurring in those areas of the proposed activity, you can proceed with caution.	
3. Can harm to Aboriginal objects listed on AHIMS or identified by other sources of information and/or can the carrying out of the activity at the relevant landscape features be avoided?	Naughtons Gap lookout area and the Bentley Road site are both considered not to be disturbed land. There is risk that Aboriginal objects may be present in these areas.
4. Does a desktop assessment and visual inspection confirm that there are Aboriginal objects or that they are likely?	A search of the NSW AHIMS found that there are a number of Aboriginal cultural places within surrounding landscape but none located within the activity area. This indicated that the general locality of the activity has been subject to cultural practices in the past. Naughtons Gap lookout area and the Bentley Road site are not considered disturbed land will require site inspection by traditional owners (Casino Local Aboriginal Land Council) to confirm presence of Aboriginal objects.
5. Further investigation and impact assessment	The activity will require the preparation of an Aboriginal Cultural Heritage Assessment to assess the potential impact of the activity on aboriginal cultural heritage within the Naughtons Gap lookout area and the Bentley Road site. The assessment will require onsite visual inspection of

	the activity area with the relevant traditional owners (Casino Local Aboriginal Land Council) and any recommendations of the assessment incorporated into the activity.

The proposed activity will not occur near any known Aboriginal places or objects with no disturbance of other known aboriginal objects or places proposed. An Aboriginal Heritage Impact Permit (AHIP) in accordance with the NP&W Act 1974 is not required at this stage. The activity is not a 'future act' as it does not occur on land where native title exists.

Most of the activity area has been extensively disturbed as a result of rail and road construction activities. However further investigation is required within the Naughtons Gap lookout area and the Bentley Road site prior to constructing to determine the presence or potential impacts on unknown Aboriginal objects within the construction areas. The activity will require the preparation of an Aboriginal Cultural Heritage Assessment to assess the potential impact of the activity on aboriginal cultural heritage within the Naughtons Gap lookout area and the Bentley Road site. The assessment will require onsite visual inspection of these areas with the relevant traditional owners (Casino Local Aboriginal Land Council) and any recommendations of the assessment incorporated into the activity.

If during construction any artefacts or remains are discovered or information has been provided that suggest the site holds significant cultural heritage value to the Aboriginal Community, all works in the vicinity of the find will cease immediately. The Casino Local Aboriginal Land Council and NSW Environment, Energy and Science (EES) will be notified, and appropriate permits (AHIP) may be required under the *NP&W Act 1974* before works can recommence.

Will the works involve disturbance in any area that has not been subject to previous ground disturbances?	Yes	☒	No	☐
Has online AHIMS search been completed?	Yes	☒	No	☐
Is there potential for the proposed works to impact on any items of Aboriginal heritage?	Yes	☒	No	☐
Will the works impact on any features that may indicate any potential archaeological remains?	Yes	☒	No	☐
Is the site subject to a Native Title determination, for which Native title was found to exist?	Yes	☐	No	☒

Aboriginal Heritage - Recommended Safeguards:

- *Prior to works commencing, RVC shall prepare an Aboriginal Cultural Heritage Assessment to assess the potential impact of the activity on aboriginal cultural heritage. The assessment will require onsite visual inspection of the activity area with the relevant traditional owners (Casino Local Aboriginal Land Council) and any recommendations of the assessment incorporated into the activity.*
- *The CEMP is to include an Inadvertent discovery finds protocol:*
  <u>Sub-surface cultural material</u>
  - *On discovery of any surface or buried sub-surface cultural material (other than human remains, which is addressed following) the following actions should occur as soon as practicable:*
  - *All work should cease at the location and if necessary, an appropriately qualified Aboriginal sites officer or experienced archaeologist, with expertise in Aboriginal cultural*

heritage is to be notified, if not already present at the location. The area is to be cordoned off to prevent access and to protect the object. Construction workers and operational personnel will comply with the instructions of the qualified Aboriginal Sites Officer and/or experienced cultural professional (archaeologist). Construction may be able to continue at an agreed distance away from the site.

- *The Casino Local Aboriginal Land Council and NSW Environment, Energy and Science (EES) are to be notified.*
- *An Aboriginal cultural heritage assessment of the object and surrounding locality is to be undertaken. A written report of the archaeologist's findings and recommendations is to be provided to registered Aboriginal parties and NSW Environment, Energy and Science (EES) for their consideration.*
- *No further works or development may be undertaken at the location until the required investigations have been completed and AHIP permits, or approvals obtained as required by the NPW Act and receipt of written authorisation by NSW Environment, Energy and Science (EES). Upon further advice, construction may be able to continue at an agreed distance away from the site.*
- *AHIMS registration of the object(s) will be required.*

Human Remains

- *Should human remains be found during the activity or works, the following actions should occur as soon as practicable:*
- *All work should cease at the location. The Police must be notified, and all personnel and contractors on site should be advised that it is an offence under the Coroners Act to interfere with the material/remains.*
- *If necessary, an appropriately qualified Aboriginal or experienced archaeologist, with expertise in Aboriginal cultural heritage is to be notified, if not already present at the location. The area is to be cordoned off to access and to protect the remains. Construction workers and operational personnel will comply with the instructions of the qualified Aboriginal sites officer or archaeologist.*
- *The Local Aboriginal Land Councils are to be notified.*
- *No further works or development may be undertaken until the required investigations have been completed and permits or approvals obtained where required in accordance with the NPW Act. Upon further advice, construction may be able to continue at an agreed distance away from the site.*
- *AHIMS registration of the burial remains will be required if found to be Aboriginal cultural remains.*

3.6 Historic Heritage

3.6.1 Existing Environment

Searches of the NSW State Heritage Inventory, Register of the National Estate and RVC LEP 2012 confirms that activity area is located within proximity to two heritage listed items as shown at **Table 3.7**.

Table 3.7 Historic Heritage items near the Activity Area

Item	Listing	Description
Old Casino Railway Station	NSW State Heritage Register (SHR) Listing No: 01216	Old Casino site is significant as the first railway station in the area opening in 1903 and changing to Old Casino with the opening of the new facilities when the main line was opened to Brisbane in 1930. It is a good example of
	RVC LEP 2012 II40	

Item	Listing	Description
		a pioneer building at a large location. The crane is a rare and preserved example of this type of early timber and steel structure. The item is assessed as being historically, architecturally and socially rare.
Naughtons Gap railway tunnel	RVC LEP 2012 I144	The Naughton's gap tunnel is historically significant for its association with the development of the North Coast railway, particularly the development of stage 2 between Lismore and Grafton. It is representative of the 9 tunnels that were built on the line east of Casino.

3.6.2 **Impact Assessment**

The proposed activity has been designed to avoid the Naughtons Gap railway tunnel due to the sensitive biodiversity issues associated with the microbat roost within the tunnel (refer to section 3.4). Therefore, the heritage values of the Naughtons Gap railway tunnel will not be impacted by the Activity.

Similarly, the project has been designed to avoid any impact on the NSW State Heritage Register (SHR) Old Casino Railway Station and both design and construction impacts are located outside the State Heritage curtilage boundary.

Unexpected heritage finds may be encountered during the works and suitable unexpected finds protocols are recommended during construction of the activity.

The following recommended safeguards have been provided to mitigate impacts upon heritage items associated with the activity.

Have online heritage database searches been completed?	Yes	☒	No	☐
Are there any items of non-Aboriginal heritage or heritage conservation areas located within the vicinity of the proposed works?	Yes	☒	No	☐
Are there any items of potential non-Aboriginal heritage significance within the vicinity of the works?	Yes	☒	No	☐
Are works likely to occur in or near features that indicate potential archaeological remains?	Yes	☒	No	☐

Historic Heritage - Recommended Safeguards:

- *If historic heritage items are uncovered during the works, all works in the vicinity of the find must cease and NSW Heritage notified immediately.*
- *In the event of an unexpected find, works will not recommence until signed authority is received from the Council and any necessary permits and/or approvals are obtained.*
- *The Construction Contractor is to ensure all staff on site are aware of the unexpected finds protocol contained in the Construction Environmental Management Plan.*
- *Exclusion fencing will be established along the boundary of the NSW State Heritage Register (SHR) Listing No: 01216 to exclude construction activities with the State Heritage listed area.*
- *Not construction activities are permitted within the SHR Listing No: 01216 without prior approval issued by the NSW Heritage Council under section 60 of the NSW Heritage Act 1977.*

3.7 Noise and Vibration

3.7.1 Existing Environment

Existing background noise will typically include agricultural noises associated with rural activities and vehicle uses along public roads. Insect and livestock generated noise will also contribute to background noise during the night.

Sparse rural residences are located along the rail corridor; particularly closer to Casino and Spring Grove with less rural residences located along the alignment at Naughton's Gap and Bentley Road areas. Residential dwellings within 100 metres of the Activity area are shown at **Table 3.8.** There are no schools or places of public worship within 200 metres of the activity area,

Table 3.8 Residences within 100m of the Activity Area

General location	Property Description
Casino	Lot 77 DP755727
	Lot 1 DP 859772
	Lot 23 DP831821(within approx. 50m)
	Lot 22 DP831821
	Lot 56 DP 730495
	Lot 7013 DP92635 (within approx. 50m)
	Lot 13 DP817042
	Lot 4 DP801921(within approx. 50m)
Spring Grove	Lot 32 DP701177 (within approx. 50m)
	Lot 2 DP873198 (within approx. 50m)
	Lot 130 DP755727 (within approx. 50m)
Naughtons Gap	Lot 2 DP 734474 (within approx. 50m)
	Lot 4703 DP 1222201

3.7.2 Impact Assessment

The construction and operation of the rail trail will occur within 100 meters of residences in Casino, Spring Grove and Naughtons Gap as shown in **Table 3.8**.

Use of plant and machinery, vehicles and works activity during the construction phase may have short-term noise and vibration impacts of minor significance. Trucks accessing the site will also be a source of intermittent noise throughout of the construction period.

All reasonable and feasible work practices will be implemented to reduce construction noise including, maintaining all construction equipment is good working order and operating equipment as per manufacturer's specifications.

The construction period for the Activity is expected to take approximately twelve months pending weather conditions.

Construction working hours will be restricted to the normal daytime construction hours as specified by the EPA being:

- 7 am to 6 pm Monday to Friday.
- 8 am to 1 pm Saturdays.
- No works will be undertaken on Sundays or Public Holidays.

Works may be undertaken outside these hours where:

- The delivery of materials is required outside these hours by the Police or other authorities.
- It is required in an emergency to avoid the loss of life, damage to property and/or to prevent environmental harm.
- Any parties likely to be affected by the works are notified in writing of the timing and duration of these works at least 24 hours prior to the commencement of works (with the exception of emergency work).

EPA's Interim Construction Noise Guidelines recommendations for construction noise levels include:

- The noise management level (NML) for works during the recommended standard hours is background + 10 dB(A). Above this noise level the proponent needs to implement all feasible and reasonable work practices, as defined in the Guideline, to minimise noise impacts.
- For works outside the recommended standard hours, the NML is background + 5 dB(A).
- The highly noise-affected level of LAeq 75 dB(A) represents the point above which there may be strong community reaction to noise and indicates a need to consider other feasible and reasonable ways to reduce noise, such as restricting the times of very noisy works to provide respite to affected residences.

Given the proposed works will be undertaken in close proximity to sensitive receivers (<100m) it is possible that the Activity will result in a noise-affected level at some locations; particularly receivers within 50 m of the works.

Based on the scale of the works and distance to the nearest buildings, there will be no cosmetic or structural damage to any structure. There is also no potential for human comfort goals to be exceeded.

Due the methodology of the works, the proposed plant and equipment being used for construction and proximity of the works to sensitive receivers, additional safeguards are considered necessary to manage noise and vibration impacts.

The operation of the rail trail is expected to add some additional noise to the general area associated with trail users. The level of noise generation is expected to be audible from residences adjoining the rail corridor identified in **Table 3.8**. The operational noise levels are not anticipated to be significant requiring any noise attenuation, regardless it is recommended that Council undertakes periodic consultation with potential noise affected residents to determine whether any post construction measures may need to be implemented.

The following recommended safeguards have been provided to mitigate noise and vibration impacts associated with the activity.

Are there any residential properties or other noise sensitive areas near the location of the proposed works that may be affected by the works (i.e., church, school, hospital)?	Yes	☒	No	☐
Are the proposed works going to be undertaken only during standard working hours?	Yes	☒	No	☐
Will the construction duration be greater than 3 weeks?	Yes	☒	No	☐
Is any explosive blasting required for the proposed works?	Yes	☐	No	☒
Will operation of the works alter the noise environment for sensitive receivers?	Yes	☒	No	☐

Will the works result in vibration being experienced by any surrounding properties or infrastructure (during either construction or operation)?	Yes	☐	No	☒

Noise and Vibration - Recommended Safeguards:

- *Notification of all receivers within 100 m of the works (letterbox drop or equivalent) 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.*
- *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.*
- *All employees, contractors and subcontractors are to receive an environmental induction. The induction must at least include:*
  - *All relevant project-specific and standard noise mitigation measures.*
  - *Permissible hours of work.*
  - *Any limitations on high noise generating activities.*
  - *Location of nearest sensitive receivers.*
  - *Designated loading/ unloading areas and procedures.*
  - *Escalation protocols for noise complaints.*
- *No swearing or unnecessary shouting or loud stereos/ radios on site.*
- *In general, the following respite is provided. High noise and vibration generating activities (e.g. pavement cutting) may only be carried out in continuous blocks, not exceeding three hours each, with a minimum respite period of one hour in between each block.*
- *RVC shall undertake periodic consultation with residences adjoining the rail corridor that may be affected by operational of the rail trail. Residents will be provided with a contact telephone number to register any issues. RVC shall keep records of all issues registered and will investigate and action any issues as required.*

3.8 Air Quality

3.8.1 Existing Environment

No specific land uses within the immediate area are identified as generating significant emissions. Background emissions in the locality that may impact air quality within the activity area and adjoining land include operational of agricultural machinery, transport vehicles and bushfires. There are sensitive residential receivers located within proximity to the activity area as shown in **Table 3.8**.

3.8.2 Impact Assessment

The activity may generate emissions through the operation of machinery, plant and tools during the construction of the rail trail. Of note, the works will require site disturbance (i.e., tree removal, soil excavation, old rail track/sleeper removal etc.).

These activities have potential to make materials airborne or enter the environment unless managed accordingly. Safeguards and mitigation measures are required to protect workers and nearby sensitive receivers from dust and other materials produced from the activity during the demolition. Mitigation measures such covering truck loads, installing dust screens and wetting down stockpiled and exposed soil as necessary are to be employed and detailed under the CEMP.

As detailed in section 3.2, the activity will require removal of asbestos that has potential to cause emissions of hazardous materials into the environment. Suitable measures are therefore required to ensure the

asbestos removal and transportation is safely managed in accordance with the asbestos management plan prepared for the activity (refer to Appendix C)

Following the completion of construction works, the air quality in the locality will be expected to be comparable to that of the current environment.

The following recommended safeguards have been provided to mitigate air quality impacts associated with the activity.

Are the proposed works likely to result in large areas (>2ha) of exposed soils?	Yes	☒	No	☐
Will there be any dust sensitive receivers located within the vicinity of the proposed works during the construction period?	Yes	☒	No	☐
Is there likely to be an emission to air during construction?	Yes	☒	No	☐

Air Quality - Recommended Safeguards:

- *Adjacent residents are to be suitably notified and consulted with prior to the works occurring and kept updated throughout the duration of the activity.*
- *Vehicles and vessels transporting waste or other materials that may produce odours or dust are to be covered during transportation.*
- *The Construction Contractor will observe local meteorological conditions and predicted forecasts on a daily basis and prepare site for extreme weather events (i.e., high winds).*
- *All disturbed areas will be stabilised as soon as practicable to prevent or minimise windblown dust.*
- *Disturbed surfaces and stockpiles will be wetted down or covered with geotextile fabric during high wind conditions to prevent significant dust generation, as required.*
- *All plant and machinery will be serviced at regular intervals to minimise exhaust emissions.*
- *Vehicles will be switched off when not in use.*

3.9 Traffic & Access

3.9.1 Existing Environment

The rail trail alignment will cross public roads including Naughtons Gap Road, Whittons Road, Powells Road and Bentley Road. The existing rail corridor is no longer used by trains.

3.9.2 Impact Assessment

Construction access points to the activity area will occur from the existing public road network intersecting the rail alignment including Naughtons Gap Road, Whittons Road, Powells Road and Bentley Road. Construction access will also occur along the alignment of the rail corridor.

Where the construction of the rail trail and site access is required adjacent to live traffic; traffic control will be required to ensure safety for construction staff and road users. Similarly, the construction of the rail trail will in sections be located within a narrow construction alignment and management of internal vehicle movements, parking and construction staff is required to ensure workers safety.

Additional parking is proposed to support operation of the rail trail at key trail points including the Casino Rail Station start point, Primex Site, Naughtons Gap, and Bentelys Road finish point. The total parking numbers proposed will be determined at detailed design stage. The rail trail operation will also need to ensure suitable signage and infrastructure is maintained to promote safety of rail trail users over the public

roads at the relevant crossing points of Naughtons Gap Road, Whittons Road, Powells Road and Bentley Road.

The following recommended safeguards have been provided to mitigate traffic and access impacts associated with the activity.

Are the proposed works likely to result in detours or disruptions to traffic flow (vehicular, cycle and pedestrian) or access during construction?	Yes	☒	No	☐
Are the proposed works likely to result in detours or disruptions to traffic flow (vehicular, cycle and pedestrian) or access during operation?	Yes	☐	No	☒
Are the proposed works likely to affect any other transport nodes or transport infrastructure (e.g., bus stops, bus routes) in the surrounding area? Result in detours or disruptions to traffic flow (vehicular, cycle and pedestrian) or access during operation?	Yes	☐	No	☒

Traffic & Access - Recommended Safeguards:

- *A Traffic Control Plan (TCP) shall be prepared by a suitable qualified person (orange card) and implemented for the works in accordance with the requirements of the Traffic Control at Worksites Manual (RTA 2010 V4) and AS1742.3. Licensed traffic controllers will assist with traffic control during the Project.*
- *Where possible, current traffic movements will be maintained during the works.*
- *Regard to public safety will be maintained at all times.*
- *Appropriate signage will be erected and details will be confirmed by appropriate Council personnel responsible for site safety during the Activity.*
- *Traffic delay notifications will be issued by Council at least two weeks prior to commencement of works. Notification will be made via Council website, media notification and potable variable messages sign (VMS) located along Byron Bay Road.*
- *An Access Management Plan shall be prepared to manage internal site traffic and pedestrian movements to ensure the safety of workers and public within the site.*
- *Neighbouring residents and property owners are to be informed in writing with respect to any changes to pedestrian movements around the site.*
- *The public way must not be obstructed by any materials, vehicles, refuse, skips or the like, under any circumstances.*
- *Detailed design of the activity shall include signage and infrastructure to ensure safe rail trail crossing points at Naughtons Gap Road, Whittons Road, Powells Road and Bentley Road.*

3.10 Waste and Chemical Management

3.10.1 Existing Environment

The main types of waste currently associated with the activity area are mixed forms of general rubbish which has been left by road users within the adjoining road corridor or members of the public accessing the rail corridor.

As detailed previously in **section 3.2**, asbestos containing materials are located within the rail corridor at seven locations including one site in Casino and serval location across Spring Grove and Naughtons Gap with possibility of further expected finds within the activity area.

3.10.2 **Impact Assessment**

The works will likely generate construction waste, such as metal, concrete, soil, and general waste. As detailed in **Section 3.2** some waste generated from the activity will be classified as contaminated (including asbestos materials) , and will be required to be transferred from the site via trucks and disposed at licensed waste facilities for the receipt of such waste as classified, with preference given to those in closest proximity.

Chemicals may be used onsite during some components of the works including fuel required to operate machines and vehicles or pesticides required for weed control. Storage and handling of chemicals are governed under Australian Standards (AS3780-2008).

During operation rail trail users will generate waste and will require suitable waste stream bins and educational waste signage to mitigate littering impacts of trail users.

The following recommended safeguards have been provided to mitigate waste impacts associated with the activity.

Are the proposed works likely to generate >200 tonnes of waste material?	Yes	☐	No	☒
Contaminated waste material?	Yes	☒	No	☐
Are the proposed works likely to require a licence from the EPA?	Yes	☐	No	☒

Waste and Chemical Management - Recommended Safeguards:

- *Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day using skip bins.*
- *Work to be undertaken in accordance with the Protection of the Environment Operations (Waste) Regulation 2014.*
- *Waste materials are to be categorised in accordance with the NSW EPA Waste Classification Guidelines and transferred to a licensed waste facility for the receipt of such waste.*
- *Asbestos waste shall be managed in accordance with the asbestos management plan.*
- *Operational waste stream bins and educational waste signage will be provided at key trail points to mitigate littering impacts of trail users.*

3.11 Bushfire

3.11.1 **Existing Environment**

The activity area traverses grassland and stands of native vegetation that has been mapped as bushfire prone land. There are also various residences that are located within proximity of the actively area as shown at **Table 3.8.**

3.11.2 **Impact Assessment**

Power tools are proposed to be used at the site which have the potential to cause sparks.

In order to ensure that the proposed activity does not result in a fire, firefighting equipment will be kept on site. Works which could cause sparks are to cease during total fire bans. The wetting down of nearby vegetation and structures on the adjacent lots will also reduce the risk of fire.

The following recommended safeguards have been provided to mitigate bushfire impacts associated with the activity.

Is the site identified as bushfire prone land?	Yes	☒	No	☐
Does the proposal involve a Special Fire Protection Purpose?	Yes	☐	No	☒

Will the proposed works cause an open flame/spark?	Yes	☒	No	☐

Bushfire - Recommended Safeguards:

- *A fire extinguisher is to be kept on site throughout the proposed activity construction phase.*
- *All work involving an open flame or spark out in the open is to cease during a total fire ban.*
- *The Construction Contractor is to check the Fire Danger Rating for the Far North Coast Fire Area: 1 prior to any work involving an open flame or spark out in the open commences.*
- *Construction Contractor is to make sure all staff are aware of evacuation route.*
- *In the event of a fire, 000 is to be called immediately.*

3.12 Visual Amenity & Landscape

3.12.1 **Existing Environment**

The visual landscape associated with the activity area is summarised in Table 3.9 below.

Table 3.9 Visual Landscape associated with the Activity Area

General location	Landscape description	Landscape quality
Casino and Spring Grove	The landscape in this area comprises a mix of railway buildings, the Casino Dairy Co-operative buildings and adjoining area of rural lands and rural residences. This area is relatively flat with minimal stands of vegetation.	Medium
Upper Springgrove, Naughtons Gap and Bentley road	The landscape in this area comprises undulating rural landscape with sparse rural residences. Stands of native vegetation are located within the broader landscape and adjoining the rail corridor. Elevated sections of the alignment feature scenic rural views.	Medium to high

3.12.2 **Impact Assessment**

There will be minor short-term visual impacts during construction of the project. This will be associated with the presence of workers, construction equipment, temporary structures and fencing.

Areas of tree loss will occur resulting in a visual change to some sections to trail alignment, however not all areas can be seen from the public domain therefore the visual impact is relatively low.

The proposed new infrastructure including playgrounds, amenities buildings, rest areas and parking areas at the Primex Site, Naughton's Gap and Bentley Road locations represent a change to the existing landscape. These elements of new infrastructure and associated landscaping have been carefully designed to provide a positive visual change. Remaining sections of the trail upgrades are relatively consistent with the existing rail alignment; being at grade level trails of compacted gravel, sealed bitumen and concrete. Some raised boardwalks may be provided in sections and an adjacent maintenance track/trail will also be provided and function as a horse trail along the entire alignment. Detailed design for any buildings or structures shall include soft material finishes that minimise intrusive glare and other detrimental visual landscape impacts. These variations in the visual landscape are not considered significant and do not represent a negative impact on the visual landscape of the area.

Overall , the proposed new trail infrastructure is not considered significant in scale and is not expected to detrimentally impact the quality of the existing visual landscape associated with the activity area.

The following recommended safeguards have been provided to mitigate visual impacts associated with the activity.

Are the proposed works over or near an important physical or cultural element or landscape? (Heritage items and areas, distinctive or historic built form, National Parks, conservation areas, scenic highways etc.)?	Yes	☒	No	☐
Will the proposed works obstruct or intrude upon the character or views of a valued landscape or urban area? For example, locally significant topography, a rural landscape or a park, a river, lake or the ocean or a historic or distinctive townscape or landmark?	Yes	☐	No	☒
Will the proposal require the removal of mature trees or stands of vegetation, either native or introduced?	Yes	☒	No	☐
Will the proposal result in large areas of man-made material or clearing visible from the road or adjacent properties?	Yes	☐	No	☒
Will the proposal involve new noise walls or visible changes to existing noise walls?	Yes	☐	No	☒
Will the proposal involve substantial changes to the appearance of a bridge (including piers, girders, abutments and parapets) that are visible from the road or residential areas?	Yes	☐	No	☒
If involving lighting, will the proposal create unwanted light spillage on residential properties at night (in construction or operation)?	Yes	☐	No	☒
Will any new structures or features being constructed result in over shadowing to adjoining properties or areas?	Yes	☐	No	☒
Visual Amenity & Landscape - Recommended Safeguards: • *Upon completion of work, temporary structures, barriers and fences, work areas and stockpiles will be removed, the site cleared of all rubbish and materials and rehabilitated (i.e. turfed).* • *Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day using skip bins.* • Detailed design for any buildings or structures shall include soft material finishes that minimise intrusive glare and other detrimental visual landscape impacts.				

3.13 Socio-economic Considerations

The activity is located within the Richmond Valley Council Local Government Area (LGA) within the popular holiday destination of the Northern Rivers of NSW. The Northern Rivers region is a key tourism destination, with the second highest level of international tourists in NSW. The activity area spans the localities of Casino, North Casino, Spring Grove and Bentley and the proposed rail trail ties into the rail corridor that connects similar proposed rail trail projects within the Lismore, Byron and Tween LGAs.

Review of Richmond Valley Council online demographic profile (.id Community 2022) identifies the estimated population of the Richmond Valley as of March 2021 is 23,490 and the LGA is experiencing population growth. The Richmond Valley has a strong primary agricultural industries and associated food manufacturing, including beef production, dairy products, sugar processing, plus grain, fruits, vegetables, tea tree, timber and the fishing industry. The area also has a strong tourism interest associated with its coastal and hinterland regions. The Richmond Valley is well located for principle road, rail and air transport routes south to Sydney and north to Queensland. The Richmond Valley's gross regional product (GRP) is

estimated at $1 billion, which represents 0.15% of NSW's gross state product. It is also noted that the LGA has a higher proportion of children (under 18) and a higher proportion of persons aged 60 or older than Regional NSW, with an average age of 44.

Scoping studies undertaken for the overall Casino to Murwillumbah rail trail project (refer to Appendix E) identifies that based on a case study of similar rail trails, establishing the overall rail trail has potential to result in visitation levels between 25,900 and 97,100 per annum, with a base case visitation estimate of around 88,300 per annum. The report further estimates each rail trail visitation has potential to spend on average AU$201 per day per individual. Based on these estimates the completed rail trail (Casino to Murwillumbah) has potential to generate between $4 million and $17.4 million per annum. Additional economic benefits will also be generated across local businesses within the region in association with the rail trail construction phase.

The operation of the rail trail will have direct benefits associated with community health and wellbeing as a result of trail users actively undertaking outdoor recreation. The trail usage will also foster opportunities for positive social interactions across a variety of user groups.

Temporary property access impacts will occur where private driveways cross the rail line. In such instances an alternate property access shall be provided until such time as the original access point is reinstated; ensuring that suitable access is maintain during construction and during operation of the activity.

Although there are temporary negative impacts during the construction phase, these short-term negative impacts can be managed through safeguards and mitigation measures detailed within this REF and further implemented through the CEMP.

During preliminary consultation undertaken for the NRRT, a number of adjoining residences raised objections to the proposed rail trail associated with anticipated negative biosecurity and amenity impacts (e.g. noise) of the trail operation. RVC shall undertake periodic consultation with residences adjoining the rail corridor that may be affected by operational of the rail trail. Residents will be provided with a contact telephone number to register any issues. RVC shall keep records of all issues registered and will investigate and action any issues as required.

The following recommended safeguards have been provided to mitigate socio-economic impacts associated with the activity.

Are the proposed works likely to negatively impact on local business?	Yes	☐	No	☒
Are the proposed works likely to require any property acquisition?	Yes	☐	No	☒
Are the proposed works likely to alter any access for properties (either temporarily or permanently)?	Yes	☐	No	☒
Are the proposed works likely to alter any on-street parking arrangements (either temporarily or permanently)?	Yes	☐	No	☒
Are the proposed works likely to change pedestrian movements or pedestrian access (either temporarily or permanently)?	Yes	☐	No	☒
Are the proposed works likely to impact on any items or places of social value to the community (either temporarily or permanently)?	Yes	☐	No	☒
Are the proposed works likely to reduce or change visibility of any businesses, farms, tourist attractions or the like (either temporarily or permanently)?	Yes	☐	No	☒
Socio-economic Considerations - Recommended Safeguards:				

- *Goods, services, and personnel will be sourced locally wherever possible.*
- *Where possible, current traffic movements and property accesses are to be maintained during the works. Any disturbance is to be minimised to prevent unnecessary traffic delays.*
- *Adjacent residents are to be suitably notified and consulted with prior to the works occurring and kept updated throughout the duration of the activity.*
- *Construction Contractor is to report and document incidents where damage to public or private property is caused.*

3.14 Cumulative impacts

No other external projects (other than the Casino to Murwillumbah Rail Trail) are known to be proposed or occurring in the vicinity of the site shortly before, during or after the proposed activity.

Are other projects proposed to be undertaken at the same time within the vicinity of the proposal?	Yes	☐	No	☒
Cumulative Impacts - Recommended Safeguards: • *N/A*				

4 Statutory and Planning Considerations

4.1 Commonwealth legislation

4.1.1 *Environment Protection & Biodiversity Conservation Act 1999 (EPBC Act)*

Under the EPBC Act, actions that have, or are likely to have, a significant impact on a matter of national environmental significance (MNES) require approval from the Australian Government Minister for the Environment (the Minister). The nine matters of national environmental significance protected under the EPBC Act are:

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

Based on the search results and Biodiversity Impact Assessment (refer to Appendix B), no significant impacts to any MNES are likely to result from the proposal, therefore referral to the Minister for the Environment and Energy will be unlikely to be required.

4.1.2 *Aboriginal Land Rights Act 1983 (ALR Act 1983) and Native Title Act 1993 (NT Act 1993)*

Native Title is the recognition in Australian law that some Indigenous people continue to hold rights to their land and waters, which come from their traditional laws and customs. Native title can be extinguished (refused recognition) because of actions the government has done, or allowed others to do, over a particular area that are inconsistent with Native Title. Native Title exists alongside and subject to the rights of other people in the same area and can only be claimed on certain areas of land or water, such as vacant or unallocated Crown Land and not on residential freehold land or public operational land like roads, schools or hospitals.

In accordance with the ALRA 1983 and NT Act, the land is not Crown Land and subsequently Native Title Claim is extinguished. The proposed activity will not be identified as a 'future act' for the purposes of the *NT Act 1993*.

There are no determined Native Title claims within the activity area. One Native Title Claim proximate to the site being NCD2013/002 Bandjalung People #2 v. Attorney General of NSW. A determination has been made in the Federal Court in regard to this claim (NSD6107/1998). The determination found that Native Title exists in parts of the determination area. Of note, the closest part of the determination area is east of Spring Grove Road approximately 200m east of the rail trail alignment. While not preclusive, works shall be undertaken with awareness of cultural significance in the area.

4.2 State Legislation

4.2.1 Environmental Planning and Assessment Act 1979 (*EP&A Act 1979*)

The EP&A Act 1979 is the principal planning legislation for NSW. It provides a framework for the overall environmental planning and assessment of proposals.

The works are to be assessed as 'development permissible without consent' under Part 5 of the EP&A Act 1979. This is discussed in detail under section 4.3.1 of this REF. Accordingly, Council must satisfy Sections 5.5, 5.6 and 5.7 of that Act by examining, and taking into account to the fullest extent possible, all matters which are likely to affect the environment. This REF is intended to assist and ensure compliance with the EP&A Act 1979 including Sections 5.5, 5.6 and 5.7 and the requirements of clause 171 of the Regulation. Environmental Planning Instruments under the EP&A Act 1979, other Acts and Regulations may also be relevant and are addressed below.

4.2.2 *Biodiversity Conservation Act 2016 (BC Act 2016)*

Part 7 of the BC Act 2016 provides the environmental assessment requirements for activities being assessed under Part 5 of the EP&A Act 1979. If a significant impact is likely, the environmental impact statement is to be accompanied by a Species Impact Statement, or if the proponent so elects – a biodiversity development assessment report. Section 7.2(1)(a) and 7.3 describe the assessment requirements and thresholds for what is considered a significant impact.

The Biodiversity Impact Assessment prepared by GeoLink confirms a BioNet search identified records of 32 threatened flora species and habitat for 10 threatened ecological communities listed in the BC Act from within 5 km of the site. A number of these species/communities are also listed in the EPBC Act. Protected Matters Search Tool results identified habitat for 22 threatened flora species and two threatened ecological communities listed in the EPBC Act within 5 km of the site.

The subject site contains land identified on the Biodiversity Values Map associated with the alignment of Post Office Creek.

The activity area is modified, having been historically cleared, levelled and maintained for rail infrastructure for over 100 years. Key findings of the biodiversity impact assessment are summarised at section 3.4 and is provided at Appendix B.

On the basis of the findings of the assessment, it is considered that with the adoption of various safeguards and mitigation measures, development of the rail trail can be managed in such a way that impacts to biodiversity are relatively low. As the activity will not have a significant impact on biodiversity and is being undertaken under Part 5 of the *EP&A Act 1979*, the proposal will not require entry into the Biodiversity Offset Scheme.

4.2.3 *Contaminated Land Management Act 1997 No 140 (CLM Act 1997)*

Section 59 of the Act requires the notification of contaminated sites. A search of the NSW Environment Protection Authority's (EPA) Contaminated Lands Register found that none of the sites are recorded as being contaminated.

Section 60 of the Act requires that the EPA be notified by landowners as soon as practicable after the person becomes aware of contamination that represents a risk of harm to human health or the environment. The EPA will therefore need to be notified if it is found that the land is contaminated and presents a risk of harm to human health or the environment.

It is considered suitable to proceed with the construction works in accordance with the asbestos management plan prepared for the activity, considering the history of the site and the proposed works (in terms of land use and construction requirements).

4.2.4 *Heritage Act 1977*

Searches on the NSW State Heritage Branch database found the activity area is proximate to the following heritage listed areas

- Old Casino Railway Station (State and locally listed)
- Naughtons Gap railway tunnel (locally listed)

The activity has been designed such that impacts on both listed heritage items can be avoided via the implementation of safeguards listed in this REF.

4.2.5 *Fisheries Management Act 1994*

An assessment of significance ('seven-part test') under Section 220ZZA of the Fisheries Management Act 1994 (FM Act) is required where impacts on threatened species, populations and communities listed in the FM Act may occur. Statutory assessment for potential impacts to the Purple Spotted Gudgeon (Mogurnda adspera) are required for works in or near Barlings Creek and Back Creek (including associated tributaries) and have been completed (refer to Appendix B). The assessment concluded that a significant impact was unlikely. No habitat for other threatened species, populations and communities listed in the FM Act occur within the railway corridor, therefore no other assessment of significance would be required.

Any instream works required for the activity within the following waterways will require a permit from DPI fisheries in accordance with section 200 of the *Fisheries Management Act 1994*:

- Post Office Creek and associated wetland and tributaries (Key Fish Habitat)
- Back Creek and associated wetland and tributaries (Key Fish Habitat)

4.2.6 *Local Land Services Act 2013 (LLS Act 2013)*

The objects of the *LLS Act 2013* include 'to ensure the proper management of natural resources in the social, economic and environmental interests of the State, consistently with the principles of ecologically sustainable development. The Act regulates the clearing of native vegetation; however section 60(O)(b)(ii) excludes the need for consent under the LLS Act 2013 where the clearing is an activity carried out by a determining authority within the meaning of Part 5 of the *EP&A Act 1979*.

The removal of the trees is being undertaken by a public authority. This negates further assessment requirements under the LLS Act.

4.2.7 *National Parks and Wildlife Act 1974 (NP&W Act 1974)*

The NP&W Act 1974 regulates the control and management of all national parks, historic sites, nature reserves, and Aboriginal areas (among others). The site is not located on or adjacent to any land reserved or protected under this Act and will therefore not have an impact on any National Parks or reserves.

The main aim of the NP&W Act 1974 is to conserve the natural and cultural heritage of NSW and where works will disturb Aboriginal objects, an Aboriginal Heritage Impact Permit (AHIP) is required.

The proposed activity will not occur near any known Aboriginal places or objects with no disturbance of other known aboriginal objects or places proposed. An Aboriginal Heritage Impact Permit (AHIP) in accordance with the NP&W Act 1974 is not required at this stage.

Most of the activity area has been extensively disturbed as a result of rail and road construction activities. However further investigation is required within the Naughtons Gap lookout area and the Bentley Road site prior to constructing to determine the presence or potential impacts on unknown Aboriginal objects within the construction areas. The activity will require the preparation of an Aboriginal Cultural Heritage Assessment to assess the potential impact of the activity on aboriginal cultural heritage within the Naughtons Gap lookout area and the Bentley Road site. The assessment will require onsite visual inspection of these areas with the relevant traditional owners (Casino Local Aboriginal Land Council) and any recommendations of the assessment incorporated into the activity.

4.2.8 *Protection of the Environment Operations Act 1997 (POEO Act 1997) and associated Regulations*

The *Protection of the Environment Operations Act 1997* (POEO Act) is the key environmental protection and pollution statute. The Act is administered by the EPA and establishes a licensing regime for waste, air, water and pollution. The following summarises key heads of consideration under the Act:

- The project contractor is required to notify EPA if a 'pollution incident' occurs during works, that is likely to impact upon the environment.
- The REF includes mitigations measures to minimise potential impacts that may result in pollution of waters
- The project contractor is required to manage waste in accordance with the Waste Avoidance and Resource Recovery Act 2001.

Section 143 of the Act requires waste to be transported to a place that can lawfully accept it. All waste generated form the works will need to be classified pursuant to the EPA Waste Classification Guidelines and relevant permits obtained for its disposal.

4.2.9 *Water Act 1912 and Water Management Act 2000 (WM Act 2000)*

The *Water Act 1912* and the WM Act 2000 are the two key pieces of legislation for the management of water in NSW and contain provisions for the licensing of water access and use.

The main objective of the WM Act 2000 is to manage NSW water in a sustainable and integrated manner that will benefit today's generations without compromising future generations' ability to meet their needs. Section 91E of the Act establishes an approval regime for controlled activities within waterfront land. Consistent with Clause 41 of *Water Management (General) Regulation 2018*, a public authority is exempt from Section 91E(1) of the Act in relation to all controlled activities that it carries out in, on or under waterfront land. So while the alignment crosses several streams which will usually form a controlled activity, no controlled activity approval is necessary.

The proposed activity does not require the taking of water nor does it involve water supply works (as defined by the WM Act). Approvals for such are therefore not required.

4.2.10 *Roads Act 1993*

Section 138 of the Roads Act requires the approval from the relevant road's authority for the erection of structures or the carrying out of works including digging up and disturbing the surface of a public road.

Part 5(1) of Schedule 2 of the Roads Act 1993 states that public authorities do not require consent for works on unclassified roads. The rail trail generally follows and connects/intersects unclassified roads. Further assessment or approvals under this *Act* are not required.

4.2.11 *Rural Fires Act 1997 (RF Act 1997)*

The objectives of the RF Act 1997 are to protect life and property from bushfires and coordinate and prevent bushfires in the State. Section 100B of the RF Act 1997 declares certain development which requires a bushfire safety authority. The subject site contains mapped bushfire prone land, however the proposed activity is not development for the purposes of Section 100B. A bushfire safety authority is therefore not required.

Section 99 of the RF Act 1997 enables the minister to declare a total fire ban in in any part of the State. A total fire ban helps prevent bushfires developing during very hot, dry and windy weather. During total fire bans it is not permitted to light, maintain or use a fire in the open, or to carry out any activity in the open that causes, or is likely to cause, a fire. As the subject site is located next to vegetation and dwellings, adherence to total fire bans and weather conditions is necessary.

4.2.12 **Waste Avoidance and Resource Recovery Act 2001 (WARR Act 2001)**

The purpose of the WARR 2001 is to develop and support the implementation of regional and local programs to meet the outcomes of a State-wide strategy for waste avoidance and resource recovery. It also aims to 'minimise the consumption of natural resources and final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste'.

Waste generation and disposal reporting will be carried out during the construction and operation of the proposal. Procedures shall be implemented in an attempt to promote the objectives of the Act.

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

4.3.1 **State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&ISEPP)**

The aim of this Policy is to facilitate the effective delivery of infrastructure across NSW by identifying whether certain types of infrastructure require consent, can be carried out without consent or are exempt development.

Transport for NSW (TfNSW) and Richmond Valley Council are public authorities (EP&A Act s1.4 and s5.3) and Transport for NSW is the determining authority (EP&A Act s. 5.1) appointing Richmond Valley Council to carry out the construction activity.

Division 15 Railways of T&ISEPP specifies that development for the purpose of a railway or rail infrastructure facilities may be carried out by or on behalf of a public authority without consent on any land.

Rail infrastructure facilities include—

*a) railway tracks, **associated track structures,** cuttings, **drainage systems, fences, tunnels,** ventilation shafts, emergency accessways, **bridges, embankments, level crossings and roads, pedestrian and cycleway facilities,** and*

b) signalling, train control, communication and security systems, and

*c) **power supply** (including overhead power supply) systems, and*

d) railway stations, station platforms and areas in a station complex that commuters use to get access to the platforms, and

*e) **public amenities for commuters**, and*

*f) **associated public transport facilities for railway stations**, and*

g) facilities for the assembly, maintenance and stabling of rolling stock, and

g1) facilities for the dismantling and stabling of rolling stock taken out of service, and

*h) refuelling depots, **garages, maintenance facilities** and **storage facilities** that are for the purposes of a railway, and*

i) railway workers' facilities, and
j) rail freight terminals, sidings and freight intermodal facilities, and
*k) **buildings for or related to railway purposes,***
but do not include buildings or works that are for residential, retail or business purposes and unrelated to railway purposes.

The land is owned by Transport for NSW, the Rail Trail works and facilities are considered to meet the definition of Railway Infrastructure Facilities and therefore can be undertaken without requiring development consent.

These works still require a detailed environmental assessment in the form of a Review of Environmental Factors (REF), addressing Part 5 of the EP&A Act 1979 and clause 171 of the Regulations.

T&1SEPP requires the public authority to undertake consultation with other public authorities for work permitted without consent under Division 1. The proposed activity triggers statutory consultation requirement under Division 1. Consultation requirements are further discussed in Section 5 of this REF.

4.3.2 Review of other Environmental Planning Instruments

The following table provides a review of other Environmental Planning Instruments (EPIs) made under the EP&A Act 1979. Whilst not applicable, this review of EPIs has been undertaken to assist in confirming the suitability, likely impacts, and necessary environmental considerations for the proposed activity. This review has confirmed that the proposal is consistent with the aims and objectives of the EPIs and EP&A Act 1979.

Table 4.1 - Review of Other EPIs

EPI	Section	Comment
State Environmental Planning Policy (Resilience and Hazards) 2021	Chapter 2 Coastal management	The proposed activity is not located within the coastal zone. This SEPP is not applicable
	Chapter 3 Hazardous and offensive development	The proposed activity is not defined as a "potentially hazardous industry" or "potentially offensive industry".
	Chapter 4 Remediation of land	The proposed works do not require remediation of land.
State Environmental Planning Policy (Biodiversity and Conservation) 2021	Chapter 4 Koala habitat protection 2021	The SEPP indicates when a Koala Plan of Management is required in regard to development that requires consent. As the activity is permitted without consent the provisions of the SEPP do not apply.
State Environmental Planning Policy (Planning Systems) 2021	Chapter 3 Aboriginal land	The Aboriginal Land SEPP only applies to land identified on the Land Application Map. The subject site is not identified on the Land Application Map.

EPI	Section	Comment
	Schedule 1-7	The proposal is not identified Regionally Significant Development, or State Significant Development
State Environmental Planning Policy (Precincts—Regional) 2021		The subject site is not located within a Regional significant precinct.

Review of the above EPIs find that no further consent, licence, permission, approval or authorisation is required for the proposed activity.

4.4 Matters of National Environmental Significance (NES)

The following matters are required to be considered under the EPBC Act when determining if the proposal shall be referred to the Commonwealth Department of Environment and Energy for assessment.

Table 4.2 - Review of Matters of NES

Matters of NES	Significant Impact			
Any impact on a World Heritage property?	Yes	☐	No	☒
The activity is not located on or within proximity to a World Heritage property.				
Any impact on a National Heritage place?	Yes	☐	No	☒
The activity is not located on or within proximity to a National Heritage Place.				
Any impact on a wetland of international importance?	Yes	☐	No	☒
The activity is not located on or within proximity to a wetland of international importance.				
Any impact on a nationally listed threatened species or communities?	Yes	☒	No	☐
The activity will not have any significant long-term impact on threatened species or communities. The impact is low.				
Any impacts on listed migratory species?	Yes	☒	No	☐
The activity will not have any impacts on listed migratory species. The impact is low.				
Does the proposal involve a nuclear action (including uranium mining)?	Yes	☐	No	☒
No nuclear action proposed.				
Any impact on a Commonwealth marine area?	Yes	☐	No	☒
The activity is not located on or within proximity to a Commonwealth marine area.				
Any impact on the Great Barrier Reef Marine Park?	Yes	☐	No	☒
The activity is not located on or within proximity to the Great Barrier Reef Marine Park.				
Any impact on water resources from coal seam gas development and large coal mining development?	Yes	☐	No	☒
No coal seam gas or coal mine is development proposed.				
Additionally, any significant impact (direct or indirect) on Commonwealth land?	Yes	☐	No	☒
No impact on Commonwealth land is proposed.				
Additionally, any significant impact (direct or indirect) on the environment generally as a result of a Commonwealth action?	Yes	☐	No	☒
No significant impact on the environment as a result of a Commonwealth action is proposed or likely.				

This REF has determined that the proposed activity does not require referral to the Commonwealth Department of Environment and Energy for assessment as it will not have any significant impacts on matters of NES.

4.5 Clause 171 of the Regulation

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

Table 4.3 - Review of Clause 171 Factors

Clause 171 Factors	Adverse Impact			
Any environmental impact on a community?	Yes	☐	No	☒
The proposal will have some short-term minor negative impacts associated with temporary restrictions associated with traffic control on public roads. However, the activity will have a long term positive impact on the community by providing a recreational trail for a variety of user groups. The short-term negative impacts can be managed through safeguards and mitigation measures.				
Any transformation of a locality?	Yes	☐	No	☒
The Activity does not transform the locality in any way.				
Any environmental impact on the ecosystems of the locality?	Yes	☒	No	☐
Reference shall be made to Section 3 of this REF. No detrimental environmental impact to ecosystems is likely to occur as part of the activity. All potential impacts are low.				
Any impact on the aesthetic, recreational, scientific or other environmental quality or value of a locality?	Yes	☒	No	☐
The activity is unlikely to detrimentally impact on the aesthetic, recreational, scientific or other environmental quality or value of the locality. All potential impacts are low.				
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?	Yes	☐	No	☒
Reference shall be made to Section 3 of this REF. No impact to items of anthropological, archaeological, architectural, cultural, historical, scientific or social significance are envisaged.				
Any impact on the habitat of protected animals (within the meaning of the Biodiversity Conservation Act 2016)?	Yes	☒	No	☐
The proposed activity will not have any adverse impacts on the habitat of protected animals. All potential impacts are low.				
Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?	Yes	☐	No	☒
The proposed activity will not cause the endangering of any species of animal, plant or other form of life.				
Any long-term effects on the environment?	Yes	☐	No	☒
The proposal is not considered to have any long-term effects on the environment.				
Any degradation of the quality of the environment?	Yes	☐	No	☒
The proposed activity will not degrade the quality of the environment.				
Any risk to the safety of the environment?	Yes	☐	No	☒
Minor short-term risks are likely and can be managed through appropriate safe work practices. These procedures have been recommended under this REF.				

Any reduction in the range of beneficial uses of the environment?	Yes	☐	No	☒
No reduction in the range of beneficial uses of the environment will occur.				
Any pollution of the environment?	Yes	☐	No	☒
Suitable construction methods will ensure there is no pollution of the environment and all waste will be disposed of correctly. These procedures have been recommended under this REF.				
Any environmental problems associated with the disposal of waste?	Yes	☐	No	☒
Any waste generated from the works will be categorised and disposed of in accordance with the relevant guidelines and all so as not to cause environmental problems.				
Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply?	Yes	☐	No	☒
The proposal will not increase demands on resources.				
Any cumulative environmental effect with other existing or likely future activities?	Yes	☐	No	☒
No cumulative impacts have been identified.				
Any impact on coastal processes and coastal hazards, including those under projected climate change conditions?	Yes	☐	No	☒
The activity is not located within the coastal zone.				

The factors listed under Clause 171 have been considered and all impacts associated are considered acceptable and can be managed, mitigated and minimised through the implementation of the measures contained in this REF.

5 Consultation Requirements

5.1 Consultation with Councils and Other Public Authorities

Part 2.2 Division 1 of the T&ISEPP requires public authorities to consult with Councils and other public authorities prior to the commencement of specified development. These requirements are summarised in Table 5.1.

Table 5.1 - Consultation Requirements Checklist

Infrastructure SEPP, Part 2, Division 1 Consultation				
Consultation with councils – development with impacts on council-related infrastructure or services				
Will the proposal have a substantial impact on stormwater management services provided by a council?	Yes	☐	No	☒
Is the proposal likely to generate traffic to an extent that will strain the capacity of the road system in a local government?	Yes	☐	No	☒
Will the proposal involve connection to, and a substantial impact on the capacity of, any part of a sewerage system owned by a council?	Yes	☐	No	☒
Will the proposal involve connection to, and use of a substantial volume of water from, any part of a water supply system owned by a council?	Yes	☐	No	☒
Will the proposal involve the installation of a temporary structure on, or the enclosing of, a public place that is under a council's management or control that is likely to cause a disruption to pedestrian or vehicular traffic that is not minor or inconsequential?	Yes	☐	No	☒
Will the proposal involve excavation that is not minor or inconsequential of the surface of, or a footpath adjacent to, a road for which a council is the roads authority under the Roads Act 1993 (if the public authority that is carrying out the development, or on whose behalf it is being carried out, is not responsible for the maintenance of the road or footpath)?	Yes	☐	No	☒
Consultation with councils – development with impacts on local heritage				
Is the proposal likely to affect the heritage significance of a local heritage item, or of a heritage conservation area, that is not also a State heritage item, in a way that is more than minor or inconsequential, and is development that this Policy provides may be carried out without consent?	Yes	☐	No	☒
Consultation with councils – development with impacts on flood liable land				
Is the proposed activity located on flood liable land and will change flood patterns other than to a minor extent?	Yes	☐	No	☒
Consultation with State Emergency Service – development with impacts on flood liable land				
Is the proposed activity located on flood liable land and proposed to be carried out without development consent under a relevant provision?	Yes	☒	No	☐
Consultation with councils – development with impacts on certain land within the coastal zone				

Is the proposed development on land that is within a coastal vulnerability area and is inconsistent with a certified coastal management program that applies to that land?	Yes	☐	No	☒
Consultation with public authorities other than councils				
Is the development adjacent to land reserved under the National Parks and Wildlife Act 1974 or to land acquired under Part 11 of that Act—the Office of Environment and Heritage?	Yes	☐	No	☒
Is the development on land in Zone E1 National Parks and Nature Reserves or in a land use zone that is equivalent to that zone—the Office of Environment and Heritage?	Yes	☐	No	☒
Is the development comprising a fixed or floating structure in or over navigable waters—Roads and Maritime Services?	Yes	☐	No	☒
Will the development increase the amount of artificial light in the night sky and that is on land within the dark sky region as identified on the dark sky region map—the Director of the Observatory?	Yes	☐	No	☒
Is the development on defence communications facility buffer land within the meaning of clause 5.15 of the Standard Instrument—the Secretary of the Commonwealth Department of Defence?	Yes	☐	No	☒
Is the development on land in a mine subsidence district within the meaning of the Mine Subsidence Compensation Act 1961—the Mine Subsidence Board?	Yes	☐	No	☒

As the activity is being undertaken on behalf of RVC, no consultation is required with Council under the provisions of T&ISEPP.

As the activity is being undertaken under T&ISEPP Division 15 (Railways), consultation is required with State Emergency Service. A letter was issued on 4 August (refer to Appendix F) and any response received by SES will be considered by RVC regarding the construction and or operation of the activity.

5.2 Community Consultation

Preliminary consultation was undertaken for the rail trail project in February 2020. The NSW Department of Planning, Industry and Environment sought to consult with the community on the potential closure of the currently disused Casino to Bentley rail corridor in the Northern Rivers area of NSW. The consultation involved an in-person public consultation session, held in Casino on 17th February 2020, and an invitation for public feedback was issued seeking email submissions for those unable to attend the sessions in person. A total of 30 people attended the consultation session. Attendees known to own land directly adjacent to the proposed rail trail numbered 12 people (representing 40 % of attendees). Of the questions raised a large proportion (84%) were focussed on specific aspects of the rail trail project. As specifics, of the proposed project were not available, in many cases definitive answers could not be provided and instead answers reflected the NSW Government's general position or approach.

Key issues raised during the consultation included:

- biosecurity management practices;
- the implications for adjacent landholders in relation to access and security;
- ongoing trail maintenance costs and how these can be offset by the economic opportunity the rail is intended to bring.

Overall, a total of three (3) written submissions were received. All were from local land holders. One of these was conditionally supportive of the rail trail, with that support premised on appropriate management and access arrangements being put in place. The other two written submissions outlined a series of issues and concerns about the rail trail which were deemed as objections.

A report on the consultation undertaken is provided at Appendix G.

5.3 Aboriginal Cultural Heritage Consultation

Onsite cultural heritage assessment is required to be undertaken with Casino Local Aboriginal Land Council prior to commencement of works at the Naughtons Gap lookout area and the Bentley Road site. Further detail is provided at Section 3.5 of this REF.

6 Environmental Management

6.1 Additional Approvals

The following additional approvals may be required for the Activity:

- Any instream works required for the activity within the following waterways will require a permit from DPI fisheries in accordance with section 200 of the *Fisheries Management Act 1994*:
  - Post Office Creek and associated wetland and tributaries (Key Fish Habitat); and
  - Back Creek and associated wetland and tributaries (Key Fish Habitat).

6.2 Summary of Environmental safeguards

Environmental safeguards and management measures outlined in this REF will be recommended to be implemented during construction and operation of this proposal. The safeguards and management measures will minimise any potential adverse impacts arising from the proposed works on the surrounding environment. The safeguards and management measures are summarised at **Table 6.1.**

Table 6.1 – Mitigation Measures

Safeguards/Mitigation Measures
1. General
• *A CEMP shall be prepared prior to any construction works commencing. The CEMP shall include relevant REF safeguards summarised under Section 3 and 6 of this REF* • *As part of the 'site induction' all workers are to be made aware of the site sensitivities.* • *Temporary ancillary facilities will be established within the alignment of the existing rail corridor and the boundary of the activity area. Construction parking, material laydown, material stockpiles and worker amenities shall be established within the ancillary facility areas.* *These facilities shall be established under the following general locational criteria:* - *A minimum distance of 50 m from any waterway;* - *A minimum distance of 200m from any residence;* - *Not within private land;* - *Not within an area that will require additional clearing outside of areas proposed to be cleared for rail trail infrastructure*

Safeguards/Mitigation Measures
2. Landform, Geology and Soils
• *Prior to finalising detailed designs, geotechnical investigations shall be undertaken for all new buildings and other significant structures to inform suitable foundations for each structure.* • *Site management will incorporate best management erosion and sediment control practices such as those found in the Department of Housing's "Blue Book (4th Edition) on erosion and sediment control and Safe Work Australia 'Excavation Code of Practice (March 2015).* • *Overburden will be placed in the form of a bund upslope of the site where necessary to reduce surface water entering the site.* • *All erosion and silt control devices will be visually inspected weekly and before forecast rain events to ensure effectiveness as well as after each rainfall event.* • *Excavated areas will be stabilised and returned to grass cover as soon as possible.*
3. Contaminated Land and Acid Sulfate Soils

• *The Construction Environmental Management Plan will include the Asbestos Management Plan prepared by North Coast Occupational Hygiene.*
• *Further testing and investigations will be undertaken by an EPA approved Occupational Hygienist following the removal of asbestos to ensure that the site does not present health and environmental risk to rail trail users during operation.*
• *Construction Environmental Management Plan is to contain suitable unexpected finds protocols and waste handling procedures for managing contaminated soils. This shall include, as a minimum:*
  - *Works to proceed with caution and cease immediately if any potential source of contamination in encountered.*
  - *If unexpected contamination is encountered, a suitably qualified environmental consultant shall be engaged to address the contamination issue and develop a suitable management plan in accordance with NSW Legislation.*
• *Excess spoil to be disposed offsite from the proposed works will need to be classified pursuant to the EPA Waste Classification Guidelines. Relevant permits may need to be obtained for such waste in accordance with the POEO Act 1997 and the relevant guidelines.*

4. Water Quality and Hydrology
• *In stream controls including silt booms and the like will be installed where works will expose soils and has potential to impact a nearby waterway in accordance with the Department of Housing's "Blue Book (4th Edition) on erosion and sediment control and Safe Work Australia 'Excavation Code of Practice.* • *Fuel for construction equipment is to be stored in a bunded container. Refuelling of plant is to be undertaken within a designated bunded area.* • *Visual monitoring of local water quality (i.e. turbidity, hydrocarbon spills/slicks) is to be undertaken on a regular basis to identify any potential spills or deficient erosion and sediment controls.* • *Wash down, if undertaken at the site, must be undertaken in a designated and controlled (bunded and plastic lined) area within the site. Wash down shall use potable water and excess debris removed using hand tools. Wash down waste must be filtered before release.* • *All stockpiles will be located on elevated land, outside of drainage lines and flood prone areas, and not within 50 metres of a waterway.*

Safeguards/Mitigation Measures
• *Water to be used efficiently and conserved where possible.* • *Stormwater from roof surfaces is to be appropriately managed in accordance with Richmond Valley Council's Design Guidelines D7 and the Northern Rivers Local Government Development & Design Manual.* • *Contractors shall monitor weather forecasts daily and ensure that works are scheduled so that construction is not impacted by flooding where possible*
5. Biodiversity
Detailed design • *During* detailed design/ construction aim to avoid vegetation removal where possible. Priority would be given to avoiding removal of: - Threatened ecological communities (TECs). - Areas of mapped native vegetation. - Mature trees, particularly Forest Red Gums. *Where* vegetation removal is unavoidable vegetation removal would be minimised. ***Construction*** • *A Microbat Management Plan (MMP) would be developed by an ecologist with microbat management experience to guide works within 200 m of the Naughton's Gap tunnel. The Plan would provide a suite of proven safeguards to minimise disturbance to the roosting colony during construction, giving due consideration to the final design, construction methodologies and site conditions. The need for construction timing restrictions for high-risk activities during the peak bent-winged bat overwintering period (March and September, inclusive) would be considered. The Plan would include a construction and operation phase monitoring program (including collection of baseline data prior to construction commencing) to determine if bats are being adversely impacted by the project, with contingency triggers and corrective actions clearly defined* • *Native vegetation removal would be avoided/ minimised where possible.* • *Clearing limits would be clearly delineated to avoid damage to retained vegetation.* • *Vegetation would be directionally cleared into existing cleared areas to prevent damaged to adjacent retained vegetation.* • *Temporary no-go fencing would be installed when working in proximity to sensitive areas including TECs, patches of Thorny Pea at Back Creek, waterways and microbat habitat.* • *Pre-clearing ecologist inspections would be undertaken prior to commencement of clearing to identify sensitive features within the works footprint (e.g. bird nests; waterways that require instream works and provide potential aquatic fauna habitat; potential microbat roosts). Advice would be provided by the ecologist for the management of these features to reduce potential impacts to fauna based on the conditions at the time of the works. The ecologist would belicenced under the BC Act and undertake fauna rescue and relocation as appropriate during removal of sensitive features.* • *Where an ecologist is not required to be on site during clearing, final inspections for fauna would be undertaken by the contractor. Should arboreal fauna be detected, the works would stop and appropriate temporary buffers established based on advice from the ecologist.*

Safeguards/Mitigation Measures

- *A Weed and Pathogen Management Plan would be developed and implemented by the construction contractor. This would focus on suppression of weeds, meeting Biosecurity Act 2015 obligations and preventing the introduction or spread of weeds and pathogens from construction works. Incorporation of relevant measures would include ensure all plant, vehicles and equipment (including clothing) are clean before coming to site, and are weed and propagule free before leaving the site.*
- *Should dewatering of any waterways be required, an aquatic ecologist would be engaged to guide the dewatering process and undertake aquatic fauna salvage and relocation.*

Operation

- *Final designs of rail trail infrastructure in the vicinity of the Naughton's Gap Tunnel roost site would be development in consultation with a microbat expert and BCD. The objective of this collaboration is to ensure the rail trail designs 1) prevent microbat and human interactions; and 2) avoid and minimise indirect impacts during both the construction and operation phases of the project. This would include:*
    - *Diverting the rail trail around the tunnel and not to the tunnel entrances to minimise indirect visitor disturbance. Viewpoints of the tunnel entrances may still be provided (e.g. from viewing platform with interpretive signage located off the side of the trail as it ascends the hill). Simple guide/barrier fence (e.g. timber post and rail fence) could be used to direct trail users to stay on the trail rather than proceeding towards the tunnel entrances.*
    - *Locating infrastructure (e.g. picnic tables, bike racks, etc) away from the tunnel entrances so as to not encourage the congregation of people near the tunnel entrances.*
    - *Signage should be installed at the tunnel entrance stating 'Hazardous conditions – do not enter' or words of similar intent.*
    - *Making the focal point of the trail tunnel feature the viewpoint from the hill above the tunnel with signage, picnic facilities, view points away from the tunnel entrances*
- *Should use of the trail by feral animals (wild dogs, foxes) become an issue, rail trail management may be required to participate in baiting programs run by North Coast Local Land Services. This measure should be included in a biosecurity management plan.*
- *Provisions of the Companion Animals Act 1998 would be implemented to minimise domestic pet interactions with native fauna as a result of rail trail usage. Key provisions include:*
    - *Pet owners must ensure that their companion animal does not threaten or harm a person or animal and is prevented from straying or causing other nuisance.*
    - *Council officers are able to enforce the Act and manage stray and aggressive dogs*

Biosecurity Management

- *Effective biosecurity management during the construction and operation phases of the project is essential and should be planned during the project planning phase and encompass:*
    - *Weed management.*

Safeguards/Mitigation Measures
- *Maintaining livestock fencing and ensuring separation between livestock on adjacent grazing land and rail trail users.* - *Encouraging users of the rail trail to implement good biosecurity management hygiene.* - *Providing clean down facilities at strategic access points.* - *Bollards at entrance points to prevent unauthorised vehicle access.* • *Users of the rail trail should be educated on good biosecurity management hygiene to reduce the spread of weeds and pathogens. This would include:* - *Ensuring bikes, clothing and equipment is clean of soil and plant material before accessing the site or going to other areas.* - *Staying on the rail trail (not venturing into weed infestations and native vegetation).* - *Avoiding contact with livestock and wildlife.* - *Take out what you take in (i.e. no littering).* - *If walking pets, they must be on a leash.*
6. Aboriginal Heritage
• *Prior to works commencing, RVC shall prepare an Aboriginal Cultural Heritage Assessment to assess the potential impact of the activity on aboriginal cultural heritage. The assessment will require onsite visual inspection of the activity area with the relevant traditional owners (Casino Local Aboriginal Land Council) and any recommendations of the assessment incorporated into the activity.* • *CEMP is to include an Inadvertent discovery finds protocol:* *<u>Sub-surface cultural material</u>* - *On discovery of any surface or buried sub-surface cultural material (other than human remains, which is addressed following) the following actions should occur as soon as practicable:* - *All work should cease at the location and if necessary, an appropriately qualified Aboriginal sites officer or experienced archaeologist, with expertise in Aboriginal cultural heritage is to be notified, if not already present at the location. The area is to be cordoned off to prevent access and to protect the object. Construction workers and operational personnel will comply with the instructions of the qualified Aboriginal Sites Officer and/or experienced cultural professional (archaeologist). Construction may be able to continue at an agreed distance away from the site.* - *The Casino Local Aboriginal Land Council and NSW Environment, Energy and Science (EES) are to be notified.* - *An Aboriginal cultural heritage assessment of the object and surrounding locality is to be undertaken. A written report of the archaeologist's findings and recommendations is to be provided to registered Aboriginal parties and NSW Environment, Energy and Science (EES) for their consideration.* - *No further works or development may be undertaken at the location until the required investigations have been completed and AHIP permits, or approvals obtained as required by the NPW Act and receipt of written authorisation by NSW Environment, Energy and Science (EES). Upon further advice, construction may be able to continue at an agreed distance away from the site.*

Safeguards/Mitigation Measures
- *AHIMS registration of the object(s) will be required.* *<u>Human Remains</u>* - *Should human remains be found during the activity or works, the following actions should occur as soon as practicable:* - *All work should cease at the location. The Police must be notified, and all personnel and contractors on site should be advised that it is an offence under the Coroners Act to interfere with the material/remains.* - *If necessary, an appropriately qualified Aboriginal or experienced archaeologist, with expertise in Aboriginal cultural heritage is to be notified, if not already present at the location. The area is to be cordoned off to access and to protect the remains. Construction workers and operational personnel will comply with the instructions of the qualified Aboriginal sites officer or archaeologist.* - *The Local Aboriginal Land Councils are to be notified.* - *No further works or development may be undertaken until the required investigations have been completed and permits or approvals obtained where required in accordance with the NPW Act. Upon further advice, construction may be able to continue at an agreed distance away from the site.* - *AHIMS registration of the burial remains will be required if found to be Aboriginal cultural remains.*
7. Historic Heritage
• *If historic heritage items are uncovered during the works, all works in the vicinity of the find must cease and NSW Heritage notified immediately.* • *In the event of an unexpected find, works will not recommence until signed authority is received from the Council and any necessary permits and/or approvals are obtained.* • *The Construction Contractor is to ensure all staff on site are aware of the unexpected finds protocol contained in the Construction Environmental Management Plan.* • *Exclusion fencing will be established along the boundary of the NSW State Heritage Register (SHR) Listing No: 01216 to exclude construction activities with the State Heritage listed area.* • *Not construction activities are permitted within the SHR Listing No: 01216 without prior approval issued by the NSW Heritage Council under section 60 of the NSW Heritage Act 1977.*
8. Noise and Vibration
• *Notification of all receivers within 100 m of the works (letterbox drop or equivalent) 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.* • *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.*

Safeguards/Mitigation Measures

• *All employees, contractors and subcontractors are to receive an environmental induction. The induction must at least include:*
  - *All relevant project-specific and standard noise mitigation measures.*
  - *Permissible hours of work.*
  - *Any limitations on high noise generating activities.*
  - *Location of nearest sensitive receivers.*
  - *Designated loading/ unloading areas and procedures.*
  - *Escalation protocols for noise complaints.*
• *No swearing or unnecessary shouting or loud stereos/ radios on site.*
• *In general, the following respite is provided. High noise and vibration generating activities (e.g. pavement cutting) may only be carried out in continuous blocks, not exceeding three hours each, with a minimum respite period of one hour in between each block.*
• *RVC shall undertake periodic consultation with residences adjoining the rail corridor that may be affected by operational of the rail trail. Residents will be provided with a contact telephone number to register any issues. RVC shall keep records of all issues registered and will investigate and action any issues as required.*

9. Air Quality
• *Adjacent residents are to be suitably notified and consulted with prior to the works occurring and kept updated throughout the duration of the activity.* • *Vehicles and vessels transporting waste or other materials that may produce odours or dust are to be covered during transportation.* • *The Construction Contractor will observe local meteorological conditions and predicted forecasts on a daily basis and prepare site for extreme weather events (i.e., high winds).* • *All disturbed areas will be stabilised as soon as practicable to prevent or minimise windblown dust.* • *Disturbed surfaces and stockpiles will be wetted down or covered with geotextile fabric during high wind conditions to prevent significant dust generation, as required.* • *All plant and machinery will be serviced at regular intervals to minimise exhaust emissions.* • *Vehicles will be switched off when not in use.*
***10.* Traffic and Access**
• *A Traffic Control Plan (TCP) shall be prepared by a suitable qualified person (orange card) and implemented for the works in accordance with the requirements of the Traffic Control at Worksites Manual (RTA 2010 V4) and AS1742.3. Licensed traffic controllers will assist with traffic control during the Project.* • *Where possible, current traffic movements will be maintained during the works.* • *Regard to public safety will be maintained at all times.*

Safeguards/Mitigation Measures
• *Appropriate signage will be erected and details will be confirmed by appropriate Council personnel responsible for site safety during the Activity.* • *Traffic delay notifications will be issued by Council at least two weeks prior to commencement of works. Notification will be made via Council website, media notification and potable variable messages sign (VMS) located along Byron Bay Road.* • *An Access Management Plan shall be prepared to manage internal site traffic and pedestrian movements to ensure the safety of workers and public within the site.* • *Neighbouring residents and property owners are to be informed in writing with respect to any changes to pedestrian movements around the site.* • *The public way must not be obstructed by any materials, vehicles, refuse, skips or the like, under any circumstances.* • *Detailed design of the activity shall include signage and infrastructure to ensure safe rail trail crossing points at Naughtons Gap Road, Whittons Road, Powells Road and Bentley Road.*
11. Waste and Chemical Management
• *Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day using skip bins.* • *Work to be undertaken in accordance with the Protection of the Environment Operations (Waste) Regulation 2014.* • *Waste materials are to be categorised in accordance with the NSW EPA Waste Classification Guidelines and transferred to a licensed waste facility for the receipt of such waste.* • *Asbestos waste shall be managed in accordance with the asbestos management plan.* • *Operational waste stream bins and educational waste signage will be provided at key trail points to mitigate littering impacts of trail users.*
12. Visual Amenity & Landscape
• *Upon completion of work, temporary structures, barriers and fences, work areas and stockpiles will be removed, the site cleared of all rubbish and materials and rehabilitated (i.e. turfed).* • *Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day using skip bins.* • *Detailed design for any buildings or structures* shall include soft material finishes that minimise intrusive glare and other detrimental visual landscape impacts.
13. Socio-economic Considerations
• *Goods, services, and personnel will be sourced locally wherever possible.* • *Where possible, current traffic movements and property accesses are to be maintained during the works. Any disturbance is to be minimised to prevent unnecessary traffic delays.* • *Adjacent residents are to be suitably notified and consulted with prior to the works occurring and kept updated throughout the duration of the activity.* • *Construction Contractor is to report and document incidents where damage to public or private property is caused.*

7 Conclusion

Planit Consulting Pty Ltd has prepared a Review of Environmental Factors for the proposed construction and operation of a 13.4km stretch of pedestrian and cycling 'rail trail' including associated rail infrastructure facilities, parking, amenities and the like within the Richmond Valley Council area between the Old Casino Station (south) and Bentley (north).

The REF has assessed the proposed activity under Part 5 of the EP&A Act 1979, with regard to the EP&A Regulations, other relevant legislation and EPIs to ensure due regard has been made to any potential detrimental environmental impact. This assessment has confirmed that the proposal is not likely to significantly detrimentally affect the environment.

This report demonstrates that the proposal will have no long-term adverse environmental impacts, is compatible with surrounding development, and serves an environmental, social and economic need to support public infrastructure and the supply of water to Lawrence. This environmental assessment has also identified the proposal is not a prescribed activity, and therefore does not require an Environmental Impact Statement (EIS) in accordance with Section 5.7 of the EP&A Act 1979, and is not likely to significantly affect threatened species, and therefore does not require a Species Impact Statement (SIS) in accordance with Section 7.8 of the *Biodiversity Conversation Act 2016*.

Additional environmental safeguards are proposed to mitigate any short-term construction impact and operational impacts associated with the activity, as prescribed and detailed under Section 6 of this REF.

Overall, it is considered that having regard to the relevant tests under the NSW and Commonwealth planning frameworks, the proposal shall be supported subject to the reasonable and relevant measures as contained in Section 6.

8 REF Determination Page

8.1 Declaration

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

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

Author Declaration	
Project Name:	Northern Rivers Rail Trail – Casino to Bentley
Assessor Name:	Sean Cochran
Position:	Senior Environmental Planner, Planit Consulting
Phone:	02 6687 4666
Signature:	
Date:	05/08/2022

8.2 Determiner declaration & approval

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

Determiner declaration & approval	
Determiner Name:	
Company:	
Position:	
Phone:	
Signature:	
Date:	

References

NSW Environment Protection Authority (2022), *Contaminated Lands Register, Available at:* http://www.epa.nsw.gov.au/prclmapp/searchregister.aspx (Accessed: 08 December 2020)

NSW Office of Environment and Heritage (2022), *BioNet ATLAS of NSW wildlife*, Available at: http://www.bionet.nsw.gov.au/ (Accessed: 2022)

NSW Office of Environment and Heritage (OEH), *Aboriginal Heritage Information System (AHIMS)*, Available at: http://www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm (Accessed: 2022)

Heritage NSW, *State Heritage Inventory*, Available at: https://www.heritage.nsw.gov.au/search-for-heritage/search-for-nsw-heritage/ (Accessed: 2022)

.id community, *Richmond Valley Council*, Available at: https://profile.id.com.au/richmond-valley Accessed: 2022)

Appendix A. **Project Boundary**

100mm AT ORIGINAL SIZE

RICHMOND VALLEY COUNCIL

NORTHEN RIVERS RAIL TRAIL
CASINO TO BENTLEY

PROJECT BOUNDARY

Sheet List Table		
Drawing No	Title	Revision
0200	COVER SHEET AND DRAWING REGISTER	B
0201	PROJECT BOUNDARY PLAN - SHEET 1 OF 17	B
0202	PROJECT BOUNDARY PLAN - SHEET 2 OF 17	B
0203	PROJECT BOUNDARY PLAN - SHEET 3 OF 17	B
0204	PROJECT BOUNDARY PLAN - SHEET 4 OF 17	B
0205	PROJECT BOUNDARY PLAN - SHEET 5 OF 17	B
0206	PROJECT BOUNDARY PLAN - SHEET 6 OF 17	B
0207	PROJECT BOUNDARY PLAN - SHEET 7 OF 17	B
0208	PROJECT BOUNDARY PLAN - SHEET 8 OF 17	B
0209	PROJECT BOUNDARY PLAN - SHEET 9 OF 17	B
0210	PROJECT BOUNDARY PLAN - SHEET 10 OF 17	B
0211	PROJECT BOUNDARY PLAN - SHEET 11 OF 17	B
0212	PROJECT BOUNDARY PLAN - SHEET 12 OF 17	B
0213	PROJECT BOUNDARY PLAN - SHEET 13 OF 17	B
0214	PROJECT BOUNDARY PLAN - SHEET 14 OF 17	B
0215	PROJECT BOUNDARY PLAN - SHEET 15 OF 17	B
0216	PROJECT BOUNDARY PLAN - SHEET 16 OF 17	B
0217	PROJECT BOUNDARY PLAN - SHEET 17 OF 17	B

N

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 200 400 800 1200

Full Size 1:20000 ; Half Size 1:40000

Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: COVER SHEET AND DRAWING REGISTER

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0200	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 9:59:36 AM

100mm AT ORIGINAL SIZE

N

LOT 238
DP755727

LOT 237
DP755727

LOT 242
DP755727

LOT 7021
DP1059188

REFER TO DRAWING 0202

LOT 1
DP1010688

LOT 5
DP1124270

LOT B
DP341391

LOT 1
DP1213623

DYRAABA ST

SPRING GROVE RD

WALKER ST

HICKEY ST

WHEAT ST

EAST STREET

DEAN ST

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

PROJECT: NORTHERN RIVERS RAIL TRAIL

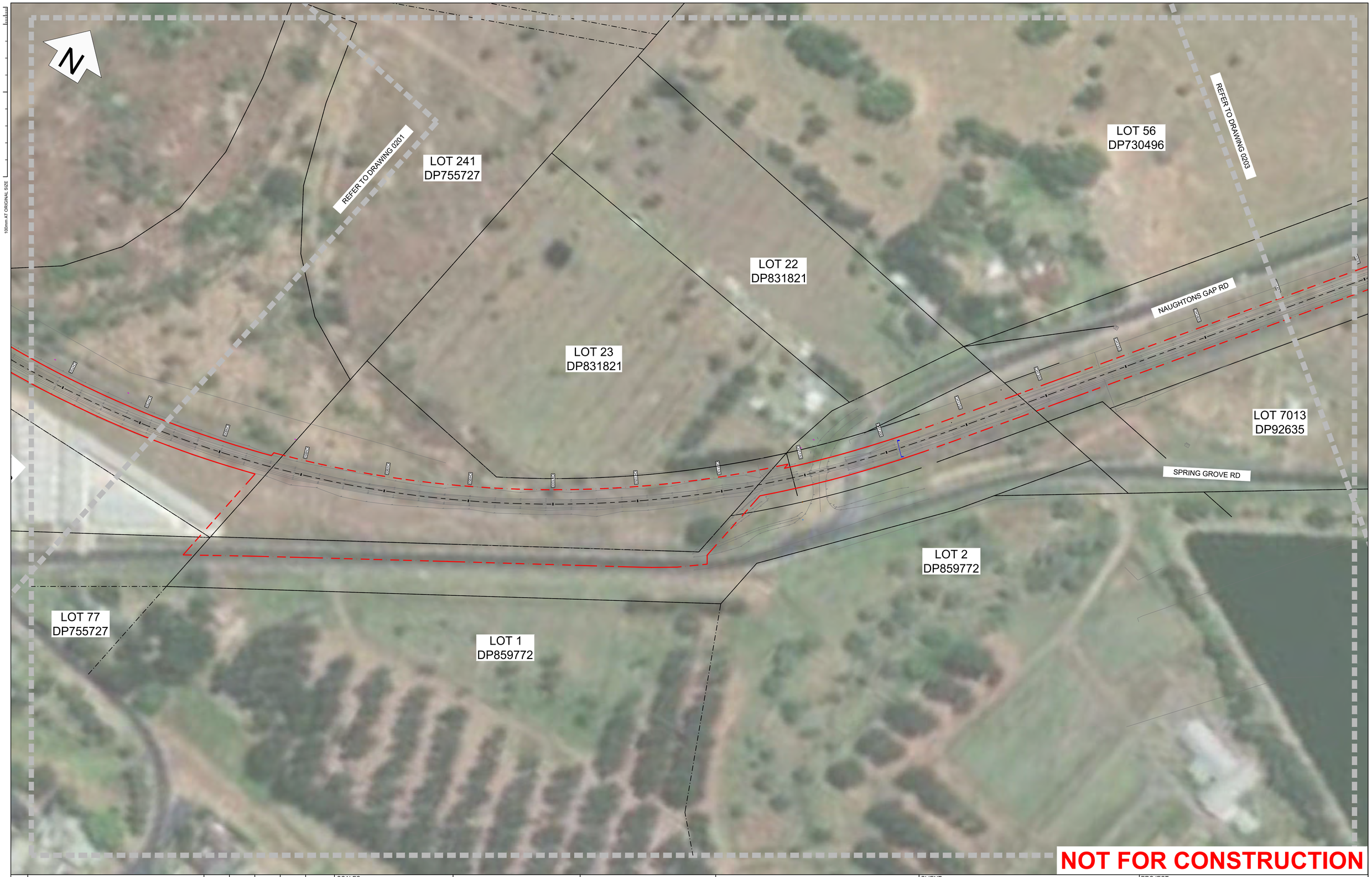
DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 1 OF 17

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0201	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLAN\TJ6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 9:59:39 AM

100mm AT ORIGINAL SIZE



NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000

Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 2 OF 17

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0202	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 9:59:44 AM

100mm AT ORIGINAL SIZE

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000

Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 3 OF 17

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0203	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 9:59:50 AM

100mm AT ORIGINAL SIZE

N

LOT 4
DP801921

BARLINGS CREEK

LOT 5
DP801921

REFER TO DRAWING 0205

LOT 195
DP755727

NAUGHTONS GAP RD

LOT 32
DP701177

REFER TO DRAWING 0203

LOT 314
DP755727

LOT 315
DP755727

LOT 316
DP755727

WILTON RD

LOT 317
DP755727

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:
0 10 20 40 60
Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:
DESIGN BY:
APPROVED BY:
DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 4 OF 17

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0204	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 9:59:55 AM

100mm AT ORIGINAL SIZE

N

REFER TO DRAWING 0204

REFER TO DRAWING 0206

LOT 1
DP1245636

LOT 322
DP755727

NAUGHTONS GAP RD

LOT 323
DP755727

LOT 334
DP729467

LOT 32
DP701177

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 5 OF 17

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0205	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 9:59:59 AM

100mm AT ORIGINAL SIZE

N

LOT 6
DP572371

LOT 5
DP572371

LOT 4
DP572371

LOT 3
DP572371

LOT 6
DP572371

NAUGHTONS GAP RD

LOT 130
DP755727

LOT A
DP409482

LOT B
DP409482

LOT 2
DP873198

LOT 1
DP1131021

LOT 130
DP755727

REFER TO DRAWING 0205

REFER TO DRAWING 0207

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 6 OF 17

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0206	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:04 AM

100mm AT ORIGINAL SIZE

N

LOT 1
DP618643

LOT 2
DP618643

REFER TO DRAWING 0206

REFER TO DRAWING 0208

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 7 OF 17

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0207	B

CAD FILE: W:\A-ZN\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:09 AM

100mm AT ORIGINAL SIZE

N

LOT 2
DP1172371

LOT 295
DP755727

REFER TO DRAWING 0209

REFER TO DRAWING 0207

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 8 OF 17

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0208	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:15 AM

100mm AT ORIGINAL SIZE

N

NAUGHTONS GAP RD

REFER TO DRAWING 0208

LOT 235
DP755727

LOT 235
DP755727

LOT B
DP368071

REFER TO DRAWING 0210

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 9 OF 17

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0209	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:20 AM

100mm AT ORIGINAL SIZE

N

NAUGHTONS GAP RD

LOT 78
DP755727

REFER TO DRAWING 0211

REFER TO DRAWING 0209

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 10 OF 17

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0210	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:25 AM

100mm AT ORIGINAL SIZE

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 11 OF 17

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0211	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:30 AM

100mm AT ORIGINAL SIZE

N

LOT 4703
DP1222201

LOT 1
DP1077104

REFER TO DRAWING 0211

LOT 4703
DP1222201

LOT 2
DP734474

REFER TO DRAWING 0213

LOT 1
DP397603

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 12 OF 17

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0212	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:35 AM

100mm AT ORIGINAL SIZE

N

LOT 1
DP1213478

LOT 2
DP1077104

LOT 185A
DP4576

STONES RD

LOT 2
DP1077104

LOT 1
DP397603

REFER TO DRAWING 0212

REFER TO DRAWING 0214

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 13 OF 17

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0213	B

CAD FILE: W:\A-ZN\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:40 AM

100mm AT ORIGINAL SIZE

N

LOT 2
DP17223

LOT 4
DP813647

LOT 11
DP860763

REFER TO DRAWING 0213

REFER TO DRAWING 0215

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 14 OF 17

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0214	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:45 AM

100mm AT ORIGINAL SIZE

N

LOT 4
DP813647

LOT 11
DP860763

REFER TO DRAWING 0216

REFER TO DRAWING 0214

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 15 OF 17

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0215	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:50 AM

100mm AT ORIGINAL SIZE

N

LOT 1
DP337142

LOT 7003
DP1057130

BENTLEY RD

LOT 7006
DP1073212

LOT 7009
DP1060428

LOT 8
DP948432

LOT 581
DP1044661

LOT 7001
DP1060659

LOT 2
DP1237008

REFER TO DRAWING 0215

REFER TO DRAWING 0217

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 16 OF 17

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0216	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLAN\TJ6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:55 AM

100mm AT ORIGINAL SIZE

N

LOT 1
DP1081238

LOT 2
DP1112764

LOT 8
DP948432

LOT 1
DP432816

LOT 1
DP945360

LOT 1
DP1081238

LOT 2
DP1081238

REFER TO DRAWING 0216

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:
0 10 20 40 60
Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:
DESIGN BY:
APPROVED BY:
DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 17 OF 17

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0217	B

CAD FILE: W:\A-ZN\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:01:00 AM

PLANIT
CONSULTING

Appendix B. **Biodiversity Impact Assessment**

Biodiversity Impact Assessment

Casino to Bentley Rail Trail

PO Box 119
Lennox Head NSW 2478
T 02 6687 7666

PO Box 1446
Coffs Harbour NSW 2450
T 02 6651 7666

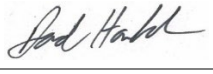
PO Box 1267
Armidale NSW 2350
T 02 6772 0454

PO Box 229
Lismore NSW 2480
T 02 6621 6677

info@geolink.net.au

Prepared for: RVC

Certification

	Name	***Signature***	***Date***
Prepared by	David Havilah		29/07/2022
Reviewed by	David Andrighetto		2/08/2022

UPR	***Description***	***Date Issued***	***Issued By***
3500-1018	First issue	02/08/2022	David Havilah

Table of Contents

Illustrations

Tables

Appendices

Executive Summary

GeoLINK has been engaged by Planit Consulting on behalf of Richmond Valley Council (RVC) to assess biodiversity impacts associated with the development of a 'rail trail' for cyclist and pedestrian use along the existing railway corridor between Casino and Bentley within Richmond Valley Local Government Area (LGA). The Casino – Bentley Rail Trail (CBRT) forms part of a larger proposal to utilise the disused railway corridor between Casino and Murwillumbah (closed in 2004) as the Northern Rivers Rail Trail (NRRT). A previous biodiversity assessment was completed for the project (GeoLINK, 2020) which identified biodiversity matters relevant to the development of the CBRT. The previous biodiversity assessment did not include an impact assessment for the CBRT given that the rail trail proposal was under development at the time. This report assesses the impacts of the Activity including providing statutory biodiversity assessments to accompany the Review of Environmental Factors (Part 5 of the *Environmental Planning and Assessment Act 1979* [EP&A Act] assessment) for the Activity. This report is designed to be read in conjunction with the previous Biodiversity Assessment for the project (GeoLINK, 2020).

The Activity would incur the following main biodiversity impacts:

- Potential disturbance to the large roosting colony of Bent-winged bats within the Naughtons Gap rail tunnel during the construction and operation stages of the project. It is noted that the CBRT has be designed to divert around the rail trail and will exclude human visitation into the tunnel.
- Loss of up to 2.11 ha of native vegetation from seven Plant Community Types although it is noted that actual vegetation clearing is likely to be less than this, given that most vegetation is to be retained to contribute to the amenity of the rail trail.
- Loss of up to 0.42 ha of vegetation representative of three Threatened Ecological Communities.
- Removal/ disturbance of potential habitat for the following threatened fauna species:
  - Forest/ woodland birds: Dusky Woodswallow, Little Lorikeet, Glossy Black-Cockatoo, Grey-crowned Babbler.
  - Birds of prey: Spotted Harrier, Eastern Grass Owl.
  - Wetland/ floodplain birds: Brolga, Black-necked Stork, Comb-crested Jacana.
  - Microbats: Eastern Coastal Freetail-bat, Little Bent-winged Bat, Large Bent-winged Bat, Yellow-bellied Sheathtail-bat, Greater Broad-nosed Bat, Southern Myotis.
  - Mammals: Squirrel Glider, Brush-tailed Phascogale, Koala.
  - Flying-foxes: Grey-headed Flying-fox.
- Localised disturbance in or near Barlings Creek and Back Creek and associated riparian zone which provides potential habitat for the *Fisheries Management Act 1994* (FM Act) listed threatened fish species, Southern Purple Spotted Gudgeon.

Review of statutory instruments relevant to the Activity was completed as follows:

- BC Act: the proposal is unlikely to significantly impact any affect any threatened species or TECs.
- EPBC Act: the proposal is unlikely to significantly impact threatened species or communities listed under the EPBC Act.
- FM Act: Waterway and water quality impacts at Barlings Creek may impact habitat for the FM Act listed threatened fish species, Southern Purple Spotted Gudgeon. The works are unlikely to significantly impact a local population of the Southern Purple Spotted Gudgeon.

A range of mitigation measures have been prescribed to minimise the potential for biodiversity impacts associated with the project.

1. Introduction

1.1 Background

GeoLINK has been engaged by Planit Consulting on behalf of Richmond Valley Council (RVC) to assess biodiversity impacts associated with the development of a 'rail trail' for cyclist and pedestrian use along the existing railway corridor between Casino and Bentley within Richmond Valley Local Government Area (LGA). The Casino – Bentley Rail Trail (CBRT) forms part of a larger proposal to utilise the disused railway corridor between Casino and Murwillumbah (closed in 2004) as the Northern Rivers Rail Trail (NRRT).

A previous biodiversity assessment was completed for the project (GeoLINK, 2020) which identified biodiversity matters relevant to the development of the CBRT, which included:

1. A significant roost site for microchiropteran bats at Naughton's Gap tunnel. This has been avoided by the updated CBRT design leaving the corridor formation and siting the rail trail adjacent to the formation (i.e. diverting around the tunnel).

2. The threatened flora species Thorny Pea was recorded in one location (Back Creek). These plants occur outside the extent of works proposed for the CBRT.

3. Weed management: weed infestations are common across the majority of the railway corridor and pose a threat to agriculture and biodiversity. The removal and ongoing management of weeds along the corridor poses a significant financial and management consideration. Mitigation measures are provided to ameliorate these impacts.

4. Native vegetation clearing: fragmented stands of native vegetation on the railway formation have regrown since 2004 and are generally of limited biodiversity value. Beyond the railway formation within the railway corridor however, there are stands of better-quality vegetation with conservation values including threatened ecological communities and localised areas with mature/moderate condition vegetation. The final design of the CBRT would avoid/ minimise clearing of native vegetation to the maximum extent possible.

The previous biodiversity assessment (GeoLINK, 2020) did not include an impact assessment for the CBRT given that the rail trail proposal was under development at the time. This report assesses the impacts of the Activity including providing statutory biodiversity assessments to accompany the Review of Environmental Factors (Part 5 of the *Environmental Planning and Assessment Act 1979* [EP&A Act] assessment) for the Activity. This report is designed to be read in conjunction with the previous Biodiversity Assessment for the project (GeoLINK, 2020).

1.2 The Activity

The proposal comprises utilisation of the rail corridor for a pedestrian path and cycleway. The *Casino to Eltham Northern Rivers Rail Trail Business Case* (BusinessSense 2019) stated '*On completion, the Casino to Eltham Stage is forecast to attract almost 52,000 persons per annum initially, including 28,250 local users and attract 23,200 visitors to the Northern Rivers region*'.

A broad scope of works for construction of the rail trail as outlined by the NRRT (GeoLINK 2018) within the existing railway formation is as follows:

- Remove undergrowth, weeds and trees on the top of formation and in ballast (around 5 m width).
- Clean out, repair longitudinal and transverse drains and culverts.
- Remove and dispose of (preferably recycle) existing railway lines and sleepers.
- Trim, spread and compact existing ballast.
- Import, spread, compact and trim road base material 150 mm thick, 3.5 m wide over ballast for rail trail path pavement.
- Bitumen seal path surface 3 m wide.

A concept design for the rail trail is shown at **Figure 1.1**.

In addition to creating the rail trail pathway, other works required include (but are not limited to):

- Remediation or replacement of bridges and culverts (subject to engineering assessment).
- Installation of safety fencing as required.
- Installation of signage as required.
- Carparking and access points for users or construction/ maintenance (e.g. Naughtons Gap Road [two crossings] and Bentley Road).

Construction of an access and maintenance track beside the rail corridor will also be required as it is likely many construction activities will not be possible using the formation itself.

Note: This construction schedule is generic in nature and requires detailed scheduling, design and revision once other constraints and issues are known (eg. access, bridgeworks, disposal of sleepers and rails etc).

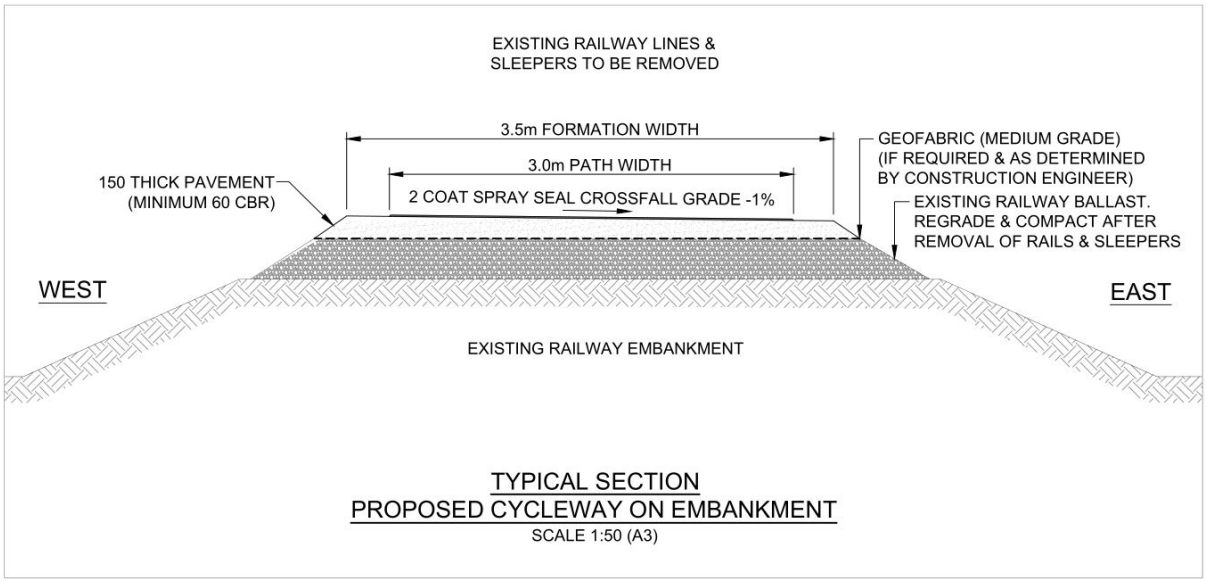


Figure 1.1 Typical Section of Proposed Cycleway/Rail Trail

A project boundary for the CBRT has been provided by Planit Consulting. This biodiversity impact assessment assumes that all vegetation within the project boundary may be cleared. However, it is likely that this will not be the case as the retention of native vegetation along the rail trail is proposed to contribute to the amenity of the trail.

Refer to **Appendix A** for a design of the proposal and **Illustration 2.1** for the proposed impact footprint.

LEGEND

Casino-Bentley rail trail

0 1 Km

Locality Plan - Illustration 1.1

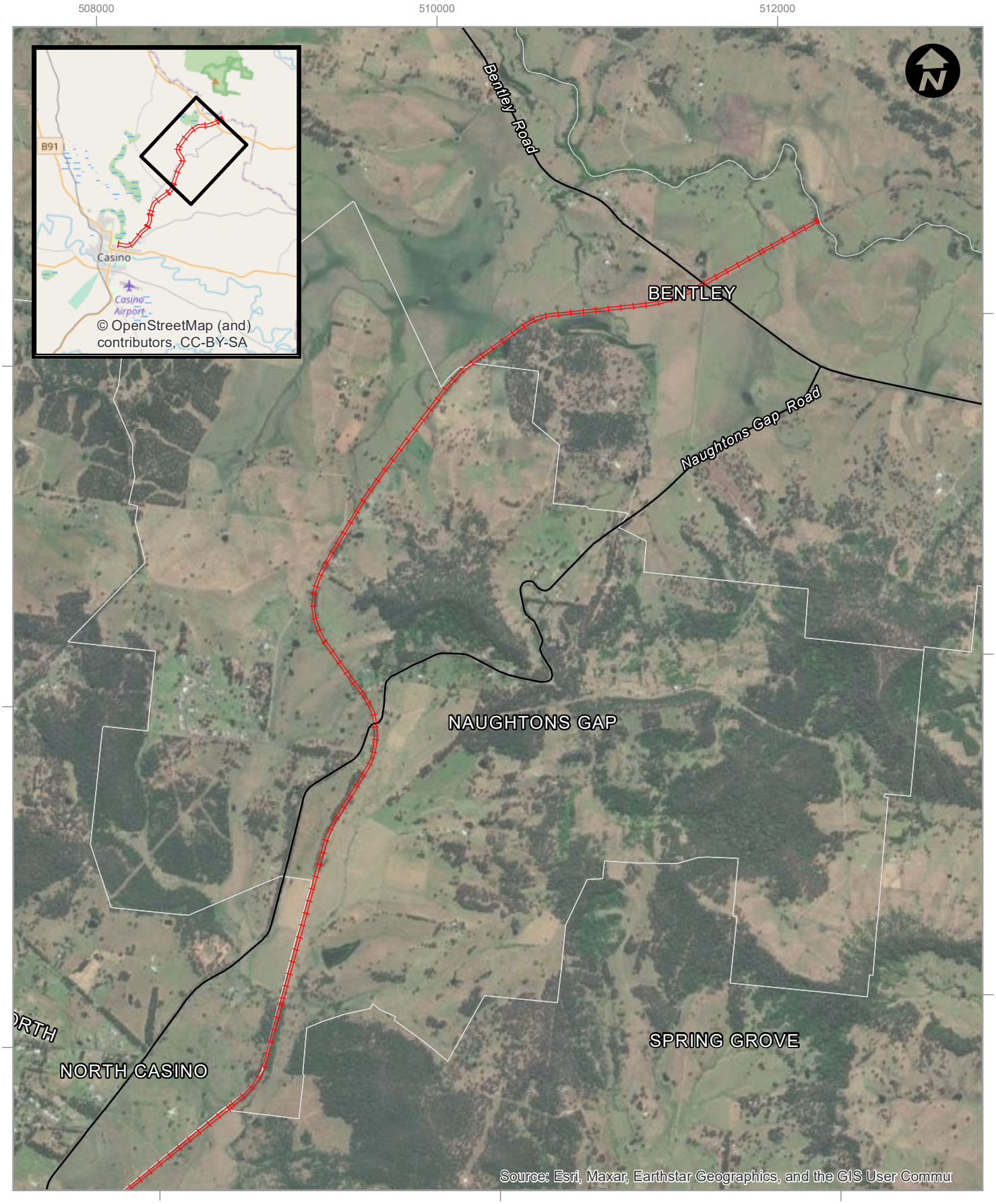
LEGEND

- Casino-Bentley rail trail
- Suburb
- Major road

0 580 Metres

Site Plan
Illustration 1.3 - Sheet 1 of 2

Information shown is for illustrative purposes only
Drawn by: AB Checked by: RE Reviewed by: DGH
Source of base data: Esri World Imagery
Date: 27/07/2022



LEGEND

- Casino-Bentley rail trail
- Suburb
- Major road

0 580 Metres

Site Plan
Illustration 1.3 - Sheet 2 of 2

2. Impacts and Mitigation

2.1 Direct Impacts of the Activity

2.1.1 Native Vegetation

Seven broad Plant Community Types (PCTs) occur with regard to approved plant community types (PCT) in the BioNet Vegetation Classification system. These PCTS and upper limit clearing estimates for the proposal are shown provided below in **Table 2.1** and **Illustration 2.1**. It is noted that actual vegetation clearing is likely to be less than that shown below given that most vegetation is to be retained to contribute to the amenity of the rail trail. Vegetation condition is typically low-moderate, except in localised stands on the periphery of the railway corridor (outside the railway formation).

Table 2.1 Impacts to Plant Community Types (PCTs)

*PCT**	*Comments*	*Corresponding TEC*	*Maximum area of impact (ha)*
PCT 782: Coastal freshwater meadows and forblands of lagoons and wetlands	▪ Occurs in floodplain areas along drainage lines, in depressions and areas of wet meadow. ▪ Key indicator species include: *Eleocharis spp.*, *Cyperus spp.*, *Ludwigia peploides*, *Persicaria spp.*and *Leersia hexandra*.	BC Act: Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South-East Corner Bioregions (excluding artificial structures)	0.03
PCT 841: Forest Red Gum grassy open forest of the coastal ranges of the NSW North Coast Bioregion	▪ Occurs on outside the floodplain on foothills and rolling hills; as well as on fill material. ▪ Key indicator species include: Forest Red Gum, Grey Ironbark, Swamp Box, Rough-barked Apple, Pink Bloodwood and wattles.	N/A	1.32
PCT 1073: Pink Bloodwood - Tallowwood moist open forest of the far northern ranges of the NSW North Coast Bioregion	▪ Occurs outside of the floodplain on a localised hill. ▪ Key indicator species include: Pink Bloodwood, Tallowwood, Grey Ironbark, White Mahogany in the canopy, Forest Oak, wattles and rainforest pioneer species (e.g. Red Ash) in the understorey.	N/A	0.34

*PCT**	*Comments*	*Corresponding TEC*	*Maximum area of impact (ha)*
PCT 1106: River Oak riparian woodland of the NSW North Coast Bioregion and northern Sydney Basin Bioregion	▪ Occurs at a localised area near Back Creek. ▪ River Oak is the dominant canopy species. Other riparian species (e.g. Lilly Pilly, Weeping Bottle Brush) occur in the understorey fringing Back Creek.	N/A	0.01
PCT 1221: Spotted Gum dry grassy open forest of the foothills of the northern NSW North Coast	▪ Occurs on a localised hill near the old Casino Railway Station. ▪ Comprises Spotted Gum trees with a maintained understorey.	N/A	0.02
PCT 1227: Swamp Box swamp forest of the coastal lowlands of the NSW North Coast Bioregion	▪ Occurs mainly on the floodplain adjacent to the railway formation and encroaching onto the batters. ▪ Typically immature Swamp Box regrowth with some wattle regrowth. Forest Red Gum, Rough-barked Apple and Paperbarks are sub-dominant.	BC Act: Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion (excluding regrowth on the fill material or outside of the floodplain).	0.24
PCT 1235: Swamp Oak swamp forest of the coastal lowlands of the NSW North Coast Bioregion	▪ Occurs in localised areas associated with the floodplain and drainage lines adjacent to the railway formation and encroaching onto the batters. ▪ Swamp Oak is the dominant canopy species.	BC Act: Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (excluding regrowth on the fill material or outside of the floodplain). No stands meet the EPBC Act TEC condition criteria for Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community.	0.15
		Total	**2.11**

2.1.2 Threatened Ecological Communities (TECs)

Three BC Act listed TECs occur within the railway corridor (refer **Appendix B**), including:

- *Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion*: occurs on flood prone area dominated by Forest Red Gum and/or Swamp Box at scattered and fragmented locations. Condition is typically low. No significant stands of this TEC occur within the railway corridor.
- *Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South-East Corner Bioregions*: occurs on the floodplain in localised areas along drainage lines, depressions and in areas of wet meadow. All occurrences extend outside the railway corridor.
- *Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*: occurs in localised areas associated with the floodplain and drainage lines adjacent to the railway formation.

Local occurrences of all of these TECs extend outside the railway formation and beyond the railway corridor. Upper limit clearing estimates for TECs are included in **Table 2.1**. It is noted that actual vegetation clearing is likely to be less than that shown given that most vegetation within the project site is to be retained to contribute to the amenity of the rail trail.

The BC Act listed TEC *Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South-East Corner Bioregions* also occurs in localised areas on land adjacent to the railway corridor (e.g. ch 811.5).

No EPBC Act listed TECs occur at the site. Although Swamp Oak Forest is also listed as a TEC under the EPBC Act, no stands on site meet the EPBC Act TEC condition criteria for *Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community*

2.1.3 Threatened Flora

One threatened flora species, Thorny Pea (*Desmodium acanthocladum*) was recorded along the rail corridor (refer to **Appendix B**). Thorny Pea is listed as vulnerable under both the BC Act and EPBC Act. Ten plants were recorded on the southern bank of Back Creek below the existing steel truss bridge, on the LGA boundary with Lismore City Council (LCC). The species is likely to occur more broadly locally along Back Creek, including on the northern bank. Thorny Pea is locally common in much of the LCC LGA and is known to occur in disturbed landscapes. Habitat for this species associated with Back Creek occurs outside of the identified extent of works for the CBRT and as such no impacts to this species are likely from the project.

GDA 1994 MGA Zone 56

LEGEND

- Extent of works
- Cadastre

Plant Community Type (PCT)

- PCT 1221: Spotted Gum dry grassy open forest of the foothills of the northern NSW North Coast
- PCT 1227: Swamp Box swamp forest of the coastal lowlands of the NSW North Coast Bioregion
- PCT 841: Forest Red Gum grassy open forest of the coastal ranges of the NSW North Coast Bioregion

Threatened Ecological Community (TEC)

- Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion

0 60 Metres

Vegetation Plan - Illustration 3.1
Sheet 1 of 12

Information shown is for illustrative purposes only
Drawn by: DSA Checked by: RE Reviewed by: DGH
Source of base data: DFSI
Date: 27/07/2022

GDA 1994 MGA Zone 56

LEGEND

- Extent of works
- Cadastre
- Watercourse

Plant Community Type (PCT)

- PCT 1227: Swamp Box swamp forest of the coastal lowlands of the NSW North Coast Bioregion
- PCT 782: Coastal freshwater meadows and forblands of lagoons and wetlands
- PCT 841: Forest Red Gum grassy open forest of the coastal ranges of the NSW North Coast Bioregion

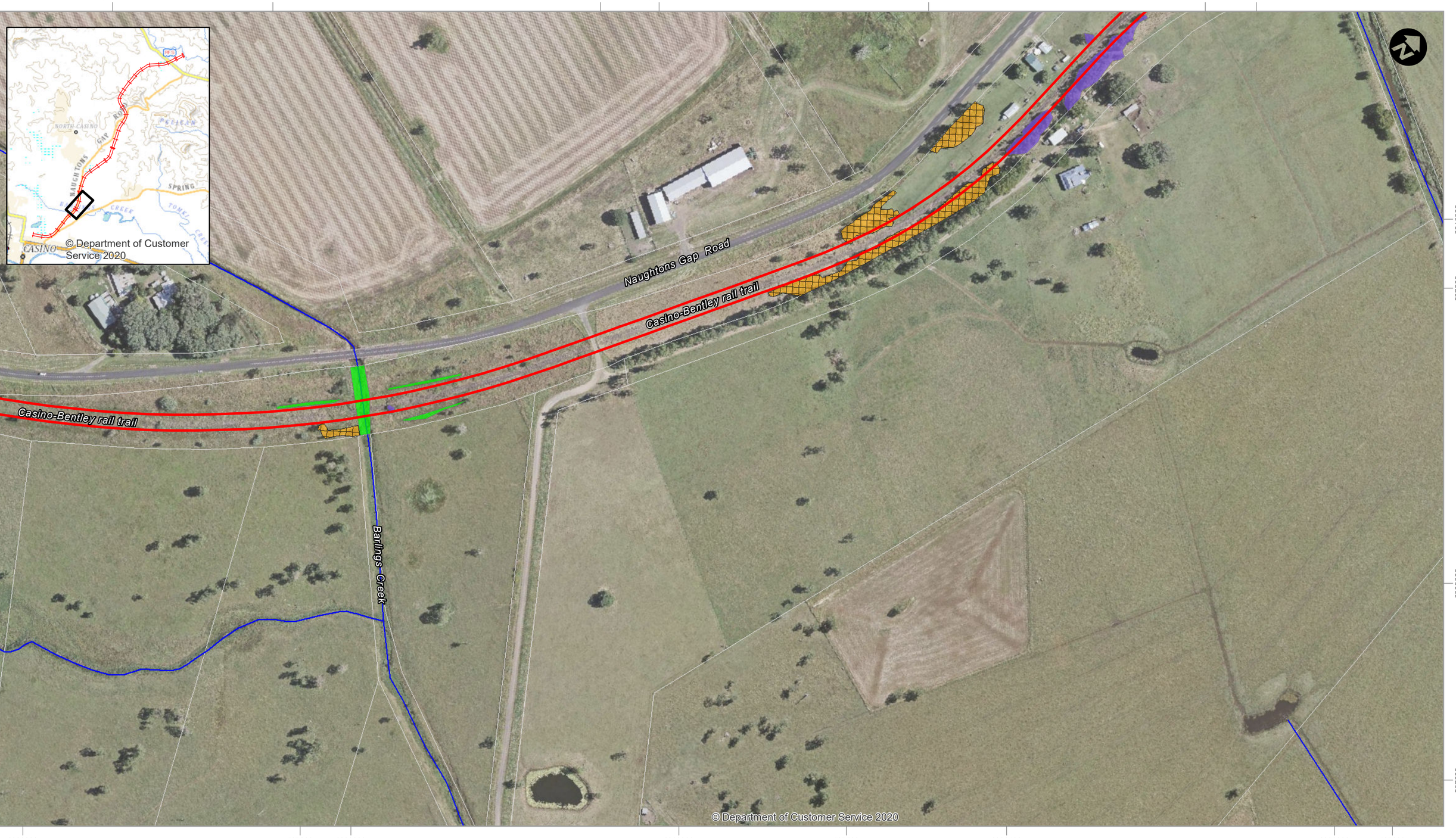
Threatened Ecological Community (TEC)

- Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South-East Corner Bioregions
- Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion

0 60 Metres

Vegetation Plan - Illustration 3.1
Sheet 2 of 12

Information shown is for illustrative purposes only
Drawn by: DSA Checked by: RE Reviewed by: DGH
Source of base data: DFSI
Date: 27/07/2022



LEGEND

- Extent of works
- Cadastre
- Watercourse

Plant Community Type (PCT)

- PCT 1227: Swamp Box swamp forest of the coastal lowlands of the NSW North Coast Bioregion
- PCT 782: Coastal freshwater meadows and forblands of lagoons and wetlands
- PCT 841: Forest Red Gum grassy open forest of the coastal ranges of the NSW North Coast Bioregion

Threatened Ecological Community (TEC)

- Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion

0 60 Metres

Vegetation Plan - Illustration 3.1
Sheet 3 of 12

Information shown is for illustrative purposes only
Drawn by: DSA Checked by: RE Reviewed by: DGH
Source of base data: DFSI
Date: 27/07/2022

GDA 1994 MGA Zone 56

LEGEND

- Extent of works
- Cadastre
- Watercourse

Plant Community Type (PCT)

- PCT 1227: Swamp Box swamp forest of the coastal lowlands of the NSW North Coast Bioregion
- PCT 782: Coastal freshwater meadows and forblands of lagoons and wetlands
- PCT 841: Forest Red Gum grassy open forest of the coastal ranges of the NSW North Coast Bioregion

Threatened Ecological Community (TEC)

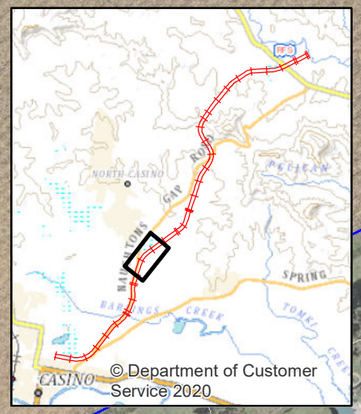
- Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion

0 60 Metres

Vegetation Plan - Illustration 3.1
Sheet 4 of 12

Information shown is for illustrative purposes only
Drawn by: DSA Checked by: RE Reviewed by: DGH
Source of base data: DFSI
Date: 27/07/2022

6810600 6810800 507200 6811000 6811200 507500 6811400



Naughtons Gap Road

Casino-Bentley rail trail

© Department of Customer Service 2020

507800 6811400 6811200 508100

6810400 507200 6810200

6810200 507500 6810400 507800 6810800 508100

GDA 1994 MGA Zone 56

LEGEND

- Extent of works
- Cadastre
- Watercourse

Plant Community Type (PCT)

- PCT 1227: Swamp Box swamp forest of the coastal lowlands of the NSW North Coast Bioregion
- PCT 1235: Swamp Oak swamp forest of the coastal lowlands of the NSW North Coast Bioregion
- PCT 782: Coastal freshwater meadows and forblands of lagoons and wetlands
- PCT 841: Forest Red Gum grassy open forest of the coastal ranges of the NSW North Coast Bioregion

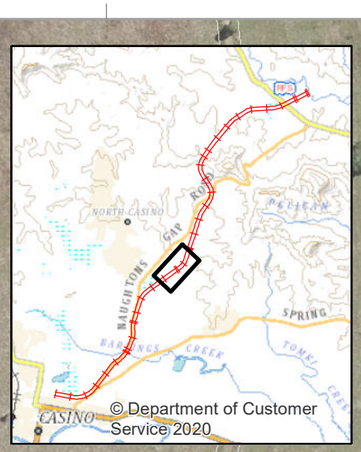
Threatened Ecological Community (TEC)

- Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion
- Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions

0 60 Metres

Vegetation Plan - Illustration 3.1
Sheet 5 of 12

Information shown is for illustrative purposes only
Drawn by: DSA Checked by: RE Reviewed by: DGH
Source of base data: DFSI
Date: 27/07/2022



Casino-Bentley rail trail

© Department of Customer Service 2020

6811400 507800 6811600 508100 6811800 6812000 508400 6812200

507800 6812200 508700 6811200 508100 6812000 6811000 509000

6811000 508400 6811200 6811400 508700 6811600 509000 6811800

GDA 1994 MGA Zone 56

LEGEND

- Extent of works
- Cadastre
- Watercourse

Plant Community Type (PCT)

- PCT 1073: Pink Bloodwood - Tallowwood moist open forest of the far northern ranges of the NSW North Coast Bioregion
- PCT 1235: Swamp Oak swamp forest of the coastal lowlands of the NSW North Coast Bioregion
- PCT 841: Forest Red Gum grassy open forest of the coastal ranges of the NSW North Coast Bioregion

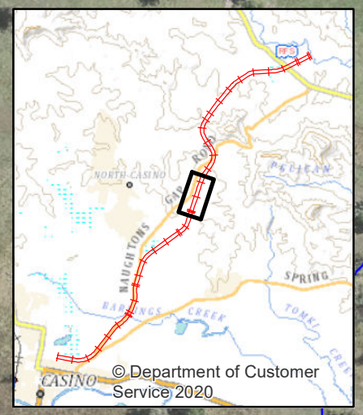
Threatened Ecological Community (TEC)

- Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions

0 60 Metres

Vegetation Plan - Illustration 3.1
Sheet 6 of 12

Information shown is for illustrative purposes only
Drawn by: DSA Checked by: RE Reviewed by: DGH
Source of base data: DFSI
Date: 27/07/2022



Naughtons Gap Road

Casino-Bentley rail trail

© Department of Customer Service 2020

6812200 6812400 6812600 6812800 508700 6813200

508700 6812000 509000

509000 6813200 509300

6812000 6812200 6812400 6812600 509300 6812800 6813000

GDA 1994 MGA Zone 56

LEGEND

- Extent of works
- Cadastre
- Watercourse

Plant Community Type (PCT)

- PCT 1073: Pink Bloodwood - Tallowwood moist open forest of the far northern ranges of the NSW North Coast Bioregion
- PCT 1227: Swamp Box swamp forest of the coastal lowlands of the NSW North Coast Bioregion
- PCT 1235: Swamp Oak swamp forest of the coastal lowlands of the NSW North Coast Bioregion
- PCT 841: Forest Red Gum grassy open forest of the coastal ranges of the NSW North Coast Bioregion

Threatened Ecological Community (TEC)

- Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions

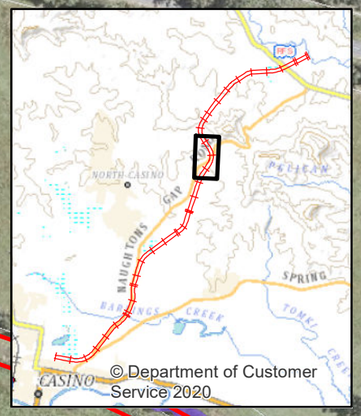
0 60 Metres

Vegetation Plan - Illustration 3.1
Sheet 7 of 12

Information shown is for illustrative purposes only
Drawn by: DSA Checked by: RE Reviewed by: DGH
Source of base data: DFSI
Date: 27/07/2022

6813200 6813400 6813600 6813800 6814000 6814200

509000 509300



Naughtons Gap Road

Casino-Bentley rail trail

© Department of Customer Service 2020

6813200 6813400 509600 6813800 6814000 6814200

GDA 1994 MGA Zone 56

LEGEND

- Extent of works
- Cadastre
- Watercourse

Plant Community Type (PCT)

- PCT 1227: Swamp Box swamp forest of the coastal lowlands of the NSW North Coast Bioregion
- PCT 841: Forest Red Gum grassy open forest of the coastal ranges of the NSW North Coast Bioregion

0 60 Metres

Vegetation Plan - Illustration 3.1
Sheet 8 of 12

GeoLINK environmental management and design

Biodiversity Impact Assessment - Casino to Bentley Rail Trail
3500-1021

Information shown is for illustrative purposes only
Drawn by: DSA Checked by: RE Reviewed by: DGH
Source of base data: DFSI
Date: 27/07/2022

GDA 1994 MGA Zone 56

LEGEND

- Extent of works
- Cadastre
- Watercourse

Plant Community Type (PCT)

- PCT 841: Forest Red Gum grassy open forest of the coastal ranges of the NSW North Coast Bioregion

0 60 Metres

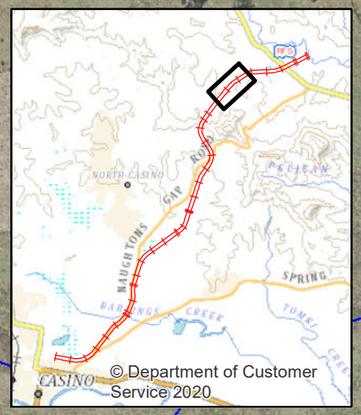
Vegetation Plan - Illustration 3.1
Sheet 9 of 12

GeoLINK environmental management and design

Biodiversity Impact Assessment - Casino to Bentley Rail Trail
3500-1021

Information shown is for illustrative purposes only
Drawn by: DSA Checked by: RE Reviewed by: DGH
Source of base data: DFSI
Date: 27/07/2022

6815600 6815800 509600 6816000 509900 6816200 510200



6815400 6815200 509600 510500 6816200 6816000

Casino-Bentley rail trail

© Department of Customer Service 2020

509900 6815400 510200 6815600 510500 6815800

GDA 1994 MGA Zone 56

LEGEND

- Extent of works
- Cadastre
- Watercourse

Plant Community Type (PCT)

- PCT 782: Coastal freshwater meadows and forblands of lagoons and wetlands
- PCT 841: Forest Red Gum grassy open forest of the coastal ranges of the NSW North Coast Bioregion

Threatened Ecological Community (TEC)

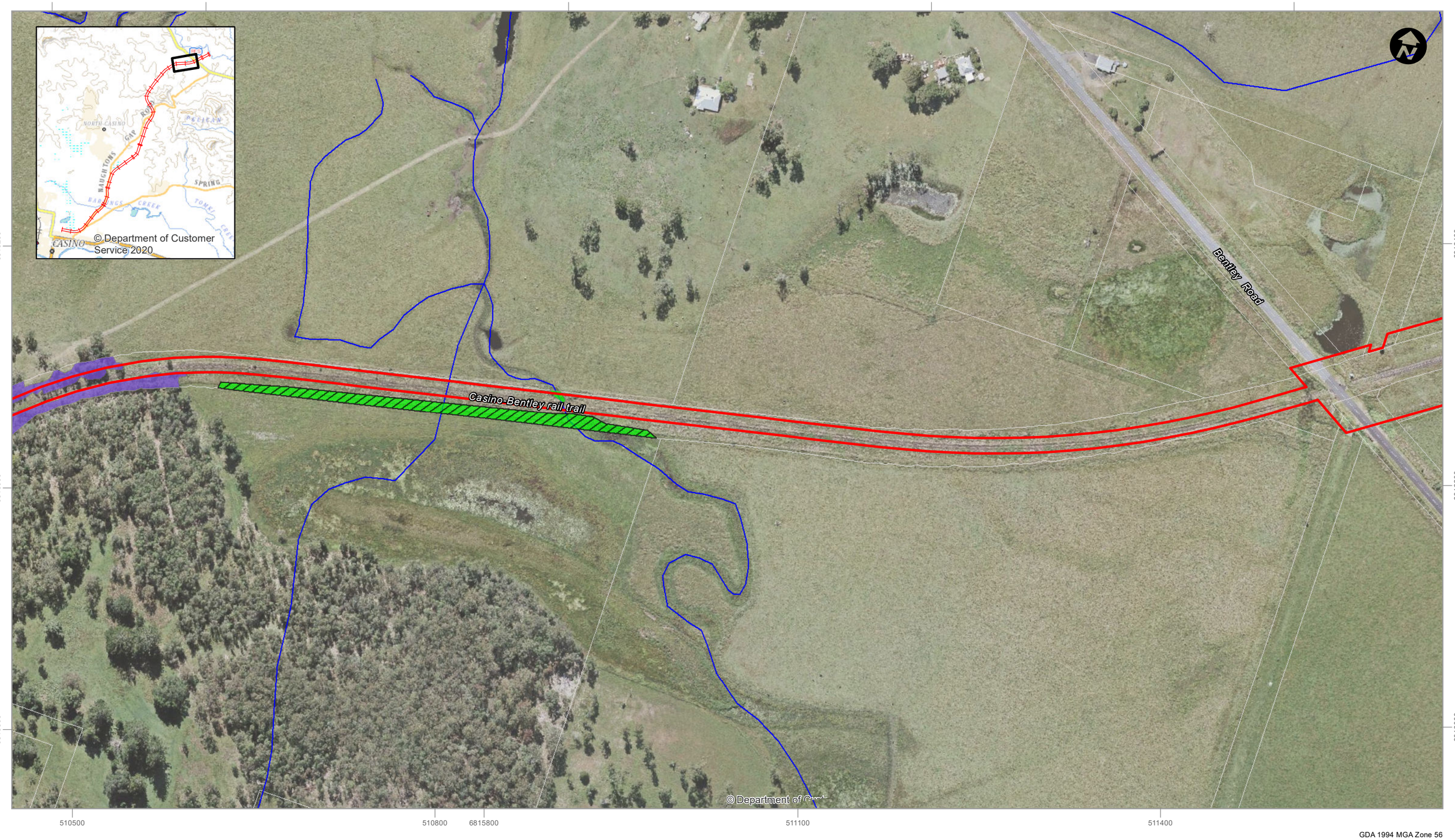
- Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South-East Corner Bioregions

0 60 Metres

Vegetation Plan - Illustration 3.1
Sheet 10 of 12

Information shown is for illustrative purposes only
Drawn by: DSA Checked by: RE Reviewed by: DGH
Source of base data: DFSI
Date: 27/07/2022

6816400 510500 510800 511100 511400



6816200 6816000 6815800

6816400 6816200 6816000

510500 510800 6815800 511100 511400

GDA 1994 MGA Zone 56

LEGEND

- Extent of works
- Cadastre
- Watercourse

Plant Community Type (PCT)

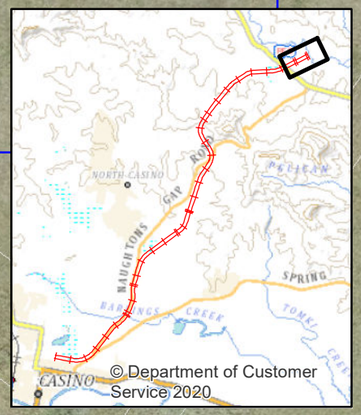
- PCT 782: Coastal freshwater meadows and forblands of lagoons and wetlands
- PCT 841: Forest Red Gum grassy open forest of the coastal ranges of the NSW North Coast Bioregion

Threatened Ecological Community (TEC)

- Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South-East Corner Bioregions

0 60 Metres

Vegetation Plan - Illustration 3.1
Sheet 11 of 12



511400 511700 6816800 512000 6817000 512300

511400 6816400 6816200 6816000 6817000 512600 6816800 6816600

Casino-Bentley rail trail

Back Creek

Bentley Road

© Department of Custom

511700 512000 6816200 512300 6816400 512600

GDA 1994 MGA Zone 56

LEGEND

- Extent of works
- Cadastre
- Watercourse

Plant Community Type (PCT)

- PCT 1106: River Oak riparian woodland of the NSW North Coast Bioregion and northern Sydney Basin Bioregion
- PCT 782: Coastal freshwater meadows and forblands of lagoons and wetlands

Threatened Ecological Community (TEC)

- Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South-East Corner Bioregions

Threatened Flora

- Thorny Pea

0 60 Metres

Vegetation Plan - Illustration 3.1
Sheet 12 of 12

GeoLINK environmental management and design

Biodiversity Impact Assessment - Casino to Bentley Rail Trail
3500-1021

Information shown is for illustrative purposes only
Drawn by: DSA Checked by: RE Reviewed by: DGH
Source of base data: DFSI
Date: 27/07/2022

2.1.4 Threatened Fauna Habitat

Two threatened fauna species were recorded during the field assessment (refer to **Illustration 2.2**):

1. Large Bent-winged Bat: Colony of several thousand individuals roosting at Naughton's Gap tunnel (TU001). GeoLINK (2018) estimated >5000 individuals, with anabat analysis indicated up to two third of microbats within the colony were likely to comprise Large Bent-winged Bat (co-roosting with Little Bent-winged Bat).

2. Little Bent-winged Bat: Within the Naughton's Gap tunnel colony. Call analysis by GeoLINK (2018) indicated up to a third of bats may comprise Little Bent-winged Bat (co-roosting with Large Bent-winged Bats).

The existing rail tunnel represents an important overwintering roost site for the above species noting that both species would not utilise this habitat for breeding. Interactions with this colony have been avoided by diverting the rail trail around the tunnel and preventing access of the tunnel by the use of barricades to be designed in consultation with an ecologist and NSW Department of Planning and Environment - Biodiversity Conservation Division (BCD). The proposal has potential to have indirect impacts on the roosting colony during construction/ operation. Mitigation measures are required to ameliorate these impacts.

GeoLINK (2018) also previously recorded the Comb-crested Jacana (BC Act listed Vulnerable species) adjacent to the railway corridor, with a single bird observed on a farm dam at ch. 818.7.

Based on the desktop analysis, habitat present and field results, there is potential for a range of additional threatened fauna species to occur within and in proximity to the railway corridor. These species include:

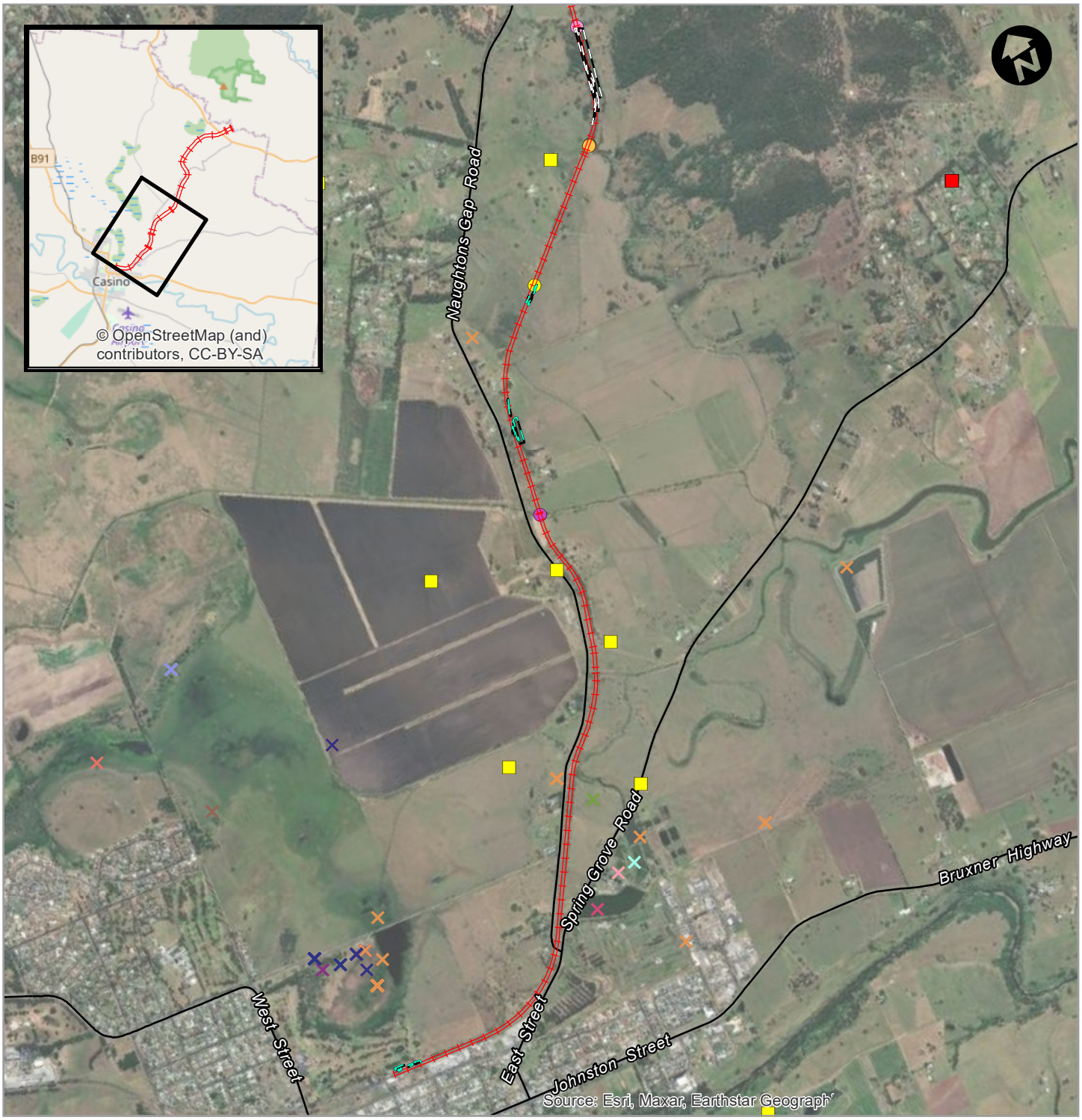
- Forest/ woodland birds: Dusky Woodswallow, Little Lorikeet, Glossy Black-Cockatoo, Grey-crowned Babbler.
- Birds of prey: Spotted Harrier, Eastern Grass Owl.
- Wetland/ floodplain birds: Brolga, Black-necked Stork, Comb-crested Jacana.
- Microbats: Eastern Coastal Freetail-bat, Little Bent-winged Bat, Large Bent-winged Bat, Yellow-bellied Sheathtail-bat, Greater Broad-nosed Bat, Southern Myotis.
- Mammals: Squirrel Glider, Brush-tailed Phascogale, Koala.
- Flying-foxes: Grey-headed Flying-fox.

Threatened fauna records associated with the site are shown in **Illustration 2.2**.

All of these species are either:

- Highly mobile species which may forage over a large home range; OR
- Associated with core habitats (e.g. wetlands or forest) outside of the railway corridor and may venture into the railway corridor on occasions.

For these species, the establishment and operation of the rail trail would be unlikely to result in any impact to habitat of significance (ie. core foraging or breeding habitat) or impact local habitat connectivity.



LEGEND

- Casino-Bentley rail trail
- Major road
- Grey-headed Flying-fox
- Koala
- Australian Painted Snipe
- Black-necked Stork
- Blue-billed Duck
- Bush Stone-curlew
- Comb-crested Jacana
- Curlew Sandpiper
- Eastern Osprey
- Freckled Duck
- Glossy Black-Cockatoo
- Magpie Goose
- White-bellied Sea-Eagle
- White-eared Monarch

Habitat With Koala Fruit Trees

- Forest Red Gum
- Tallowwood

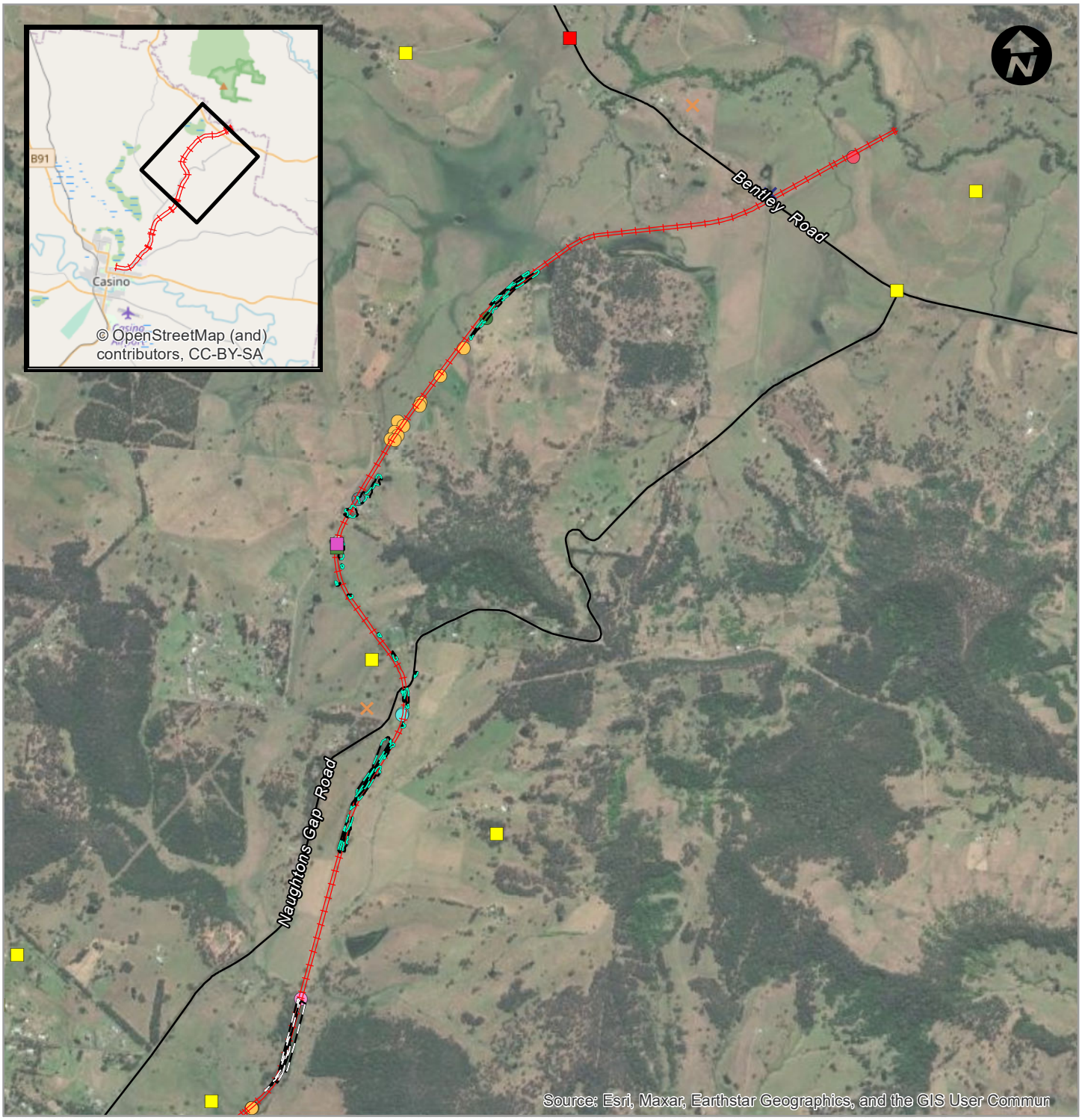
Habitat Feature

- Forest Red Gum (Koala food tree)
- Potential microbat roosting habitat (concrete blank bridge)
- Swamp box with stick nest
- Tallowwood (Koala food tree)

0 600 Metres

Threatened Fauna Records
Illustration 4.1 - Sheet 1 of 2

Information shown is for illustrative purposes only
Drawn by: AB Checked by: DSA Reviewed by: DGH
Source of base data: ESRI World Imagery and Bionet
Date: 27/07/2022



LEGEND

- Casino-Bentley rail trail
- Major road
- Grey-headed Flying-fox
- Koala
- Large Bent-winged Bat
- Little Bent-winged Bat
- Black-necked Stork
- Comb-crested Jacana

Habitat With Koala Fruit Trees

- Forest Red Gum
- Tallowwood

Habitat Feature

- Forest Red Gum (Koala food tree and stick nest)
- Forest Red Gum (Koala food tree)
- Mature Strangling Fig (hollow-bearing tree)
- Sandpaper Fig with nest
- Tallowwood (Koala food tree)
- Tunnel northern entrance - significant microbat habitat
- Tunnel southern entrance - significant microbat habitat

0 600 Metres

Threatened Fauna Records
Illustration 4.1 - Sheet 2 of 2

Information shown is for illustrative purposes only
Drawn by: AB Checked by: DSA Reviewed by: DGH
Source of base data: ESRI World Imagery and Bionet
Date: 27/07/2022

2.2 Indirect Impacts of the Activity

Indirect impacts to biodiversity would occur during both the construction and operational stages of the project, with the majority of impacts occurring during construction.

Construction Impacts

Potential indirect construction impacts may include:

- Disturbance to actual or potential microbat roost habitat at (eg. UB002, Naughton's Gap tunnel), in addition to potential disturbance of opportunistic roosting microbats at trestle underbridges, culverts and cattle underpasses.
- Minor localised disturbance to fauna from noise and disturbance.
- Potential for spread and/ or introduction of weeds and pathogens.
- Potential injury or mortality of native fauna during vegetation clearing works and general construction (e.g. ballast spreading and bridge and culvert works).
- Potential for impacts to waterways during works (e.g. spills, erosion/ sedimentation etc) or impacts to aquatic fauna should instream works be required (e.g. temporary crossings).

Operational Impacts

Potential operational impacts may include:

- Disturbance to microbat roost habitat at Naughton's Gap tunnel from light and/ or rail trail users.
- Rubbish/ waste dumping or entering waterways.
- Introduction or spread of weeds.
- Increased domestics pet (dog) encounters with wildlife.

2.3 Mitigation

To minimise biodiversity impacts which may result from the proposal, a number of biodiversity related mitigation measures are proposed. The majority of these are relatively standard mitigation measures during construction projects where the objective is to limit clearing of native vegetation and protect adjacent habitats (including waterways).

2.3.1 Project Design and Planning Phase

2.3.1.1 Protecting Microbat Habitat

BCD has been consulted with regards to the CBRT project and potential impacts to the Naughton's Gap Tunnel roost site. BCD has advised that:

- Security fencing should be installed to block unauthorised access by people to the tunnel, without blocking access for the bats or otherwise inhibiting their use of the tunnel, with detailed design of the fencing to be undertaken in consultation with the BCD.
- No lighting is to be installed near the tunnel entrances.

In addition to BCD's comments the following mitigation measure is provided to minimise the potential for indirect impacts and disturbance to microbats within the tunnel:

- Final designs of rail trail infrastructure in the vicinity of the Naughton's Gap Tunnel roost site would be development in consultation with a microbat expert and BCD. The objective of this

collaboration is to ensure the rail trail designs 1) prevent microbat and human interactions; and 2) avoid and minimise indirect impacts during both the construction and operation phases of the project. This would include:

- Diverting the rail trail around the tunnel and not to the tunnel entrances to minimise indirect visitor disturbance. Viewpoints of the tunnel entrances may still be provided (e.g. from viewing platform with interpretive signage located off the side of the trail as it ascends the hill). Simple guide/barrier fence (e.g. timber post and rail fence) could be used to direct trail users to stay on the trail rather than proceeding towards the tunnel entrances.
- Locating infrastructure (e.g. picnic tables, bike racks, etc) away from the tunnel entrances so as to not encourage the congregation of people near the tunnel entrances.
- Signage should be installed at the tunnel entrance stating '*Hazardous conditions – do not enter'* or words of similar intent.
- Making the focal point of the trail tunnel feature the viewpoint from the hill above the tunnel with signage, picnic facilities, view points away from the tunnel entrances.

Additional construction stage mitigation measures for microbats are included in **Section 2.3.2**.

2.3.1.2 Vegetation Retention

During detailed design/ construction aim to avoid vegetation removal where possible. Priority would be given to avoiding removal of:

- Threatened ecological communities (TECs).
- Areas of mapped native vegetation.
- Mature trees, particularly Forest Red Gums.

Where vegetation removal is unavoidable vegetation removal would be minimised.

2.3.1.3 Biosecurity Management

Effective biosecurity management during the construction and operation phases of the project is essential and should be planned during the project planning phase and encompass:

- Weed management.
- Maintaining livestock fencing and ensuring separation between livestock on adjacent grazing land and rail trail users.
- Encouraging users of the rail trail to implement good biosecurity management hygiene.
- Providing clean down facilities at strategic access points.
- Bollards at entrance points to prevent unauthorised vehicle access.

Weed management will be a significant and costly management task and will remain ongoing in perpetuity. In addition to controlling weeds flanking the trail, consideration should also be given to maintaining larger parts of the rail corridor for agricultural biosecurity, legislative (*Biosecurity Act 2015*) and aesthetic reasons and included in strategic project plans.

It is important to ensure adequate livestock exclusion fences along the railway corridor to prevent interactions between livestock and rail trail users for both safety and biosecurity reasons. Fencing and stock crossing provisions should be considered during the concept and detailed design phases of the project, with appropriate funding allocations for ongoing maintenance (in negotiation with adjacent land holders).

Users of the rail trail should be educated on good biosecurity management hygiene to reduce the spread of weeds and pathogens. This would include:

- Ensuring bikes, clothing and equipment is clean of soil and plant material before accessing the site or going to other areas.
- Staying on the rail trail (not venturing into weed infestations and native vegetation).
- Avoiding contact with livestock and wildlife.
- Take out what you take in (i.e. no littering).
- If walking pets, they must be on a leash.

This information could be provided through signage at strategic access points and other information points (e.g. Council's/CBRT website and social media platforms). Bike washdown bays (stands and brushes) at strategic trail access points would help maintain good biosecurity management hygiene and may be included in the project designs.

The installation of bollards at entrance points to prevent unauthorised vehicle access to the rail trail would help address a range of safety and security issues, as well as provide environmental/biosecurity benefits including preventing illegal dumping of rubbish.

2.3.1.4 Back Creek Designs

Future designs of rail trail infrastructure (including picnic facilities) would give due consideration to the environmental constraints at Back Creek. This would include minimising water quality impacts, preventing direct impacts or potential vandalism of Thorny Pea during both construction and operation phases of the project.

2.3.2 Construction

Construction phase biodiversity related mitigation measures include:

- A Microbat Management Plan (MMP) would be developed by an ecologist with microbat management experience to guide works within 200 m of the Naughton's Gap tunnel. The Plan would provide a suite of proven safeguards to minimise disturbance to the roosting colony during construction, giving due consideration to the final design, construction methodologies and site conditions. The need for construction timing restrictions for high-risk activities during the peak bent-winged bat overwintering period (March and September, inclusive) would be considered. The Plan would include a construction and operation phase monitoring program (including collection of baseline data prior to construction commencing) to determine if bats are being adversely impacted by the project, with contingency triggers and corrective actions clearly defined.
- Native vegetation removal would be avoided/ minimised where possible.
- Clearing limits would be clearly delineated to avoid damage to retained vegetation.
- Vegetation would be directionally cleared into existing cleared areas to prevent damaged to adjacent retained vegetation.
- Temporary no-go fencing would be installed when working in proximity to sensitive areas including TECs, patches of Thorny Pea at Back Creek, waterways and microbat habitat.
- Pre-clearing ecologist inspections would be undertaken prior to commencement of clearing to identify sensitive features within the works footprint (e.g. bird nests; waterways that require instream works and provide potential aquatic fauna habitat; potential microbat roosts). Advice would be provided by the ecologist for the management of these features to reduce potential impacts to fauna based on the conditions at the time of the works. The ecologist would be

licenced under the BC Act and undertake fauna rescue and relocation as appropriate during removal of sensitive features.

- Where an ecologist is not required to be on site during clearing, final inspections for fauna would be undertaken by the contractor. Should arboreal fauna be detected, the works would stop and appropriate temporary buffers established based on advice from the ecologist.
- A Weed and Pathogen Management Plan would be developed and implemented by the construction contractor. This would focus on suppression of weeds, meeting *Biosecurity Act 2015* obligations and preventing the introduction or spread of weeds and pathogens from construction works. Incorporation of relevant measures would include ensure all plant, vehicles and equipment (including clothing) are clean before coming to site, and are weed and propagule free before leaving the site.
- Should dewatering of any waterways be required, an aquatic ecologist would be engaged to guide the dewatering process and undertake aquatic fauna salvage and relocation.

These environmental management measures would be included in the project approvals with other environmental management safeguards such as water quality (e.g. erosion and sediment control) and contamination (e.g. spills) management measures.

2.3.3 Operation

The main mitigation of potential impacts on biodiversity during operations would largely comprise maintenance to signage, fencing and ongoing weed management.

Should use of the trail by feral animals (wild dogs, foxes) become an issue, rail trail management may be required to participate in baiting programs run by North Coast Local Land Services. This measure should be included in a biosecurity management plan.

Provisions of the *Companion Animals Act 1998* would be implemented to minimise domestic pet interactions with native fauna as a result of rail trail usage. Key provisions include:

- Pet owners must ensure that their companion animal does not threaten or harm a person or animal and is prevented from straying or causing other nuisance.
- Council officers are able to enforce the Act and manage stray and aggressive dogs.

2.4 Opportunities

2.4.1 Environmental Opportunities

The rail trail provides a unique opportunity for pursuing strategic environmental outcomes, either directly (e.g. native regeneration or restoration plantings), or by raising awareness (educational signage). Development of the rail trail as a biodiversity corridor in strategic locations represent an excellent opportunity to reinstate native vegetation endemic to the area and improve habitat connectivity for a variety of native fauna species. Such an initiative could also target threatened fauna species (e.g. Koalas; see potential local corridors in, ecological communities and riparian vegetation (e.g. Back Creek) as part of a locally strategic approach and use the green corridor initiative to leverage funding for environmental rehabilitation and education projects.

2.4.2 Agricultural/ Weed Management Opportunities

Along the railway corridor there is a general trend of low weed levels in areas subject to livestock grazing. Without management of this land, there is a risk of weed infestations increasing where livestock grazing is revoked as a result of the corridor becoming active public land. Opportunities for grazing agreements within low biodiversity value sections of the corridor should be investigated with adjacent landholders. Such agreements could be mutually beneficial through:

- Reducing the area of disused railway corridor requiring management for Council.
- Increasing grazing land for local landholders.
- Conditioning public landuse with weed management and fencing provisions.

Sufficient separation between the rail trail and grazing areas would need to be maintained.

3. Statutory Requirements

The following sections examine the findings of the site assessment with regard to relevant statutory requirements which require consideration for the REF.

3.1 Biodiversity Conservation Act 2016 (BC Act)

The BC Act requires a test of significance (five-part test) when assessing whether an action, development or activity is likely to significantly affect threatened species, ecological communities or their habitats. Based on the presence of threatened ecological communities, one threatened flora species and potential habitat for a number of threatened fauna species at the site, tests of significance have been completed (refer to **Appendix B**).

The tests of significance concluded that habitat for threatened species and communities would be unlikely to be significantly affected by the Activity.

3.2 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Under the EPBC Act, actions that have, or are likely to have, a significant impact on a matter of national environmental significance (MNES) require approval from the Australian Government Minister for the Environment (the Minister).

The nine matters of national environmental significance protected under the EPBC Act are:

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

No significant impacts to any MNES are likely to result from the proposal (refer to summary at **Table 3.1**), therefore referral to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) would be unlikely to be required.

Table 3.1 Assessment of MNES

Matter	*Impact*
Any impact on a World Heritage Property?	
No World Heritage properties occur within 5 km of the site.	Nil
Any impact on a National Heritage Place?	
No National Heritage places occur within 5 km of the site.	Nil
Any impact on a Wetland of International Importance?	
No wetlands of international importance (Ramsar sites) occur within 5 km of the site.	Nil

Matter	*Impact*
Any impact on nationally threatened species and ecological communities?	
Habitat for two TECs and 48 threatened species is identified within 5 km of the site from PMST results (refer to Appendix D of GeoLINK 2020). No EPBC Act TECs occur at the site. One threatened flora species (Thorny Pea) occurs at the site, along with habitat for two threatened fauna species (Koala and Grey-headed Flying-fox). It is unlikely that the proposal would result in a significant impact to these species.	Low
Any impact on Migratory species?	
Habitat for 16 migratory species is identified within 5 km of the site. One migratory fauna species has been recorded at the site and several others may occur on a seasonal or opportunistic basis. Any habitat which may be removed for the proposal is unlikely to be significant to any migratory species in the locality over its life cycle.	Low
Any impact on a Commonwealth marine area?	
No Commonwealth marine areas occur within 5 km of the site.	Nil
Any impact on the Great Barrier Reef Marine Park?	
The proposal will not impact on the Great Barrier Reef Marine Park (Qld).	Nil
Does the project involve a nuclear action?	
No nuclear actions are proposed.	Nil
Does the project involve impacts to a water resource, in relation to coal seam gas development and large coal mining development?	
The proposal is not a mining development	Nil

3.3 Fisheries Management Act 1994 (FM Act)

An assessment of significance ('seven-part test') under Section 220ZZA of the *Fisheries Management Act 1994* (FM Act) is required where impacts on threatened species, populations and communities listed in the FM Act may occur. Statutory assessment for potential impacts to the Purple Spotted Gudgeon (*Mogurnda adspera*) are required for works in or near Barlings Creek and Back Creek (including associated tributaries) and have been completed (refer to **Appendix C**). The assessment concluded that a significant impact was unlikely. No habitat for other threatened species, populations and communities listed in the FM Act occur within the railway corridor, therefore no other assessment of significance would be required.

3.4 State Environmental Planning Policy (SEPP) (Biodiversity and Conservation) 2021

Chapter 3 Koala Habitat Protection 2020 replicates the objectives and provisions of SEPP 44, which was in force from 1995 through to 2019. The SEPP aims to encourage the conservation and management of areas of natural vegetation that provide habitat for Koalas to support a permanent free-living population over their present range and reverse the current trend of Koala population decline. The Policy does not apply to proposals assessed under Part 5 of the EP&A Act such as the CBRT project.

References

Australian Government Department of Environment (DoE), (2015). *Arrive Clean, Leave Clean Guidelines to help prevent the spread of invasive plant diseases and weeds threatening our native plants, animals and ecosystems*. Commonwealth of Australia.

BusinessSense, (2019). *Casino to Eltham Northern Rivers Rail Trail Business Case.* Report prepared for Northern Rivers Rail Trail, Lismore City Council, Richmond Valley Council.

GeoLINK, (2020). 3500-1003 Biodiversity Assessment – Casino to Bentley Rail Trail. Report prepared for Richmond Valley Council.

NSW Department of Planning, Industry and Environment (DPIE), (2020). *Saving Our Species. Hygiene guidelines. Protocols to protect priority biodiversity areas in NSW from Phytophthora cinnamomi, myrtle rust, amphibian chytrid fungus and invasive plants*. Environment, Energy and Science. Department of Planning, Industry and Environment. Parramatta, NSW.

Copyright and Usage

Appendix A

Design

100mm AT ORIGINAL SIZE

RICHMOND VALLEY COUNCIL

NORTHEN RIVERS RAIL TRAIL
CASINO TO BENTLEY

PROJECT BOUNDARY

Sheet List Table		
Drawing No	Title	Revision
0200	COVER SHEET AND DRAWING REGISTER	B
0201	PROJECT BOUNDARY PLAN - SHEET 1 OF 17	B
0202	PROJECT BOUNDARY PLAN - SHEET 2 OF 17	B
0203	PROJECT BOUNDARY PLAN - SHEET 3 OF 17	B
0204	PROJECT BOUNDARY PLAN - SHEET 4 OF 17	B
0205	PROJECT BOUNDARY PLAN - SHEET 5 OF 17	B
0206	PROJECT BOUNDARY PLAN - SHEET 6 OF 17	B
0207	PROJECT BOUNDARY PLAN - SHEET 7 OF 17	B
0208	PROJECT BOUNDARY PLAN - SHEET 8 OF 17	B
0209	PROJECT BOUNDARY PLAN - SHEET 9 OF 17	B
0210	PROJECT BOUNDARY PLAN - SHEET 10 OF 17	B
0211	PROJECT BOUNDARY PLAN - SHEET 11 OF 17	B
0212	PROJECT BOUNDARY PLAN - SHEET 12 OF 17	B
0213	PROJECT BOUNDARY PLAN - SHEET 13 OF 17	B
0214	PROJECT BOUNDARY PLAN - SHEET 14 OF 17	B
0215	PROJECT BOUNDARY PLAN - SHEET 15 OF 17	B
0216	PROJECT BOUNDARY PLAN - SHEET 16 OF 17	B
0217	PROJECT BOUNDARY PLAN - SHEET 17 OF 17	B

N

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 200 400 800 1200

Full Size 1:20000 ; Half Size 1:40000

Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: COVER SHEET AND DRAWING REGISTER

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0200	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 9:59:36 AM

100mm AT ORIGINAL SIZE

N

LOT 238
DP755727

LOT 237
DP755727

LOT 242
DP755727

LOT 7021
DP1059188

REFER TO DRAWING 0202

LOT 1
DP1010688

LOT 5
DP1124270

LOT B
DP341391

LOT 1
DP1213623

DYRAABA ST

SPRING GROVE RD

WALKER ST

HICKEY ST

WHEAT ST

EAST STREET

DEAN ST

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

PROJECT: NORTHERN RIVERS RAIL TRAIL

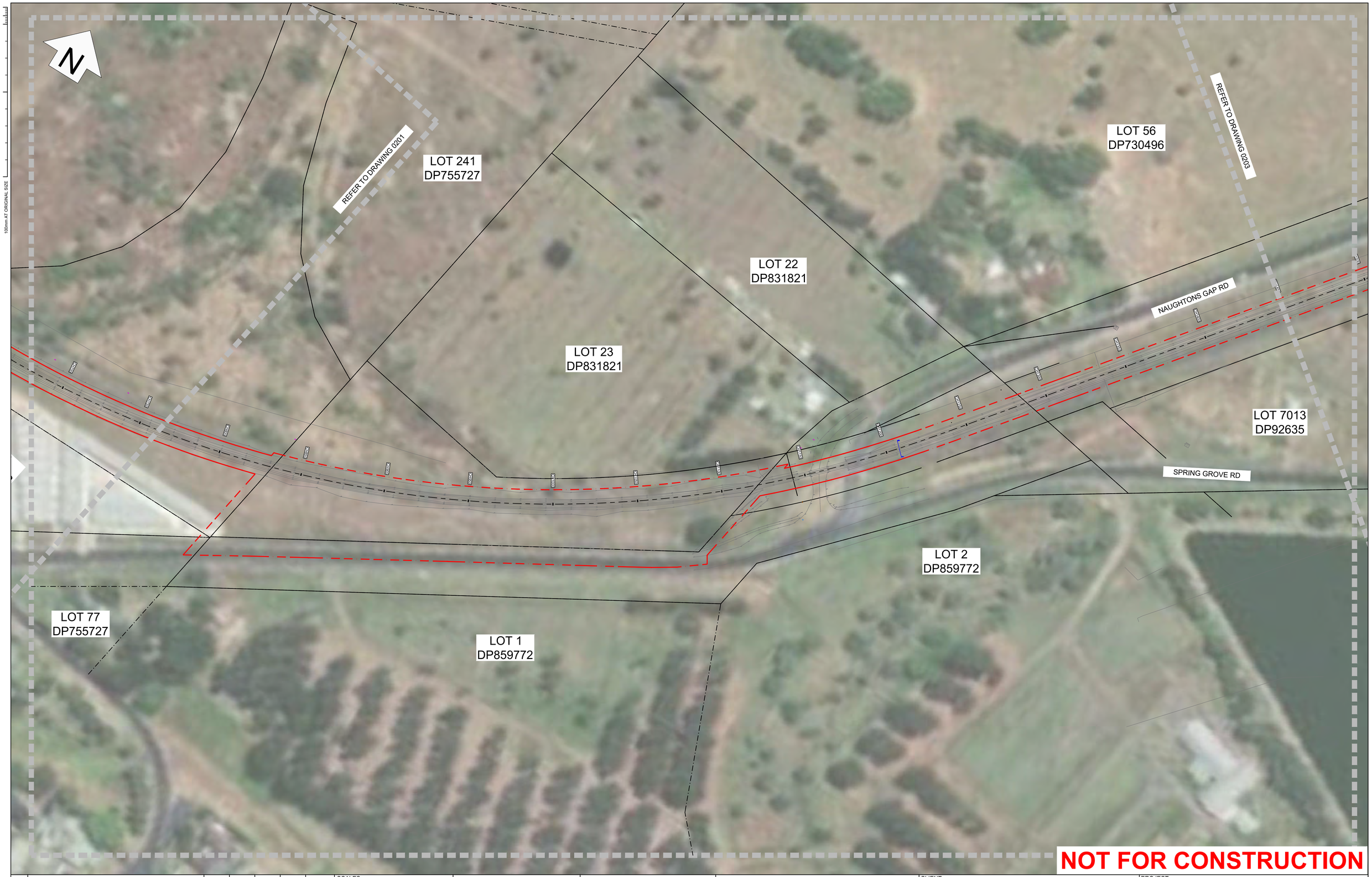
DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 1 OF 17

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0201	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLAN\TJ6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 9:59:39 AM

100mm AT ORIGINAL SIZE



NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000

Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 2 OF 17

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0202	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 9:59:44 AM

100mm AT ORIGINAL SIZE

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000

Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 3 OF 17

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0203	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 9:59:50 AM

100mm AT ORIGINAL SIZE

N

LOT 4
DP801921

BARLINGS CREEK

LOT 5
DP801921

REFER TO DRAWING 0205

LOT 195
DP755727

NAUGHTONS GAP RD

LOT 32
DP701177

REFER TO DRAWING 0203

LOT 314
DP755727

LOT 315
DP755727

LOT 316
DP755727

WILTON RD

LOT 317
DP755727

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:
0 10 20 40 60
Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:
DESIGN BY:
APPROVED BY:
DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 4 OF 17

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0204	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 9:59:55 AM

100mm AT ORIGINAL SIZE

N

REFER TO DRAWING 0204

REFER TO DRAWING 0206

LOT 1
DP1245636

LOT 322
DP755727

NAUGHTONS GAP RD

LOT 323
DP755727

LOT 334
DP729467

LOT 32
DP701177

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 5 OF 17

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0205	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 9:59:59 AM

100mm AT ORIGINAL SIZE

N

LOT 6
DP572371

LOT 5
DP572371

LOT 4
DP572371

LOT 3
DP572371

LOT 6
DP572371

NAUGHTONS GAP RD

LOT 130
DP755727

LOT A
DP409482

LOT B
DP409482

LOT 2
DP873198

LOT 1
DP1131021

LOT 130
DP755727

REFER TO DRAWING 0205

REFER TO DRAWING 0207

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 6 OF 17

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0206	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:04 AM

100mm AT ORIGINAL SIZE

N

LOT 1
DP618643

LOT 2
DP618643

REFER TO DRAWING 0206

REFER TO DRAWING 0208

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 7 OF 17

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0207	B

CAD FILE: W:\A-ZN\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:09 AM

100mm AT ORIGINAL SIZE

N

LOT 2
DP1172371

LOT 295
DP755727

REFER TO DRAWING 0209

REFER TO DRAWING 0207

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 8 OF 17

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0208	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:15 AM

100mm AT ORIGINAL SIZE

N

NAUGHTONS GAP RD

REFER TO DRAWING 0208

LOT 235
DP755727

LOT 235
DP755727

LOT B
DP368071

REFER TO DRAWING 0210

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 9 OF 17

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0209	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:20 AM

100mm AT ORIGINAL SIZE

N

NAUGHTONS GAP RD

LOT 78
DP755727

REFER TO DRAWING 0211

REFER TO DRAWING 0209

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 10 OF 17

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0210	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:25 AM

100mm AT ORIGINAL SIZE

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 11 OF 17

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0211	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:30 AM

100mm AT ORIGINAL SIZE

N

LOT 4703
DP1222201

LOT 1
DP1077104

REFER TO DRAWING 0211

LOT 4703
DP1222201

LOT 2
DP734474

REFER TO DRAWING 0213

LOT 1
DP397603

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 12 OF 17

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0212	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:35 AM

100mm AT ORIGINAL SIZE

N

LOT 1
DP1213478

LOT 2
DP1077104

LOT 185A
DP4576

STONES RD

LOT 2
DP1077104

LOT 1
DP397603

REFER TO DRAWING 0212

REFER TO DRAWING 0214

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 13 OF 17

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0213	B

CAD FILE: W:\A-ZN\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:40 AM

100mm AT ORIGINAL SIZE

N

LOT 2
DP17223

LOT 4
DP813647

LOT 11
DP860763

REFER TO DRAWING 0213

REFER TO DRAWING 0215

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 14 OF 17

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0214	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:45 AM

100mm AT ORIGINAL SIZE

N

LOT 4
DP813647

LOT 11
DP860763

REFER TO DRAWING 0216

REFER TO DRAWING 0214

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 15 OF 17

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0215	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:50 AM

100mm AT ORIGINAL SIZE

N

LOT 1
DP337142

LOT 7003
DP1057130

BENTLEY RD

LOT 7006
DP1073212

LOT 7009
DP1060428

LOT 8
DP948432

LOT 581
DP1044661

LOT 7001
DP1060659

LOT 2
DP1237008

REFER TO DRAWING 0215

REFER TO DRAWING 0217

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:

DESIGN BY:

APPROVED BY:

DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 16 OF 17

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0216	B

CAD FILE: W:\A-Z\N\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLAN\TJ6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:00:55 AM

100mm AT ORIGINAL SIZE

N

LOT 1
DP1081238

LOT 2
DP1112764

LOT 8
DP948432

LOT 1
DP432816

LOT 1
DP945360

LOT 1
DP1081238

LOT 2
DP1081238

REFER TO DRAWING 0216

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY ISSUE	04/07/22	AB	BT	MP	MP
B	REVISED PRELIMINARY ISSUE	14/07/22	AB	BT	MP	MP

SCALES:
0 10 20 40 60
Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:
DESIGN BY:
APPROVED BY:
DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
SUITE 9A, 80-84 BALLINA STREET
PO BOX 161
LENNOX HEAD NSW 2478

TELEPHONE: 02 6687 4666
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: Richmond Valley Council

PROJECT: NORTHERN RIVERS RAIL TRAIL

DRAWING TITLE: PROJECT BOUNDARY PLAN - SHEET 17 OF 17

LOCAL GOVERNMENT AUTHORITY: RICHMOND VALLEY COUNCIL

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J6805	0217	B

CAD FILE: W:\A-ZN\NORTHERN RIVERS RAIL TRAIL_J6805\3 - INCOMING\20210201_ENGINEERING PLANIT\J6805 - NORTHERN RIVERS RAIL TRAIL\6 - ENGINEERING\6.4 DRAFTING\0200 PROJECT BOUNDARY.DWG PLOTTED BY: AMANDA.BROGNOLI PLOT DATE: 14/07/2022 10:01:00 AM

Appendix B

Tests of Significance

Five-part Tests (BC Act listed species)

An *Assessment of Significance* has been undertaken for the following:

Threatened Fauna

Arboreal mammals

- Brush-tailed Phascogale
- Koala
- Squirrel Glider

Megachiropteran bats

- Grey-headed Flying-fox (*Pteropus poliocephalus*)

Microbats

- Eastern Bentwing-bat
- Little Bentwing-bat
- Eastern Coastal Freetail-bat
- Greater Broad-nosed Bat
- Southern Myotis
- Yellow-bellied Sheathtail-bat

Wetland birds

- Black-necked Stork
- Brolga
- Comb-crested Jacana

Forest birds

- Dusky Woodswallow
- Glossy Black-Cockatoo
- Grey-crowned Babbler
- Little Lorikeet

Raptors and owls

- Eastern Grass Owl
- Spotted Harrier

Threatened Flora

- Thorny Pea

Threatened Ecological Communities

- *Freshwater Wetlands on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions*
- *Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions*
- *Subtropical Coastal Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions*.

Species Profiles

Brush-tailed Phascogale

Brush-tailed Phascogales prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. They are agile climbers foraging preferentially in rough barked trees of 25 cm DBH or greater. The diet mostly comprises arthropods but also includes other invertebrates, nectar and sometimes small vertebrates. Females have exclusive territories of approximately 20 - 40 ha, while males have overlapping territories often greater than 100 ha. Brush-tailed Phascogales nest and shelter in tree hollows with entrances 2.5 - 4 cm wide and use many different hollows over a short time span. Mating occurs May - July; males die soon after the mating season whereas females can live for up to three years but generally only produce one litter.

Threatening processes for this species include:

- Loss and fragmentation of habitat.
- Loss of hollow-bearing trees.
- Predation by foxes and cats.
- Competition for nesting hollows with the introduced honeybee.

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.

In Clarence Valley LGA, preferred food trees include Forest Red Gum (*Eucalyptus tereticornis*), Swamp Mahogany (*E. robusta*), Tallowwood (*E. microcorys*) and Small-fruited Grey Gum (*E. propinqua*), with several other species recognised as secondary feed trees.

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.

Squirrel Glider

Squirrel Gliders inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. They prefer mixed species stands with a shrub or Acacia mid-storey. Squirrel Gliders live in family groups of a single adult male one or more adult females and offspring and require abundant tree hollows for refuge and nest sites. The diet varies seasonally and consists of *Acacia* gum, eucalypt sap, nectar, honeydew and manna, with invertebrates and pollen providing protein.

Threatening processes for this species include:

- Habitat loss and degradation.
- Fragmentation of habitat.
- Loss of hollow-bearing trees.
- Loss of understorey food resources.
- Inappropriate fire regimes.
- Reduction in food resources due to drought.
- Mortality due to entanglement on barbed wire.
- Occupation of hollows by exotic species.
- Mortality due to collision with vehicles.
- Predation by exotic predators.
- Changes in spatial and temporal distribution of habitat due to climate changes.

Grey-headed Flying-fox (GHFF)

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. 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 conception occurs in April or May; a single young is born in October or November. Site fidelity to camps is high; some camps have been used for over a century. GHFF may travel up to 50 km from the camp to forage; commuting distances are more often <20 km.

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.

Eastern and Little Bentwing-bat

Bentwing-bats occur in moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Roosting occurs in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats. Little Bentwing-bats often share roosting sites with the Common Bentwing-bat and, in winter, the two species may form mixed clusters.

In NSW, the largest maternity colony is in close association with a large maternity colony of Eastern Bentwing-bats and appears to depend on the large colony to provide the high temperatures needed to rear its young. Maternity colonies form in spring and birthing occurs in early summer. Males and juveniles disperse in summer. Only five nursery sites/ maternity colonies are known in Australia.

Threatening processes for these species include:

- Disturbance of colonies, especially in nursery or hibernating caves, may be catastrophic.
- Destruction of caves that provide seasonal or potential roosting sites.

- Changes to habitat, especially surrounding maternity/ nursery caves and winter roosts.
- Pesticides on insects and in water consumed by bats bio accumulates, resulting in poisoning of individuals.
- Predation from foxes, particularly around maternity caves, winter roosts and roosts within culverts, tunnels and under bridges.
- Predation from feral cats, particularly around maternity caves, winter roosts and roosts within culverts, tunnels and under bridges.
- Introduction of exotic pathogens such as the White-nosed fungus.
- Hazard reduction and wildfire fires during the breeding season.
- Large scale wildfire or hazard reduction can impact on foraging resources.
- Poor knowledge of reproductive success and population dynamics.

Eastern Coastal Freetail-bat

The Eastern Coastal Freetail-bat occurs in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. They typically roost in tree hollows but will also roost under bark or in man-made structures. Usually solitary but also recorded roosting communally; probably insectivorous.

Threatening processes for this species include:

- Loss of hollow-bearing trees.
- Loss of foraging habitat.
- Application of pesticides in or adjacent to foraging areas.
- Artificial light sources spilling onto foraging and/ or roosting habitat.
- Large scale wildfire or hazard reduction burns on foraging and/or roosting habitat.

Greater Broad-nosed Bat

The Greater Broad-nosed Bat utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although usually roosting in tree hollows, the species has also been found in buildings. Open woodland habitat and dry open forest suits the direct flight of this species as it searches for beetles and other large, slow-flying insects; this species has been known to eat other bat species. Little is known of the reproductive cycle, however a single young is born in January; prior to birth, females congregate at maternity sites located in suitable trees, where they appear to exclude males during the birth and raising of a single young.

Threatening processes for this species include:

- Disturbance to roosting and summer breeding sites.
- Foraging habitats are being cleared for residential and agricultural developments, including clearing by residents within rural subdivisions.
- Loss of hollow-bearing trees.
- Pesticides and herbicides may reduce the availability of insects or result in the accumulation of toxic residues in individuals' fat stores.
- Changes to water regimes are likely to impact food resources, as is the use of pesticides and herbicides near waterways.

Southern Myotis

Southern Myotis forage over streams and pools catching insects and small fish by raking their feet across the water surface. They generally roost close to water in caves, mine shafts, hollow-bearing trees, stormwater channels, buildings, under bridges and in dense foliage. In NSW, females have one young each year usually in November or December.

Threatening processes for this species include:

- Loss or disturbance of roosting sites.
- Clearing adjacent to foraging areas.
- Application of pesticides in or adjacent to foraging areas.
- Reduction in stream water quality affecting food resources.

Yellow-bellied Sheathtail-bat

The Yellow-bellied Sheathtail-bat forages in most habitats across a very wide range, with and without trees; the species appears to defend an aerial territory. It roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. Breeding has been recorded from December to mid-March, when a single young is born. Seasonal movements of Sheathtail-bats are unknown; there is speculation about a migration to southern Australia in late summer and autumn.

Threatening processes for this species include:

- Disturbance to roosting and summer breeding sites.
- Foraging habitats are being cleared for residential and agricultural developments, including clearing by residents within rural subdivisions.
- Loss of hollow-bearing trees; clearing and fragmentation of forest and woodland habitat.
- Pesticides and herbicides may reduce the availability of insects or result in the accumulation of toxic residues in individuals' fat stores.

Black-necked Stork

Black-necked Storks (BNS) occur in floodplain wetlands (swamps, billabongs, watercourses and dams) of the major coastal rivers in NSW. Secondary habitat includes minor floodplains, coastal sandplain wetlands and estuaries. BNS usually forage in water 5-30 cm deep for vertebrate and invertebrate prey. Eels regularly contribute the greatest biomass to their diet, but they feed on a wide variety of animals, including other fish, frogs and invertebrates (such as beetles, grasshoppers, crickets and crayfish).

BNS build large nests high in tall trees close to water. Trees usually provide clear observation of the surroundings and are at low elevation (reflecting the floodplain habitat). In NSW, breeding activity occurs May - January; incubation May - October; nestlings July - January; fledging from September. Parents share nest duties and in one study about 1.3 -1.7 birds were fledged per nest.

The NSW breeding population has been estimated at about 75 pairs. Territories are large and variable in size and estimated to average about 9,000 ha, ranging from 3,000-6,000 ha in high quality habitat and 10,000-15,000 ha in areas where habitat is poor or dispersed.

Threatening processes for this species include:

- Powerlines, especially close to wetlands or over floodplains, are a significant cause of mortality of Storks and one of the most critical threats to the species in NSW.
- Modification or degradation of wetlands through changes in natural water flows. It is important to maintain or reintroduce flows to provide wetland habitats suitable for foraging by Storks as they require large amounts of vertebrate prey from such habitats.
- Loss of wetland habitat through clearing and draining for development.
- Loss of key habitat as a result of wetland drainage for flood mitigation and agricultural development.
- Degradation of wetland habitats through pollution.
- Loss of paddock trees used for nesting.
- Degradation of wetlands as a result of salinity.

Brolga

Brolgas typically depend on wetlands, especially shallow swamps. They also often feed in dry grassland or ploughed paddocks or even desert claypans. They feed using their heavy straight bill as a 'crowbar' to probe the ground or turn it over, primarily on sedge roots and tubers. They will also take large insects, crustaceans, molluscs and frogs.

The nest comprises a platform of grasses and sticks, augmented with mud, on an island or in the water. Two eggs are laid from winter to autumn.

Threatening processes for this species include:

- At least in former times, Brolgas were poisoned and shot because of their feeding incursions into crops, following drainage of swamps.
- Loss of wetland habitat through clearing and draining for flood mitigation and agriculture.

Comb-crested Jacana

The Comb-crested Jacana occurs on freshwater wetlands in northern and eastern Australia, mainly in coastal and subcoastal regions, from the north-eastern Kimberley Division of Western Australia to Cape York Peninsula then south along the east coast to the Hunter region of NSW, with stragglers recorded in south-eastern NSW (possibly in response to unfavourable conditions further north).
Threatening processes for this species include:

- Loss of wetland habitat through clearing and draining for flood mitigation and agricultural and urban development.
- Degradation of habitat through removal of floating aquatic vegetation by grazing of livestock.
- Loss of wetland habitats has led to declines in NSW, and elsewhere, but the species uses suitable artifical wetlands with aquatic vegetation, including introduced plants, partly offsetting declines.
- Predation on breeding birds and their nests by feral predators such as the European red fox.

Dusky Woodswallow

The Dusky Woodswallow is often reported in woodlands and dry open sclerophyll forests, usually dominated by eucalypts, including mallee associations. It has also been recorded in shrublands and heathlands and various modified habitats, including regenerating forests; very occasionally in moist forests or rainforests. At sites where Dusky Woodswallows are recorded, the understorey is typically open with sparse eucalypt saplings, acacias and other shrubs, including heath. The ground cover may consist of grasses, sedges or open ground, often with coarse woody debris. Birds are also often observed in farm land, usually at the edges of forest or woodland or in roadside remnants or wind breaks with dead timber.

Dusky Woodswallows primarily eat invertebrates, mainly insects, which are captured whilst hovering and sallying above the canopy or over water. Occasionally nectar, fruit and seed are also ingested. Nesting occurs from late September to late February, with eggs present between September and January, although most eggs are present between October and early December. Clutch size is one to four and pairs may nest twice in a season. Both parents brood the eggs and feed the nestlings and fledglings need care for about a month.

Threatening processes for this species include:

- Land clearing and degradation.
- Competitive exclusion by Noisy Miners.
- Increased nest predation by currawongs, magpies and butcherbirds.
- Inappropriate fire regimes.
- Excessive grazing.

- Removal of coarse woody debris and dead trees.

Glossy Black-Cockatoo

Glossy Black-Cockatoo inhabit open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (*Allocasuarina littoralis*) and Forest Sheoak (*A. torulosa*) are important foods. Inland populations feed on a wide range of sheoaks, including Drooping Sheoak (*Allocasuaraina diminuta*) and *A. gymnathera*. Belah is also utilised and may be a critical food source for some populations. Glossy Black-Cockatoo are dependent on large hollow-bearing eucalypts for nest sites. A single egg is laid between March and May.

Threatening processes for this species include:

- Reduction of suitable habitat through clearing for development.
- Decline of hollow-bearing trees over time due to land management activities.
- Excessively frequent fire which eliminates sheoaks from areas, prevents the development of mature sheoak stands, and destroys nest trees.
- Firewood collection resulting in loss of hollow-bearing trees, reduced recruitment of hollow-bearing trees, and disturbance of breeding attempts.
- Decline in extent and productivity of sheoak foraging habitat due to feral herbivores.
- Reduced access to surface water in close proximity to foraging and nesting habitat.
- Limited information on the location of nesting aggregations and the distribution of high quality breeding habitat.
- Disturbance from coal seam gas and open cut coal mining causing loss of foraging and breeding habitat as well as disturbing reproductive attempts.
- Decline in extent and productivity of sheoak foraging habitat caused by moisture stress due to climate change.
- Forestry activity resulting in loss of hollow-bearing trees, reduced recruitment of hollow-bearing trees, degradation of foraging habitat, and disturbance of breeding attempts.
- Degradation of foraging habitat and reduced regeneration of sheoak stands due to grazing by domestic stock.
- Loss of foraging habitat due to slashing/ under scrubbing.
- Change in the spatial and temporal distribution of resources due to global warming.
- Illegal bird smuggling and egg-collecting.
- Habitat infestation by weeds such as African Boxthorn, Gazania, Buffel Grass and other invasive grasses.

Grey-crowned Babbler

Grey-crowned Babblers inhabit open Box-Gum Woodlands on the slopes, and Box-Cypress Pine and open Box Woodlands on alluvial plains; in coastal regions Woodlands on fertile soils are typical habitat. Babblers live in family groups that consist of a breeding pair and young from previous breeding seasons. A group may consist of up to fifteen birds. They feed on invertebrates, either by foraging on the trunks and branches of eucalypts and other woodland trees or on the ground, digging and probing amongst litter and tussock grasses.

Grey-crowned Babblers build and maintain several conspicuous, dome-shaped stick nests about the size of a football, which are used as a dormitory for roosting each night. Nests are usually located in shrubs or sapling eucalypts, although they may be built in the outermost leaves of low branches of large eucalypts. Nests are maintained year-round, and old nests are often dismantled to build new ones.

Breeding occurs between July and February. Usually two to three eggs are laid and incubated by the female. During incubation, the adult male and several helpers in the group may feed the female as she sits on the nest. Young birds are fed by all other members of the group. Territories range from one to 50 ha (usually around 10 ha) and are defended all year.

Threatening processes for this species include:

- Loss, degradation and fragmentation of woodland habitat on high fertility soils.
- Excessive total grazing pressure and loss of coarse woody debris is resulting in degradation and loss of important habitat components.
- Infestation of habitat by invasive weeds including exotic perennial grasses.
- Inappropriate fire regimes - excessive fires lead to loss of tree and shrub regeneration and absence of fire may lead to the grass sward being too dense and therefore unsuitable for foraging by babblers.
- Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners.
- Climate change impacts including reduction in resources due to drought.
- Nest predation by species such as ravens and butcherbirds may be an issue in some regions where populations are small and fragmented.

Little Lorikeet

The Little Lorikeet mostly forages in the canopy of open eucalypt forest and woodland, utilising *Eucalyptus*, *Angophora, Melaleuca* and other tree species. Nomadic movements are common, influenced by season and food availability, although some areas retain residents for much of the year. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. The species feeds mostly on nectar and pollen, but occasionally also on native fruits such as mistletoe. Nests are generally located in proximity to feeding areas if possible and entrances are small (3 cm) and usually high above the ground (2-15 m). Nest sites are often used repeatedly for decades, suggesting that preferred sites are limited. Riparian trees are often chosen, including species like *Allocasuarina*. The nesting season extends from May to September.

Threatening processes for this species include:

- Clearing of woodlands for agriculture.
- Loss of old hollow-bearing trees.
- Competition with the introduced Honeybee.
- Infestation of habitat by invasive weeds.
- Inappropriate fire regimes.
- Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners.
- Climate change impacts including reduction in resources due to drought.
- Degradation of woodland habitat and vegetation structure due to overgrazing.

Eastern Grass Owl

Eastern Grass Owls have been recorded occasionally in all mainland states of Australia but are most common in northern and north-eastern Australia. In NSW they are more likely to be resident in the north-east. Eastern Grass Owl numbers can fluctuate greatly, increasing especially during rodent plagues. Eastern Grass Owls are found in areas of tall grass, including grass tussocks, in swampy areas, grassy plains, swampy heath, and in cane grass or sedges on flood plains.

Threatening processes for this species include:

- Loss of suitable habitat due to grazing, agriculture and development.
- Habitat disturbance and degradation by stock.
- Use of pesticides in agriculture to control rodent populations thereby limiting seasonal food sources for owls, reducing reproductive potential, and potentially poisoning owls.
- Frequent burning, which reduces ground cover needed for safe roosting and nesting, and can reduce prey abundance.
- Poor understanding of the ecology of inland populations.
- Interacting effects of habitat degradation and increasing prevalence of invasive species.

Spotted Harrier

Spotted Harriers occur in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. They are found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. Prey includes terrestrial mammals (eg bandicoots, bettongs, and rodents), birds and reptiles, occasionally insects and rarely carrion.

Birds build a stick nest in a tree and lays eggs in spring (or sometimes autumn), with young remaining in the nest for several months.

Threatening processes for this species include:

- Loss of foraging and breeding habitat, particularly that which affects prey densities.
- Loss of mature trees from rural landscapes.
- Secondary poisoning from the use of pindone in rabbit control.
- Secondary poisoning from rodenticides.
- Lack of knowledge of locations of key breeding habitat and breeding ecology and success.

Potential Impacts

Arboreal Mammals

The proposal would affect up to 2.08 ha of sclerophyll forest representing potential habitat for the subject arboreal mammals. Impacts to hollow-bearing trees and Koala feed trees are anticipated to be minor in relation to larger similar areas of habitat occurring in the locality that would be unaffected by the proposal. Other construction stage impacts associated with risk of roadkill and vehicles is likely to be negligible given that movement of the subject species is likely to occur at night when plant/ machinery would not be operating.

Operational impacts of the proposal are anticipated to be low with only minor increases in human visitation and noise expected. Such impacts would be unlikely to substantially affect and local populations of the subject species that may occur at the site.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the subject arboreal mammal species would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Megachiropteran bats

The works may require the removal of up to 2.08 of sclerophyll forest representing potential seasonal foraging habitat for the Grey-headed Flying-fox, with adjoining forest within the study area and adjacent lands remaining unaffected and occurring extensively in the locality (refer to CRAFTI vegetation mapping).

No known roost habitat would be affected. In a local context, the works are unlikely to result in significant impacts to foraging resources for GHFF.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of GHFF would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Microbats

In relation to the large roosting colony of Bent-wing bats within the existing rail tunnel, the rail trail would be diverted around this to prevent interaction with microbats. A range of mitigation measures

would be implemented to prevent indirect impacts of the rail trail on this roosting site including the provision of barriers to prevent human visitation. The proposal has the potential to disturb the colony during construction and as such a Microbat Management Plan would be prepared to provide a suite of management strategies to ameliorate such impacts.

The proposal would affect approximately 2.08 ha of sclerophyll forest representing potential foraging habitat and opportunistic roosting habitat for the subject microbats species. Impacts to this potential roosting habitat would be limited given that hollow-bearing trees representing the most substantial habitat for these species would be largely retained on the site.

Operational impacts of the proposal on microbats species in general are anticipated to be negligible with only minor increases in human visitation and noise expected. Such impacts would be unlikely to substantially affect and local populations of the subject species that may occur at the site.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the subject microbat species would occur such that a viable local population is likely to be placed at risk of extinction.

Wetland birds

The works would comprise disturbance to a small portion (0.03 ha) of extensive floodplain environments in the locality, which would have a negligible impact on foraging or breeding habitat for the subject wetland birds in a local context.

Operational impacts of the proposal are anticipated to be low with only minor increases in human visitation and noise expected. Such impacts would be unlikely to substantially affect and local populations of the subject species that may occur at the site.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the subject species would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Forest birds

The proposal would affect up to 2.08 ha of sclerophyll forest representing potential habitat for the subject forest birds. Impacts to hollow-bearing trees representing potential nesting habitat is anticipated to be minor in relation to larger similar areas of habitat including hollows occurring in the locality that would be unaffected by the proposal. Other construction stage impacts associated with risk of roadkill and vehicles is likely to be negligible.

Operational impacts of the proposal are anticipated to be low with only minor increases in human visitation and noise expected. Such impacts would be unlikely to substantially affect and local populations of the subject species that may occur at the site.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the subject forest bird species would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Raptors and owls

The works may require the removal of up to 2.08 ha of dry sclerophyll forest habitat (potential foraging and nesting habitat), with adjoining forest within the study area and adjacent lands remaining unaffected and occurring extensively in the locality (refer to CRAFTI vegetation mapping). Preferred foraging habitat within wetlands and pasture areas will not be significantly affected by the works. In a local context, the works are unlikely to result in significant impacts to foraging resources or a reduction in the prey base for the subject raptor and owl species.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the subject species would occur such that a viable local population of the species is likely to be placed at risk of extinction.

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,

Arboreal Mammals

The Activity is unlikely to have an adverse effect on the life cycle of the subject arboreal mammals such that a viable local population is likely to be placed at risk of extinction as:

- The proposal would affect up to 2.08 ha of sclerophyll forest representing potential habitat for the subject mammals. This represents a small proportion of similar available habitat for the subject species which occurs locally.
- Denning habitat associated with hollow-bearing trees would largely be avoided with small numbers of such trees if any being removed.
- The local movement potential of the subject species would not be impacted by the Activity.
- The operational impacts of the proposal would have minimal impacts on the subject species.

Grey-headed Flying-fox

The Activity is unlikely to have an adverse effect on the life cycle of the subject species such that a viable local population is likely to be placed at risk of extinction as:

- The subject vegetation comprises a relatively small area of potential foraging habitat for the species which is well represented in the local area (outside the site).
- The subject vegetation does not include any areas identified as being significant roosting habitat.
- The local movement potential of the subject species would not be impacted by the Activity.
- The operational impacts of the proposal would have minimal impacts on the subject species.

Microbats

The Activity is unlikely to have an adverse effect on the life cycle of the subject microbats such that a viable local population is likely to be placed at risk of extinction as:

- No maternity colonies for the subject species occur at the site.
- Impacts to the rail tunnel which represents an important over wintering habitat for Bent-wing bats would be avoided as part of the proposal with mitigation measures implemented to prevent human visitation/ disturbance.
- Construction stage impacts would be mitigated but measures to be provided within a Microbat Management Plan for works within 200 m of the Naughtons Gap tunnel.
- The site does not support significant known foraging resources for any of the subject species.
- The local movement potential of the subject species would not be impacted by the Activity
- The operational impacts of the proposal would have minimal impacts on the subject species.

Water Birds

The Activity is unlikely to have an adverse effect on the life cycle of the subject rainforest birds such that a viable local population is likely to be placed at risk of extinction as:

- The works would comprise disturbance to a small portion (0.03 ha) of extensive floodplain environments in the locality, which would have a negligible impact on foraging or breeding habitat for the subject wetland birds in a local context.
- The local movement potential of the subject species would not be impacted by the Activity.
- The operational impacts of the proposal would have minimal impacts on the subject species.

Forest Birds

The Activity is unlikely to have an adverse effect on the life cycle of the subject rainforest birds such that a viable local population is likely to be placed at risk of extinction as:

- The proposal would affect up to 2.08 ha of sclerophyll forest representing potential habitat for the subject forest birds. This represents a small proportion of available habitat for the subject species which occurs locally.
- Impacts to hollow-bearing trees representing potential nesting habitat is anticipated to be minor in relation to larger similar areas of habitat including hollows occurring in the locality that would be unaffected by the proposal.
- Other construction stage impacts associated with risk of roadkill and vehicles is likely to be negligible.
- Operational impacts of the proposal are anticipated to be low with only minor increases in human visitation and noise expected. Such impacts would be unlikely to substantially affect and local populations of the subject species that may occur at the site.

Raptors and Owls

The Activity is unlikely to have an adverse effect on the life cycle of the subject rainforest birds such that a viable local population is likely to be placed at risk of extinction as:

- Preferred foraging habitat within wetlands and pasture areas will not be significantly affected by the works.
- In a local context, the works are unlikely to result in significant impacts to foraging resources or a reduction in the prey base for the subject raptor and owl species.
- Other construction stage impacts associated with risk of roadkill and vehicles is likely to be negligible.
- Operational impacts of the proposal are anticipated to be low with only minor increases in human visitation and noise expected. Such impacts would be unlikely to substantially affect and local populations of the subject species that may occur at the site.

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

Upper limit clearing areas for each impacted TEC are provided below:

- *Freshwater Wetlands on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions* – 0.03 ha
- *Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions* – 0.15 ha

- *Subtropical Coastal Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions* – 0.24 ha.

All of the above TECs are well represented in areas contiguous with the project site. As such the removal of the nominated TECs would represent a minor proportion of the local occurrences of these TECs such that their local occurrence is unlikely to be placed at risk of extinction.

ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

The proposal would involve the removal of small areas of the subject TECs within the rail trail project boundary affecting a small proportion of the local occurrence of these communities. Mitigation measures such as weed control would prevent the rail corridor becoming a vector for the spread of weeds locally. As such the composition of the subject TECs is unlikely to be modified such that the local occurrence of these TECs would 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

- *Arboreal Mammals:* minor contraction of foraging (associated with tree removal) and refuge habitat. Retained areas of adjacent forest will continue to provide foraging, refuge and breeding resources.
- *Grey-headed Flying-fox:* minor contraction of foraging habitat. Retained areas of adjacent forest will continue to provide foraging, refuge and breeding resources.
- *Microbats:* minor contraction of foraging habitat. Retained areas of adjacent forest will continue to provide foraging, refuge, roosting and breeding resources.
- *Wetland Birds*: minor contraction of foraging and refuge habitat associated with forest and riparian zone disturbance. Retained adjacent forest and riparian zone habitat continue to provide foraging and refuge resources.
- *Forest Birds*: minor contraction of foraging habitat. Retained areas of adjacent forest will continue to provide foraging, refuge and nest resources.
- *Raptors and Owls*: minor contraction of foraging habitat. Retained areas of adjacent forest and grazing lands will continue to provide foraging, refuge and nest resources.
- *TECs*: minor contraction of the extent of habitat for the subject TECs within the project boundary.

ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

The project is to be constructed within an existing rail corridor which is mostly cleared and as such would not fragment further habitat for the subject threatened species and TECs. The additional minor clearing required would not substantially increase fragmentation along this corridor.

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.

Habitat for the subject threatened species and TECs is mostly regrowth within the railway corridor and is affected by current weed infestations. Such habitat is generally of low value. Habitat of equivalent or better quality for the subject entities is widespread (although similarly fragmented) in the broader locality. The Naughton's Gap tunnel is important to the long-term survival of bent-winged bats in the locality and mitigation measures to avoid and minimise impacts on this habitat have been provided.

d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

No areas of outstanding biodiversity value have been declared in Richmond Valley LGA.

e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

A threatening process is a process that threatens, or that may threaten, the survival or evolutionary development of species or ecological communities. The current list of key threatening processes under the BC Act, and whether the Activity is recognised as a threatening process is shown in **Table B.1**.

Table B.1 Key Threatening Processes (KTP)

Listed Key Threatening Process (as described in the final determination of the Scientific Committee to list the threatening process)	***Is the development or activity proposed of a class of development or activity that is recognised as a threatening process?***		
	Likely	***Possible***	***Unlikely***
Alteration of habitat following subsidence due to longwall mining			✓
Aggressive exclusion of birds by noisy miners			✓
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands			✓
Anthropogenic climate change	✓		
Bush rock removal			✓
Clearing of native vegetation	✓		
Competition and grazing by the feral European Rabbit			✓
Competition and habitat degradation by feral goats			✓
Competition from feral honeybees			✓
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*			✓
High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition			✓
Herbivory and environmental degradation caused by feral deer			✓
Importation of red imported fire ants			✓
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			✓
Invasion and establishment of exotic vines and scramblers			✓
Invasion and establishment of Scotch broom			✓
Invasion and establishment of the Cane Toad			✓
Invasion, establishment and spread of *Lantana camara*			✓
Invasion of native plant communities by African Olive			✓

Listed Key Threatening Process (as described in the final determination of the Scientific Committee to list the threatening process)	*Is the development or activity proposed of a class of development or activity that is recognised as a threatening process?*		
	Likely	*Possible*	*Unlikely*
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 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 of feral dogs			✓
Predation by the European red fox			✓
Predation by the feral cat			✓
Predation by *Gambusia holbrooki*			✓
Predation by the Ship Rat on Lord Howe Island			✓
Predation, habitat degradation, competition and disease transmission by feral pigs			✓
Removal of dead wood and dead trees		✓	

The Activity may be characteristic of several KTPs:

- Anthropogenic climate change.
- Clearing of native vegetation.
- Infection of frogs by amphibian chytrid causing the disease chytridiomycosis.
- Loss of hollow-bearing trees.
- Removal of dead wood and dead trees.

The Activity would incrementally contribute to Anthropogenic climate change, through the generation of carbon dioxide during operation of machinery and vehicles and associated fuel consumption however the impact is not considered significant.

Clearing of native vegetation proposed is unlikely to be considered significant considering the modified habitat of impacted vegetation and the large extent of preferable habitat surrounding the Activity.

As works are being undertaken within waterbodies which constitute amphibian habitat there is potential for infection of frogs by amphibian chytrid causing the disease chytridiomycosis associated with the Activity. Strict frog hygiene and robust water quality protection measures specific to the Activity would limit the potential for chytrid infection.

Loss of hollow-bearing trees is likely to be minimal.

The project has the potential for the removal of dead wood/ dead trees although this is likely to be very minor.

Conclusion

While the Activity would impose some negative (incremental and cumulative) effects, it is considered unlikely that the Activity would result in a significant adverse impact on threatened species or TECs that would put at risk the local viability of a local population/ occurrence of these entities.

Appendix C

Assessment of significance (FM Act) – Southern Purple Spotted Gudgeon

A test of significance in accordance with the requirements of the Fisheries Management Act 1994 has been completed for the Southern Purple Spotted Gudgeon (SPSG) (*Mogurnda adspersa*) below.

a) in the case of a threatened species, whether the action proposed 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,

The SPSG is a small fish listed as Endangered under the NSW *Fisheries Management Act 1994*. The species occurs in inland drainages of the Murray-Darling basin as well as coastal drainages of northern NSW and Queensland and has been recorded in the northern rivers in Tucki Creek (Lismore LGA); refer Miles (2013).

SPSG are found in a variety of lotic and lentic habitats including small coastal streams, rainforest streams, large rivers and in dune lake and stream systems. There are also reports of the SPSG being found in estuaries. SPSG are classified as a pool dwelling species, occurring in slow-flowing weedy areas and slow moving or still waters in rivers, creeks and billabongs (Pusey 2004). Miles (2013) suggests that ideal SPSG habitat comprises “stagnant” pools or backwaters, < 61 metres long and 16 metres wide, depth < 600mm, 1-60 per cent riparian cover, 40-60 per cent riparian shading, > 21 per cent macrophyte cover, mud or rocky bottom, dissolved oxygen between 6-12 mg/L-1, conductivity 101-300µm, pH 6-8.99 and 30-150cm Secchi depth.

SPSG may occur across a range of mesohabitat conditions ranging from small, shallow riffles with moderately fast current velocities to long, moderately deep pools with no obvious flow (Pusey 2004). Substrates may range from complete dominance by mud and sand to those dominated by rock or bedrock. On average, SPSG typically occur in streams less than 10 metres in width, about 40cm deep and with a moderate current velocity (Pusey 2004).

SPSG feed mainly on insect larvae, but also consume worms, tadpoles, small fish and some plant matter. Female SPSG may lay several batches of eggs per season (30-1,300 per batch). The eggs are deposited in clusters on solid objects such as rocks, wood or broad-leaved plants. The male guards and fans the eggs until hatching (three to eight days). The spawning period in northern NSW is not known with any certainty.

Threats to SPSG include:

- Predation by introduced fish such as gambusia and redfin perch
- Habitat degradation, particularly the loss of aquatic plants
- Fluctuations in water levels as a result of river regulation, leading to negative impacts on reproduction and recruitment.

Potential impacts of the Activity

The proposal has the potential for impacts to waterways during works (e.g. spills, erosion/ sedimentation etc) or impacts to aquatic fauna should instream works be required (e.g. temporary crossings). These impacts have the potential to adversely impact PSG habitat associated with the site. Mitigation measures proposed as part of the REF would minimise the potential for adverse impacts which overall are anticipated to be low.

It is noted that all watercourses traversed by the rail corridor have been historically cleared and riparian vegetation is absent or very limited. Instream and fringing vegetation is also highly disturbed and agricultural disturbances are apparent.

a) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No consideration under this part of the assessment is required.

b) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

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

An Assessment of Significance (five-part test) has been undertaken for TECs (refer **Appendix B**).

c) in relation to the habitat of a threatened species, population or ecological community:

i. the extent to which habitat is likely to be removed or modified as a result of the action proposed,

Habitat removal should not be required associated with the two waterways given that watercourses traversed by the rail corridor have been historically cleared and riparian vegetation is absent or very limited. Instream and fringing vegetation is also highly disturbed and agricultural disturbances are apparent.

Habitat modification associated with the Activity includes:

- Potential bank and stream disturbance in the event that instream works are required
- Potential for short term localised disturbance and turbidity.

These works are minor in the context of the two waterways occurring on the site and occur over a very small, localised area.

ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

The Activity is unlikely to result in temporary barriers to movement of PSG during the construction stage.

Following works, unobstructed fish movement allowing both downstream and upstream aquatic habitats to be freely accessed by any aquatic species will be re-instated. As previously noted, fish passage is currently undisturbed and would allow for flow and unobstructed fish movement allowing both downstream and upstream aquatic habitats to be freely accessed by any individuals within the subject waterways.

iii. the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality

The habitat to be disturbed is expected to be of low-moderate importance to SPSG, given the low condition of the subject waterways and the extent of potential SPSG habitat. The Activity would see only a temporary reduction in the habitat values of the project footprint for SPSG during the works. Post works, aquatic habitat values within the subject waterways would be retained. Hence, no habitat important to the long-term survival of the SPSG in the locality would be adversely affected by the Activity.

d) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)

The Activity is not within an area of critical habitat listed under the FM Act.

e) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

A recovery plan has not been prepared under the FM Act for the Purple Spotted Gudgeon. A Priorities Action Statement (PAS) has been prepared for SPSG (refer: http://www.dpi.nsw.gov.au/fishing/species-protection/conservation/what-current/endangered-species/purple-spotted-gudgeon/priorities-action-statement-actions-for-the-purple-spotted-gudgeon). The Activity is not inconsistent with any of these recovery actions.

f) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

Key threatening processes listed in Schedule 6 of the FM Act include:

- Current shark meshing program in NSW waters.
- Hook and line fishing in areas important for the survival of threatened fish species.
- Human-caused climate change.
- Instream structures and other mechanisms that alter natural flow.
- Introduction of non-indigenous fish and marine vegetation to the coastal waters of New South Wales.
- The introduction of fish to fresh waters within a river catchment outside their natural range.
- The removal of large woody debris from NSW rivers and streams.
- The degradation of native riparian vegetation along New South Wales water courses.

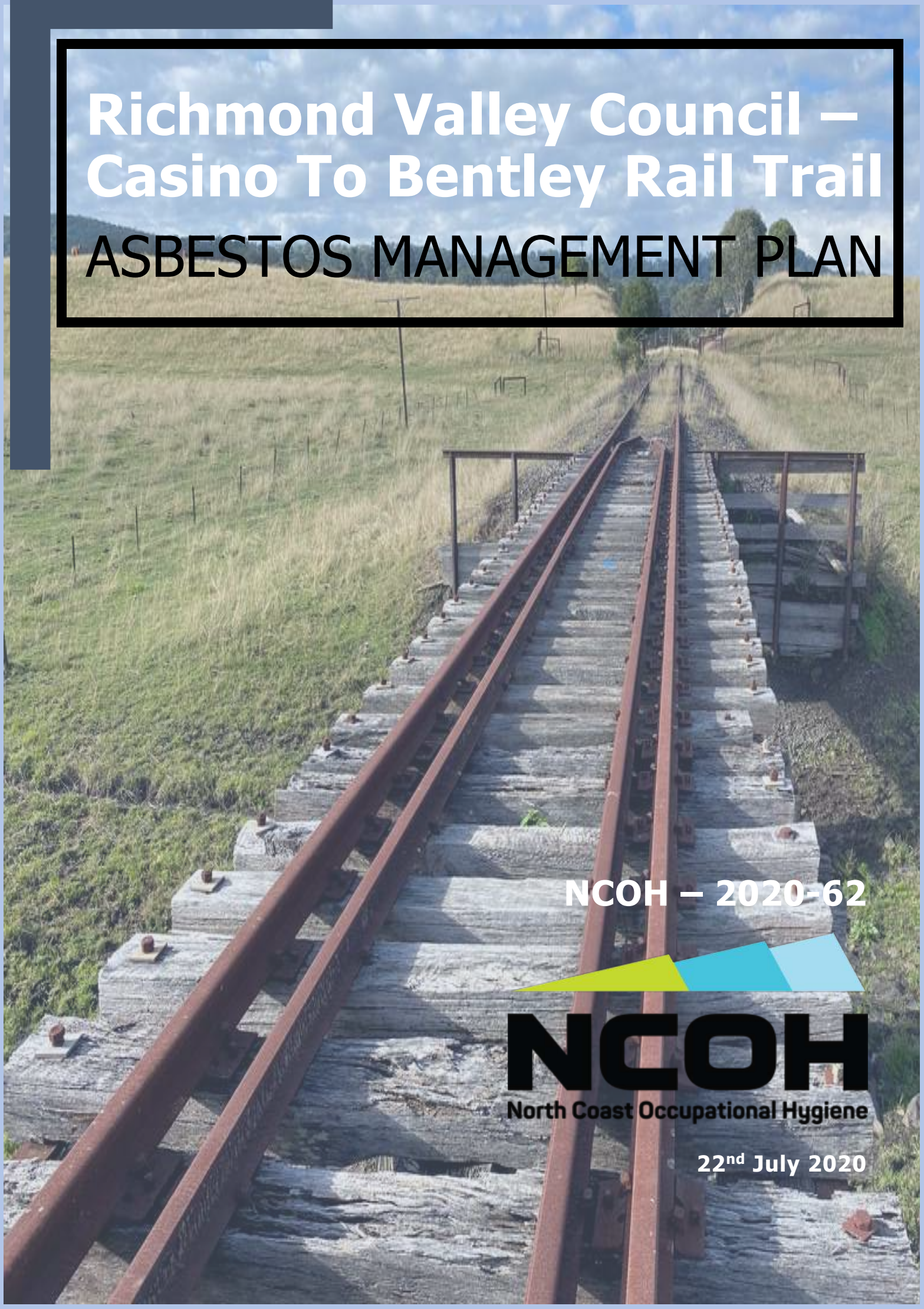
The Activity is not considered characteristic any listed KTPs. Works would be of short duration and natural flow is unlikely to be hindered.

On this basis the degree that the Activity would contribute to any threatening process is not considered likely to place SPSG at significant risk of extinction.

Appendix C. **Asbestos Management Plan**

Richmond Valley Council – Casino To Bentley Rail Trail

ASBESTOS MANAGEMENT PLAN



NCOH – 2020-62

NCOH

North Coast Occupational Hygiene

22nd July 2020

DISTRIBUTION

DOCUMENT INFORMATION	
Client:	Richmond Valley Council
Title:	Asbestos Register and Management Plan – Casino to Bentley Rail Trail
Project No:	2020-062
Issue Date:	22nd of July 2020

DOCUMENT CONTROL			
Inspected By:	Simon Bice Licensed Asbestos Assessor SafeWork NSW Licence No LAA 000108		6th of April, 16th June, 2020
Prepared By:	Simon Bice Licensed Asbestos Assessor SafeWork NSW Licence No LAA 000108		22nd of July 2020

DISTRIBUTION	
Recipient:	**Brad Birney** **Richmond Valley Council** Locked Bag 10 CASINO NSW 2470

TABLE OF CONTENTS

REFERENCES

- AS 4964 – 2004 Method for the qualitative identification of asbestos in bulk samples.
- Code of Practice: How to Manage and Control Asbestos in the Workplace [SafeWork NSW, 2019].
- Code of Practice: How to Safely Remove Asbestos [SafeWork NSW, 2019].
- Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC: 3003 (2005)].
- NSW Work Health and Safety Act 2011.
- NSW Work Health and Safety Amendment Act 2018.
- NSW Work Health and Safety Regulation 2017.
- NEPM [National Environment Protection (Assessment of Site Contamination) Measure] Guidelines 2013.

TERMS AND DEFINITIONS

ACD – Asbestos Containing Dust

ACM – Asbestos Containing Material

AMP – Asbestos Management Plan

LAA – Licensed Asbestos Assesor

ARCP – Asbestos Removal Control Plan

NATA – National Association of Testing Authorities, Australia

NES – National Exposure Standard

OHS – Occupational Health and Safety

PCBU – Person Conducting a Business or Undertaking

PPE – Personal Protective Equipment

RPE – Respiratory Protective Equipment

RVC – Richmond Valley Council

SWMS – Safe Work Method Statement

1. INTRODUCTION

1.1 BACKGROUND

This inspection and report were authorised by Mr Brad Birney of Richmond Valley Council (RVC) on the 30th of June 2020.

Concerns about the possibility of asbestos being present along the rail corridor were raised by RVC during the planning process for the Casino to Bentley Rail Trail Project.

As a result, an inspection and sampling for asbestos by a SafeWork NSW licensed asbestos assessor was requested by RVC to determine if ACM are present onsite.

Sampling was undertaken on the 6th of April and the 16th June 2020, with asbestos identified in a number of areas the site.

As a result, NCOH was engaged RVC to prepare an Asbestos Management Plan (AMP) for the management of asbestos-containing materials (ACM) identified within the rail corridor .

1.2 OBJECTIVE

The objective of the AMP is to document the management processes to be implemented on the project to ensure asbestos hazards are controlled and materials are handled and disposed appropriately to achieve compliance with the NSW Work Health and Safety Regulation 2017 and current Codes of Practice and guidance documentation.

1.2 SCOPE OF WORK

The AMP has been developed to identify and manage the risks associated with asbestos found to be present in areas of the proposed project. The AMP has been developed in accordance with current NSW legislation and specifies work practices and procedures to ensure a consistent approach in managing asbestos impacted sites.

1.3 SITE DESCRIPTION

The Northern Rivers Rail Trail Project covers a number of local government areas and involves the upgrade of the disused rail corridor between Casino and Murwillumbah and converting it to a cycle and walking trail.

RVC has been awarded the section of the project that falls within the RVC local government area, from the Old Casino Railway Station through to Back Creek Bridge in Bentley, approximately 13.5 kilometres long.

2. ASBESTOS

2.1 GENERAL INFORMATION

Asbestos is a naturally occurring fibrous silicate mineral that is typically found in rock, sediment or soil. Its strong fibres are heat resistant and have good insulating properties. As a result, it was considered a versatile product, and was used in more than 3000 different products in Australia up until the mid-1980's.

Exposure to asbestos fibres can cause life-threatening illnesses, and the use of asbestos has been greatly reduced and it is now banned in sixty-one countries. On the 31st of December 2003, a total ban on asbestos came into effect in Australia. It is illegal to make it, use it or import it from another country.

2.2 EFFECTS ON HEALTH

Asbestosis

Asbestosis is a chronic chest disease caused by inhalation of high concentrations of asbestos fibres. Asbestos fibres initially damage cell membranes in the lungs and, as a result, the lung tissue becomes hardened and scars.

The condition can develop 10 to 20 years after initial exposure and symptoms include shortness of breath after exercise, persistent coughing, chest pain, phlegm, lung infections, pulmonary hypertension and heart failure.

Early abnormalities of asbestosis are difficult to detect in a lung X-ray, however, as the disease progresses the X-ray is characterised by a cloudy, ground glass appearance.

Lung Cancer

Lung cancer of the bronchial tubes, lungs and alveoli can develop after exposure to asbestos. Smokers who are also exposed to asbestos have a greater risk of getting lung cancer.

Symptoms of lung cancer include an irritative cough with increasing sputum, followed by blood-tinged sputum, coughing up blood, chest pains and chest infections.

Mesothelioma

Mesothelioma is a cancer of the lung lining and can result from low-level exposure to asbestos. It is an aggressive and painful cancer that can take 30 to 45 years to develop after initial exposure and sufferers rarely live longer than 12 to 18 months.
A dull, aching chest pain and shortness of breath are the early symptoms, followed by abdominal pain, abdominal swelling and loss of weight.

2.3 ASBESTOS CLASSIFICATION

Under NSW OHS legislation, material that contains asbestos is referred to as friable or non-friable.

Non-Friable Asbestos Material

Non-friable or bonded asbestos products are solid and cannot be crushed by hand when dry - the asbestos has been mixed with a bonding compound such as cement.

These products include:

- flat, corrugated or compressed asbestos cement sheeting;
- asbestos cement pipes;
- electrical meter boards;
- vinyl floor tiles;
- fibreboard sheeting

If non-friable asbestos is damaged or degraded due to weathering, hail, fire damage or water blasting, the material may become friable and will pose a higher risk of fibre release.

Friable Asbestos Material

Friable asbestos is a material containing asbestos that when dry, is in powder form or may be crushed or pulverised into powder form using hand pressure. This material poses a higher risk of exposure to airborne asbestos fibres.

Friable asbestos was commonly used in industrial applications rather than residential, although loose-fill asbestos has been found in homes as ceiling and wall insulation.

Friable asbestos products include:

- sprayed limpet;
- asbestos cloth and rope;
- millboard;
- pipe and boiler lagging;
- low density board;
- sprayed ceiling and wall insulation.

2.4 LICENCE REQUIREMENTS FOR ASBESTOS REMOVAL WORK

There are two types of licenses for asbestos removal: Class A and Class B. The type of license required for works will depend on the type and quantity of asbestos or ACM that is being removed.

A summary of the license requirements is present in Table 2 below.

TABLE 2: ASBESTOS LICENSE REQUIREMENTS

TYPE OF LICENSE	WHAT ASBESTOS CAN BE REMOVED?
Class A	Any amount or quantity of asbestos or ACM, including: • any amount of friable asbestos or ACM; • any amount of asbestos containing dust (ACD); • any amount of non-friable asbestos or ACM.
Class B	• any amount of non-friable asbestos; • ACD associated with the removal of non-friable asbestos or ACM.
No license required	• Up to 10m^2 of non-friable asbestos or ACM; • ACD that is associated with the removal of less than 10m^2 of non-friable asbestos or ACM; • ACD not associated with the removal of friable or non-friable asbestos and is only a minor contamination.

3. SITE INSPECTION AND SUMMARY

3.1 INSPECTION RESULTS

8th April 2020

- NCOH attended site and undertook an inspection and soil sampling in twenty-five (25) locations along the rail corridor;
- Soil samples were analysed for asbestos at a NATA accredited laboratory in accordance with AS4964 2004 "Method for qualitative identification of asbestos in bulk samples" and the NEPM 2013 Assessment of Site Contamination Guidelines;
- The samples were taken at approximately 550 metres intervals along the rail corridor where access allowed;
- There were a number of inaccessible areas along the rail corridor due to heavy vegetation growth;
- **Chrysotile asbestos** was found to be present in seven (7) of the twenty-five (25) samples taken in the following areas of the rail corridor:

    - Behind Richmond Dairy – in line with Wheat Street, Casino;
    - South of the driveway to the residence approximately 3.9kms from Casino;
    - Just south of the crossing at 400 Naughton's Gap Road, North Casino;
    - Approximately 500m north of the crossing at 400 Naughton's Gap Road, North Casino;
    - North of the crossing at Powell's Road, North Casino;
    - In line with Stones Road, Naughtons Gap;
    - Approximately 500m north of the Naughton's Gap Road Overpass.

26th June 2020

- A further thirty-seven (37) soil samples were taken along the rail corridor;
- Samples were taken in the following locations:

    - Approximately every five (5) and ten (10) metres either side of the seven (7) locations where asbestos was identified in the sampling on 08/02/20;
    - At approximately 550 metre intervals in the area from the Naughton's Road Tunnel to Back Creek Bridge, Bentley, which was inaccessible on the 04/04/20 due to heavy vegetation growth.

- **No asbestos** was found to be present any of the thirty-seven (37) samples taken.

Appendix B – Site Maps – indicates the location of the samples that detected asbestos in RED;

3.2 SUMMARY

- Chrysotile of asbestos were found to be present in seven (7) locations along the rail corridor;
- The asbestos found consisted of a mixture of loose fibres of asbestos within the soil/ballast and loose fragments of asbestos cement sheeting;
- An assessment in accordance with *Code of Practice: How to Safely Remove Asbestos [SafeWork NSW, 2019]* has determined this asbestos as **friable.**

4 SITE RECOMENDATIONS

4.1 ASBESTOS CONTAMINATED ZONES

NCOH recommends the following areas of the rail trail be classed asbestos contaminated zones throughout the future construction phase of the project:

ZONE 1

- Sample 50740-2 location - behind Richmond Dairies - to a distance of five (5) metres in either direction along the corridor.

ZONE 2

- From south of the driveway to the residence approximately 3.9kms from Casino (Sample 50740-7 location) through to approximately 500m north of the Naughton's Gap Road Overpass (Sample 50740-19 location).
- Asbestos was found to be present in six (6) samples taken within this area of the track;
- As a result, it is recommended that the whole area be classed as asbestos contaminated as the safest and best practice option for the site.

These zones are shown in Appendix B – Site Maps.

4.2 CONSTRUCTION DESIGN

It is NCOHs understanding that the basic design for the rail trail construction will involve the following:

- Removal of the steel railway track;
- Removal of the railway sleepers;
- Ballast to remain on site;
- Encapsulation with geo fabric material or similar;
- Cover with appropriate topping material.

For the purpose of this management plan, this design option will be referred to as **Option 1.**

A second option designed to simplify the management needs on site in regard to asbestos has been suggested by NCOH to RVC:

- Removal of the steel railway track;
- Railway sleepers to remain on site to limit disturbance of ACM in soil;
- Ballast to remain on site;
- Encapsulation with geo fabric material or similar;

- Cover with appropriate topping material.

For the purpose if this report, this option will be referred to as **Option 2.**

Asbestos management recommendations for each option are outlined in Section 5 below.

5 ASBESTOS MANAGEMENT PLAN

The options below outline the asbestos identified on site as outlined in Section 3 should be managed for each design option in the construction phase of the project.

5.1 ASBESTOS MANAGEMEN PLAN – OPTION 1

If design option 1 is to be implemented on site, it is recommended the following procedures be followed on site.

Due to the railway sleepers being removed from the site under this plan, there is high potential for the loose asbestos fibres in the designated asbestos contaminated zones to be disturbed throughout this phase of the construction.

As a result, it is recommended all works undertaken within the asbestos contaminated zones be conducted under the supervision of a Class-A licensed asbestos removal contractor.

Areas outside these zones may proceed as normal, under regular working conditions, with the contractors working under an unexpected finds protocol for asbestos – as detailed below.

Class-A Licenced Asbestos Removal Contractor

As the ACM identified on site is considered friable, works undertaken in the designated asbestos contaminated zones is to be conducted under the supervision by a Class-A Contractor.

Prior to commencement of works in these areas, the Class-A Contractor must ensure that:

- A detailed site-specific Asbestos Removal Control Plan (ARCP) in accordance with the requirement in the NSW Code of Practice: How to Safely Remove Asbestos 2019 has been prepared and provided to RVC;
- A SafeWork NSW asbestos removal notification has been submitted;
- All workers have been inducted into the site;
- The appropriate licences and training/competencies of the workers undertaking the works are up to date; and
- A Safe Work Method Statement (SWMS) has been developed for the removal work.

Regulator Notification

The Class-A Contractor shall notify SafeWork NSW before the commencement of the works in the asbestos contaminated zones.

The notification will typically also require the following documentation:

- The asbestos management plan;
- Any asbestos removal specifications; and
- The Class-A Contractors ARCP.

Asbestos Removal PPE

The following asbestos removal Personal Protective Equipment (PPE) will be required to be worn by Class-A Contractors and any contractor working under their supervision in the designated asbestos contaminated zones during the project:

- Half face P3 respirators as a minimum;
- Disposable coveralls rated Type 5/6;
- Dedicated asbestos removal footwear such as steel capped gumboots or boot covers rated Type 5/6; and
- Disposable gloves.

Fitted respirator masks should be decontaminated and stored in a suitable and clean location between each use.

Any respirators used must be face fitted to the individual and evidence of the quantitative face fit provided with the contractor's safety documentation.

All operatives required to wear respirators must be cleanly shaven to ensure a suitable seal.

Site Establishment

Prior to the commencement of works in each asbestos contaminated zone, the Class-A Contractor shall establish the asbestos work area to limit access and ensure environmental controls are in place. This should include:

- Erection of temporary fencing, barricades and asbestos warning signage establishing the asbestos work area with an approximate 10 m exclusion zone;
- Installation of sediment and erosion controls;
- Establish running water onsite for dust suppression;
- Installation of the decontamination area at the boundary of the asbestos work area with access to water and power;
- Establish a transit route;
- Establish a plant and equipment decontamination area within the asbestos work area; and
- Establish a waste route and transit route for trucks ensuring trucks do not enter the asbestos work area. Should trucks be required to enter the asbestos work area a truck wash area must be established to wash down wheels and undercarriage prior to leaving site, with any water captured from this process and disposed of as asbestos waste.

Dust Suppression

Dust suppression must be engaged during any work in the designated asbestos contaminated zones in the form of a controlled water misting or similar.

No water overflow is permitted; thus, controls must be put in place to control any water overflow.

Personal Decontamination

The Class A contractor must design, supply, install and maintain a suitable decontamination unit for works in the asbestos contaminated zones, as required by the NSW Code of Practice: How to Safely Remove Asbestos 2019.

The decontamination unit should be immediately adjacent to the asbestos work area. It should be located as far away as practicable from other workplace facilities such as a lunch and break areas.

The decontamination unit shall have hot and cold running water, access to soap and towel to allow workers to appropriately decontaminate themselves.

All water from the decontamination facility must pass through a particulate filter or other trap before it passes into sewer mains. The filter or trap must be capable of capturing particles down to 5 µm.

Equipment Decontamination

Vehicles and equipment that enter the designated asbestos contaminated zones must be wiped/washed down and cleared by a SafeWork NSW licensed asbestos assessor (LAA) prior to leaving the site.

Vehicles and equipment that have not been cleared by the LAA shall not leave the site.

Waste Management

Any waste from the designated asbestos contaminated zones that is to leave site is to be classed as asbestos contaminated and disposed of accordingly.

The options for the containment of waste for transport include the following:

- Materials to be loaded directly into and transported within trucks that are sealed and leak proof to minimise the risk of asbestos fibre and dust emission during transport from the site to lawful waste facilities;
- Trucks utilised for the transport of ACM must have sealed PVC or suitable equivalent covers/tarps that extend for the full length of the tray/bin of the truck;

- These trucks will be used to transport ACM to facilities with a pre-arranged agreement to receive un-lined loads;
- Where landfill facility procedures do not permit the receipt of unlined loads, waste will be placed within a truck double lined with 200 µm polythene sheeting that must be sealed with 200 µm polythene sheeting before leaving site;
- Smaller items may be placed within 200 µm polythene asbestos labelled waste bags, goose neck tying and double bagging for smaller items;
- Waste must be transported by an NSW EPA licensed cartage contractor directly to an approved landfill licensed to accept asbestos waste ensuring the load is covered with a suitable tarp;
- The requirements related to the transport of dangerous goods apply to asbestos transport and must be addressed by the transporter;
- Waste must be tracked utilising the NSW EPA WasteLocate system;
- Waste is to be wetted down prior to leaving the site to prevent dust emissions.
- The licensed landfill accepting the asbestos waste shall have controls in place to ensure protection of landfill workers, cartage contractors and visitors to the site, This will include:

    - Equipment utilised at the active tip face is fitted with HEPA Filters;
    - Dust suppression via water spray is engaged during the tipping and working process;
    - Decontamination procedures are in place and implemented to ensure decontamination of the truck in accordance with the operational procedures for the Facility;
    - Truck bodies and exterior are inspected after disposal of waste to ensure they are adequately decontaminated;
    - Trucks exterior inspected for asbestos waste, including tail gate to ensure they are adequately decontaminated;
    - Tarp closes appropriately and inspected for rips or tears;

Asbestos Hygiene During Remedial Works

The Class-A Contractor shall engage a LAA to undertake the following asbestos hygiene services during works in the designated asbestos contaminated zones:

- Visual assessment of the site set up;
- NATA accredited asbestos fibre air monitoring and fibre counting;
- Review of controls being engaged during the remediation works including the control measures associated with waste transport;
- Visual clearance inspections and certification of the encapsulation of the asbestos contaminated zones; and
- Validation sampling and reporting.

Unexpected Finds Protocol

Works in the areas outside the designated asbestos contaminated zones can proceed as normal under regular working conditions, without the need for supervision by a Class-A Contractor.

Should potential ACM be observed during the works in these areas the following actions should be followed:

- STOP ALL WORK in the immediate area and prevent further activity.
- Notify the site supervisor and RVC representative and cordon off the area;
- The site supervisor is to assess the area and engage an LAA to undertake an asbestos investigation of the area;
- The LAA assessment should focus on the suspect material identified along with undertaking an assessment of the surrounding area;
- Samples of any suspect ACM should be collected for NATA accredited sample analysis;
- The LAA shall also use the opportunity to assess the scope required to make safe and remediate the area should the suspect ACM be confirmed as containing asbestos;
- Should the area be deemed to be non-asbestos containing following the assessment, the cordon can be removed, PWA notified and works resume;
- Should the area be found to contain asbestos, any stabilisation or remediation of the area shall be undertaken by a Class-A Contractor under controlled conditions in accordance with the LAA report and NSW legislation.

5.2 ASBESTOS MANAGEMEN PLAN – OPTION 2

If design Option 2 is implemented on site, the railway sleepers will remain in-situ and the disturbance of the ballast and ACM within will be minimised.

As a result, an AS-A licensed contractor would not be required to supervise the works.

Works could proceed as usual in accordance with the below recommendations:

Training and Awareness

It is recommended all workers involved in the project undertake training in asbestos awareness prior to any works on site.

As per the NSW Code of Practice: How to Manage and Control Asbestos in the Workplace 2019, the training program should include the following topics:

- Purpose of the training;
- Health risks of asbestos;
- Types and uses of asbestos;
- Locations of asbestos in the rail corridor;

- Roles and responsibilities of all workers under the AMP;
- Safe work procedures to be followed with examples to prevent exposure;
- The correct use of personal/respiratory protective equipment (PPE/RPE);
- Requirements for health monitoring;
- When a Class-A or Class-B Contractor are required for asbestos remedial works; and
- Air monitoring requirements and exposure standard for airborne asbestos.

Asbestos PPE

The following PPE will be required to be worn by all contractors on site during the works in area where the geofabric is not is place:

- Disposable half face P2 respirators;
- Disposable gloves.

Once geo-fabric is bedded in place in sections of the rail corridor, the areas can be opened up gradually and any further works in these areas will not require the use of the above PPE and can proceed under normal working conditions.

5.3 WORKS PRIOR TO CONSTRUCTION

The following PPE will be required to be worn by all contractors on site during any pre-construction works in the designated asbestos contaminated zones:

- Disposable half face P2 respirators;
- Disposable gloves.

Examples of works or tasks undertaken where this PPE is required would be surveyors, weed and vegetation control/removal, engineering inspections etc.

If any of the above works are intrusive and involve extensive disturbance of the ballast in the asbestos contaminated zones, then the recommendations outlined in Section 5.1 are to be followed.

6 LIMITATIONS

This report has been prepared to meet the requirements outlined in the scope of work. It does not include evaluation of any other issues. NCOH performed the services in a professional manner, in accordance with relevant guidelines and standards, and generally accepted industry practices.

Where information has been supplied to NCOH for the purpose of preparing this report, the information is assumed to be both adequate and accurate. The information provided, therefore, has not been verified or audited. NCOH will not be liable in relation to incorrect conclusions should any information be incorrect, misrepresented or otherwise not fully disclosed.

Limitations apply to analytical methods used in the identifications of some asbestos containing materials. These limitations may be due to samples collected from non-homogenous materials not being representative, the presence of masking agents, and low concentrations of asbestos fibres. As such, sample analysis results should be considered indicative only.

This report was prepared for the sole use of the client identified on the cover page and only for the purpose for which it was prepared. Any reliance on this report by third parties shall be at their own risk and may not contain sufficient information for purposes of other parties or for other uses.

This report is not intended to be used for the purposes of tendering, programming of works, refurbishment works, or demolition works unless used in conjunction with a specification detailing the extent of the works.

This report must be read in its entirety and must not be copied, distributed or referred to in part only. The report must not be reproduced without the written approval of NCOH.

APPENDIX A – ANALYSIS RESULTS

AIRSAFE

93 Beattie Street Balmain NSW 2041 Australia
T. 02 9555 9034 | F. 02 9555 9035
info@airsafe.net.au | www.airsafe.net.au
ABN 36 609 424 946

TEST REPORT

April 14, 2020

North Coast Occupational Hygiene
3 Harold Tory Dr,
YAMBA, NSW 2464

Your Reference:	Casino to Bentley Rail Trail
Job Number:	50740
Attention:	Simon Bice

Dear Simon,

In accordance with your instructions, Airsafe tested samples from the above site for asbestos content.

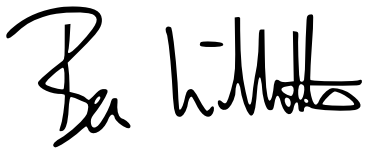
The following samples were processed on the dates indicated.

Samples:	25 Soil Samples
Date of Sample Receipt:	8/4/20
Date of Sample Analysis:	8/4/20 – 9/4/20
Date of Preliminary Report Sent:	Not Issued

The results are contained in the following pages of this report.

Should you have any queries regarding this report please contact the undersigned.

Yours faithfully
AIRSAFE OHC PTY LTD



Benjamin Willetts
Approved Identifier and Signatory

AIRSAFE

PROJECT: Casino to Bentley Rail Trail **JOB NO: 50740**

Sample No	Location/Reference	Sample Description	Asbestos ID - Soil	Trace Analysis
50740-1	Start of Rail – Behind Richmond Dairies	100g Sand, Soil & Rocks	No asbestos detected at reporting limit of 0.1g/Kg Organic fibres detected	Respirable fibres not detected
50740-2	Behind Richmond Dairy – in line with Wheat Street	45g Sand, Soil & Rocks	Chrysotile asbestos detected Organic fibres detected	Respirable fibres not detected
50740-3	100M west of Naughton's Gap Crossing	58g Sand, Soil & Rocks	No asbestos detected at reporting limit of 0.1g/Kg Organic fibres detected	Respirable fibres not detected
50740-4	In line with QLD Road	78g Sand, Soil & Rocks	No asbestos detected at reporting limit of 0.1g/Kg Organic fibres detected	Respirable fibres not detected
50740-5	Just North of Barling's Creek Bridge	95g Sand, Soil & Rocks	No asbestos detected at reporting limit of 0.1g/Kg Organic fibres detected	Respirable fibres not detected
50740-6	North of Whitton's Road Crossing	116g Sand, Soil & Rocks	No asbestos detected at reporting limit of 0.1g/Kg Organic fibres detected	Respirable fibres not detected
50740-7	South of Driveway 3.9kms from town	106g Sand, Soil & Rocks	Chrysotile asbestos detected Organic fibres detected	Respirable fibres not detected
50740-8	Approx. 500m North of Driveway 3.9kms from town	70g Sand, Soil & Rocks	No asbestos detected at reporting limit of 0.1g/Kg Organic fibres detected	Respirable fibres not detected
50740-9	In line with 340 Naughtons Road	114g Sand, Soil & Rocks	No asbestos detected at reporting limit of 0.1g/Kg Organic fibres detected	Respirable fibres not detected
50740-10	Just south of 400 Naughton's Road Crossing	110g Sand, Soil & Rocks	Chrysotile asbestos detected Organic fibres detected	Respirable fibres not detected
50740-11	Approx. 500m North of 400 Naughton's Road Crossing	114g Sand, Soil & Rocks	Chrysotile asbestos detected Organic fibres detected	Respirable fibres not detected
50740-12	Approx. 1000m North of 400 Naughton's Road Crossing	117g Sand, Soil & Rocks	No asbestos detected at reporting limit of 0.1g/Kg Organic fibres detected	Respirable fibres not detected

50740-13	Approx. 500m South of Powell's Road Crossing	130g Sand, Soil & Rocks	No asbestos detected at reporting limit of 0.1g/Kg Organic fibres detected	Respirable fibres not detected
50740-14	North of Powell's Road Crossing	35g Sand, Soil & Rocks	Chrysotile asbestos detected Organic fibres detected	Respirable fibres not detected
50740-15	Approx. 500m south of in line with Stones Road	100g Sand, Soil & Rocks	No asbestos detected at reporting limit of 0.1g/Kg Organic fibres detected	Respirable fibres not detected
50740-16	In line with Stones Road	100g Sand, Soil & Rocks	Chrysotile asbestos detected Organic fibres detected	Respirable fibres not detected
50740-17	Under Tunnel	90g Sand, Soil & Rocks	No asbestos detected at reporting limit of 0.1g/Kg Organic fibres detected	Respirable fibres not detected
50740-18	Approx. 300m North of Tunnel	140g Sand, Soil & Rocks	No asbestos detected at reporting limit of 0.1g/Kg Organic fibres detected	Respirable fibres not detected
50740-19	Approx. 500m North of Tunnel	110g Sand, Soil & Rocks	Chrysotile asbestos detected Organic fibres detected	Respirable fibres not detected
50740-20	Just south of Powell's Road Crossing	120g Sand, Soil & Rocks	No asbestos detected at reporting limit of 0.1g/Kg Organic fibres detected	Respirable fibres not detected
50740-21	Whitton's Road Crossing	120g Sand, Soil & Rocks	No asbestos detected at reporting limit of 0.1g/Kg Organic fibres detected	Respirable fibres not detected
50740-22	Approx 300m N/E of Naughtons Road Crossing	140g Sand, Soil & Rocks	No asbestos detected at reporting limit of 0.1g/Kg Organic fibres detected	Respirable fibres not detected
50740-23	Approx 400m West of Naughtons Road Cossing	100g Sand, Soil & Rocks	No asbestos detected at reporting limit of 0.1g/Kg Organic fibres detected	Respirable fibres not detected
50740-24	West of Bentley Road Crossing	120g Sand, Soil & Rocks	No asbestos detected at reporting limit of 0.1g/Kg Organic fibres detected	Respirable fibres not detected
50740-25	East of Bentley Road Crossing	130g Sand, Soil & Rocks	No asbestos detected at reporting limit of 0.1g/Kg Organic fibres detected	Respirable fibres not detected

Method: Samples have been analysed using polarised light microscopy including dispersion staining in accordance with the AS 4964 – 2004 Method for the qualitative identification of asbestos in bulk samples and in-house method AS102 - Method for the Qualitative Identification of Asbestos in Bulk Samples.

Sampling: Samples have been analysed on an "as received" basis.

Note: The results relate only to the samples tested.

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Comment: Even after disintegration of certain bulk samples (vinyl tiles and bituminous type materials), the detection of fibres may be difficult when using Polarised Light Microscopy and Dispersion Staining Techniques. This may be due to the matrix of the sample (uneven distribution), or fine fibres that are difficult to detect and positively identify.

Report Comments:

50740-2:	1-3mm fibre bundles, found in fibrous cement sheet fragment.
50740-7:	1mm length fibre bundles, found loose in sample
50740-10:	1mm length fibre bundles, found loose in sample
50740-11:	1-2 mm length fibre bundles, found loose and fibrous cement sheet fragment
50740-14:	1-3mm length fibre bundles, found loose in sample.
50740- 16:	1-3mm fibre bundles, found in fibrous cement sheet fragment.
50740-19:	1-2 mm length fibre bundles, found loose in sample.

Disclaimer: Approximate sample weights and size only – not covered as part of the scope of accreditation.

AIRSAFE

93 Beattie Street Balmain NSW 2041 Australia
T. 02 9555 9034 | F. 02 9555 9035
info@airsafe.net.au | www.airsafe.net.au
ABN 36 609 424 946

TEST REPORT

June 26, 2020

North Coast Occupational Hygiene
3 Harold Tory Drive,
YAMBA NSW 2464

Your Reference: Casino to Bentley Rail Trail
Job Number: 51819

Attention: Simon Bice

Dear Simon,

In accordance with your instructions, Airsafe tested samples from the above site for asbestos content.

The following samples were processed on the dates indicated.

Samples:	37 Soil Samples
Date of Sample Receipt:	22/06/20
Date of Sample Analysis:	22/06/20 – 26/06/20
Date of Preliminary Report Sent:	Not Issued

The results are contained in the following pages of this report.

Should you have any queries regarding this report please contact the undersigned.

Yours faithfully
AIRSAFE OHC PTY LTD

Matthew Shaw
Approved Identifier and Signatory

AIRSAFE

PROJECT: Casino to Bentley Rail Trail **JOB NO: 51819**

Sample No	Location/Reference	Sample Description	Asbestos ID	Trace Analysis
51819-1	2020-62-2a - 5m east of sample 2020-62-2	89g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-2	2020-62-2b - 10m east of sample 2020-62-2	59g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-3	2020-62-2c - 5m west of sample 2020-62-2	47g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-4	2020-62-2d - 10m west of sample 2020-62-2	96g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-5	2020-62-7a - 5m north of sample 2020-62-7	104g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-6	2020-62-7b - 10m north of sample 2020-62-7	49g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-7	2020-62-7c - 5m south of sample 2020-62-7	187g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-8	2020-62-7d - 10m south of sample 2020-62-7	136g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-9	2020-62-10a - 5m east of sample 2020-62-10	107g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-10	2020-62-10b - 10m east of sample 2020-62-10	87h soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-11	2020-62-10c - 5m west of sample 2020-62-10	114g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-12	2020-62-10d - 10m west of sample 2020-62-10	74g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-13	2020-62-11a - 5m east of sample 2020-62-11	137g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-14	2020-62-11b - 10m east of sample 2020-62-11	149g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-15	2020-62-11c - 5m west of sample 2020-62-11	119g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-16	2020-62-11d - 10m west of sample 2020-62-11	81g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected

Sample No	Location/Reference	Sample Description	Asbestos ID	Trace Analysis
51819-17	2020-62-14a - 5m north of sample 2020-62-14	92g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-18	2020-62-14b - 10m north of sample 2020-62-14	154g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-19	2020-62-14c - 5m south of sample 2020-62-14	165g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-20	2020-62-14d - 10m south of sample 2020-62-14	52g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-21	2020-62-16a - 5m north of sample 2020-62-16	184g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-22	2020-62-16b - 10m north of sample 2020-62-16	164g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-23	2020-62-16c - 5m south of sample 2020-62-16	151g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-24	2020-62-16d - 10m south of sample 2020-62-16	98g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-25	2020-62-19a - 5m north of sample 2020-62-19	127g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-26	2020-62-19b - 10m north of sample 2020-62-19	119g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-27	2020-62-19c - 5m south of sample 2020-62-19	63g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-28	2020-62-19d - 10m south of sample 2020-62-19	53g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-29	2020-62-26 - Approx. 200m South of Tunnel	96g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-30	2020-62-27 - Just north of Tunnel	144g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-31	2020-62-28 - Approx. 400m north of Tunnel	31g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-32	2020-62-29 - Approximately 1.8kms west of Bentley Road Crossing	74g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-33	2020-62-30 - Approximately 1.2kms west of Bentley Road Crossing	129g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected

Sample No	Location/Reference	Sample Description	Asbestos ID	Trace Analysis
51819-34	2020-62-31 - Just west of Post Office Creek Bridge	101g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-35	2020-62-32 - Approximately 500m east of Bentley Road Crossing	94g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-36	2020-62-33 - Approximately 1.2km east of Bentley Road Crossing	79g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected
51819-37	2020-62-34 - Just east of Back Creek Bridge	39g soil and rocks	No asbestos detected at reporting limit of 0.1g/Kg, Organic fibres detected	Respirable fibres not detected

Method: Samples have been analysed using polarised light microscopy including dispersion staining in accordance with the AS 4964 – 2004 Method for the qualitative identification of asbestos in bulk samples and in-house method AS102 - Method for the Qualitative Identification of Asbestos in Bulk Samples.

Sampling: Samples have been analysed on an "as received" basis. All sampling conducted by the customer. All data supplied by the customer. Airsafe cannot confirm its validity

Comment: Even after disintegration of certain bulk samples (vinyl tiles and bituminous type materials), the detection of fibres may be difficult when using Polarised Light Microscopy and Dispersion Staining Techniques. This may be due to the matrix of the sample (uneven distribution), or fine fibres that are difficult to detect and positively identify.

Disclaimer: Approximate sample weights and size only – not covered as part of the scope of accreditation.

Note: The results relate only to the samples tested.

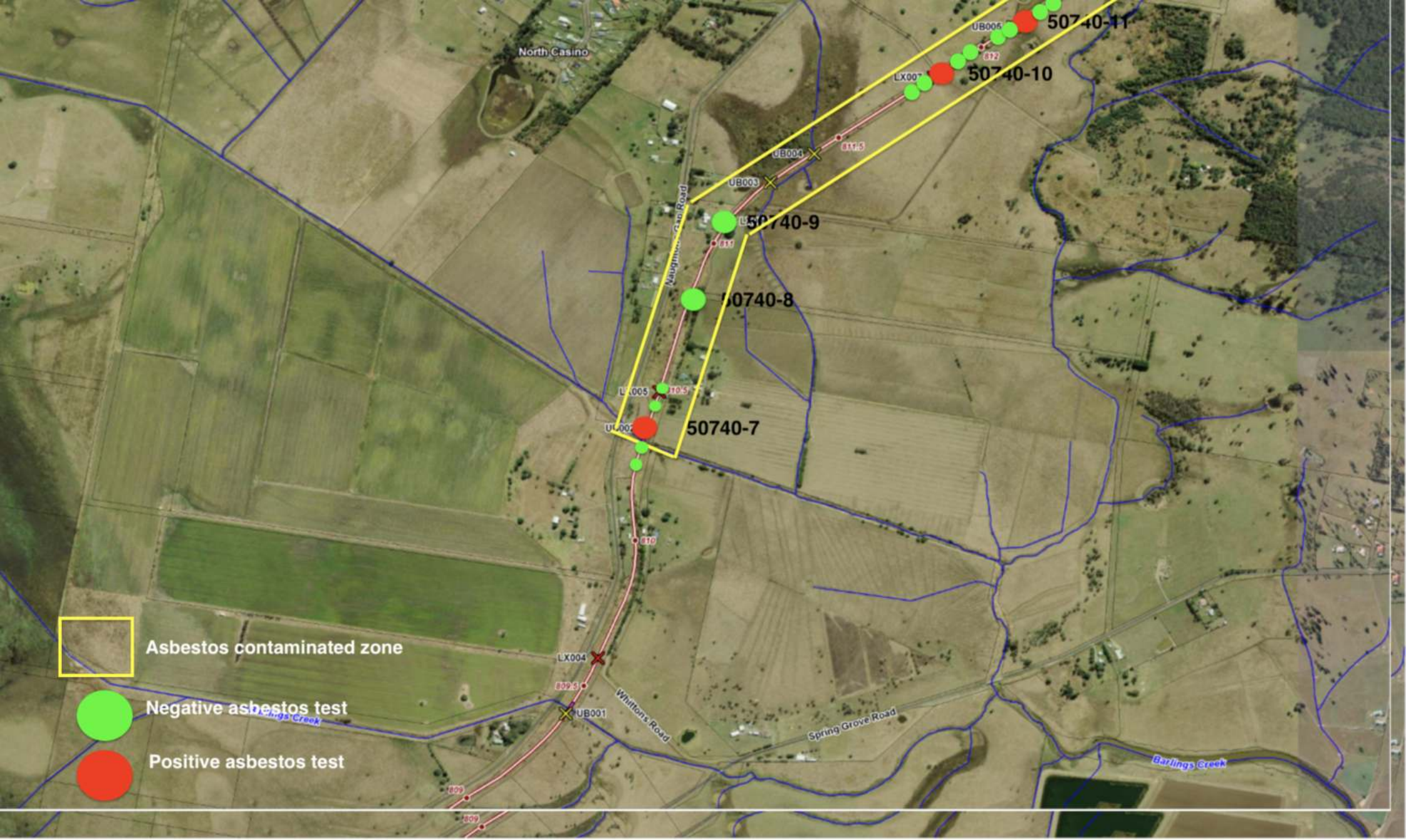
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

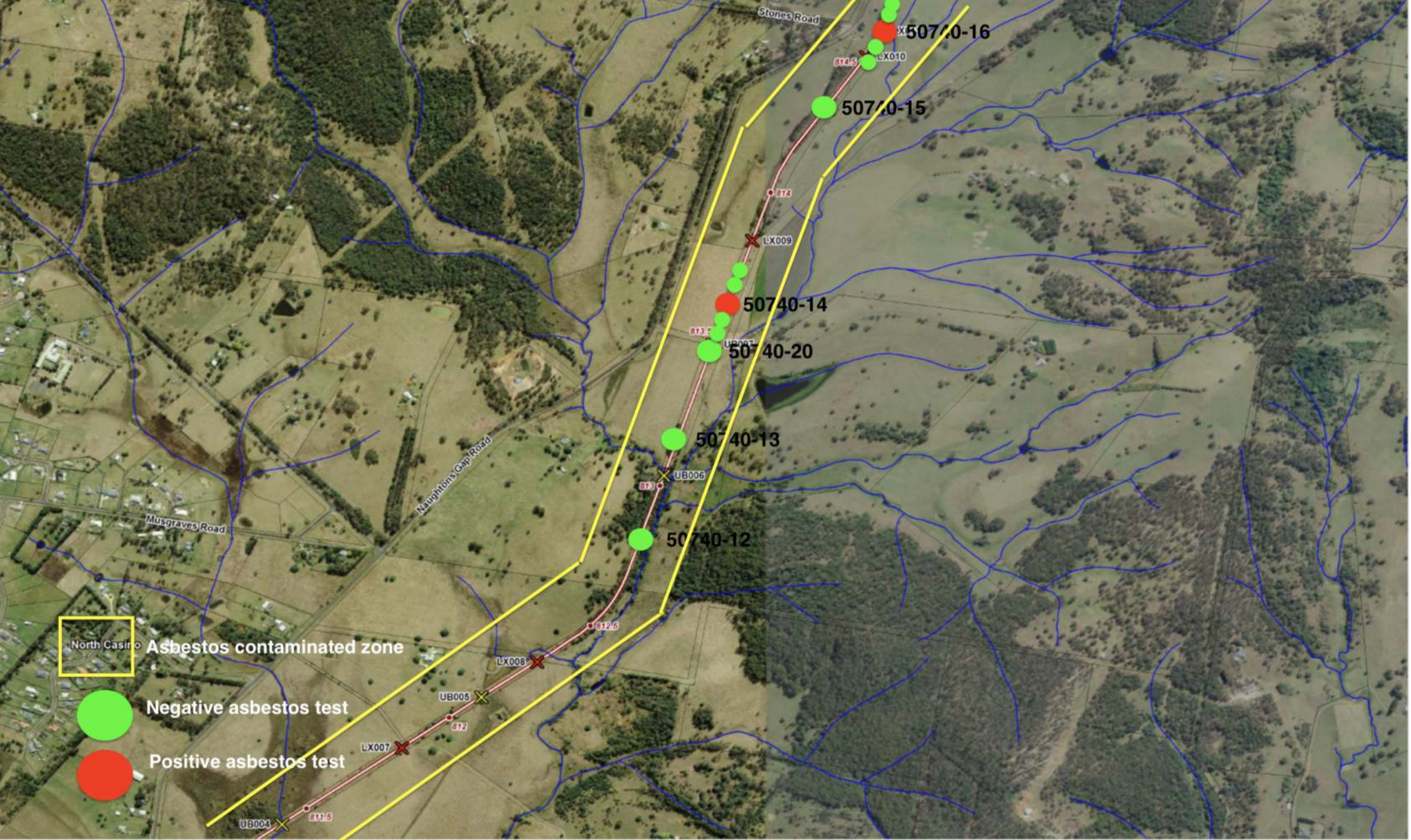
Airsafe shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Airsafe be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report.

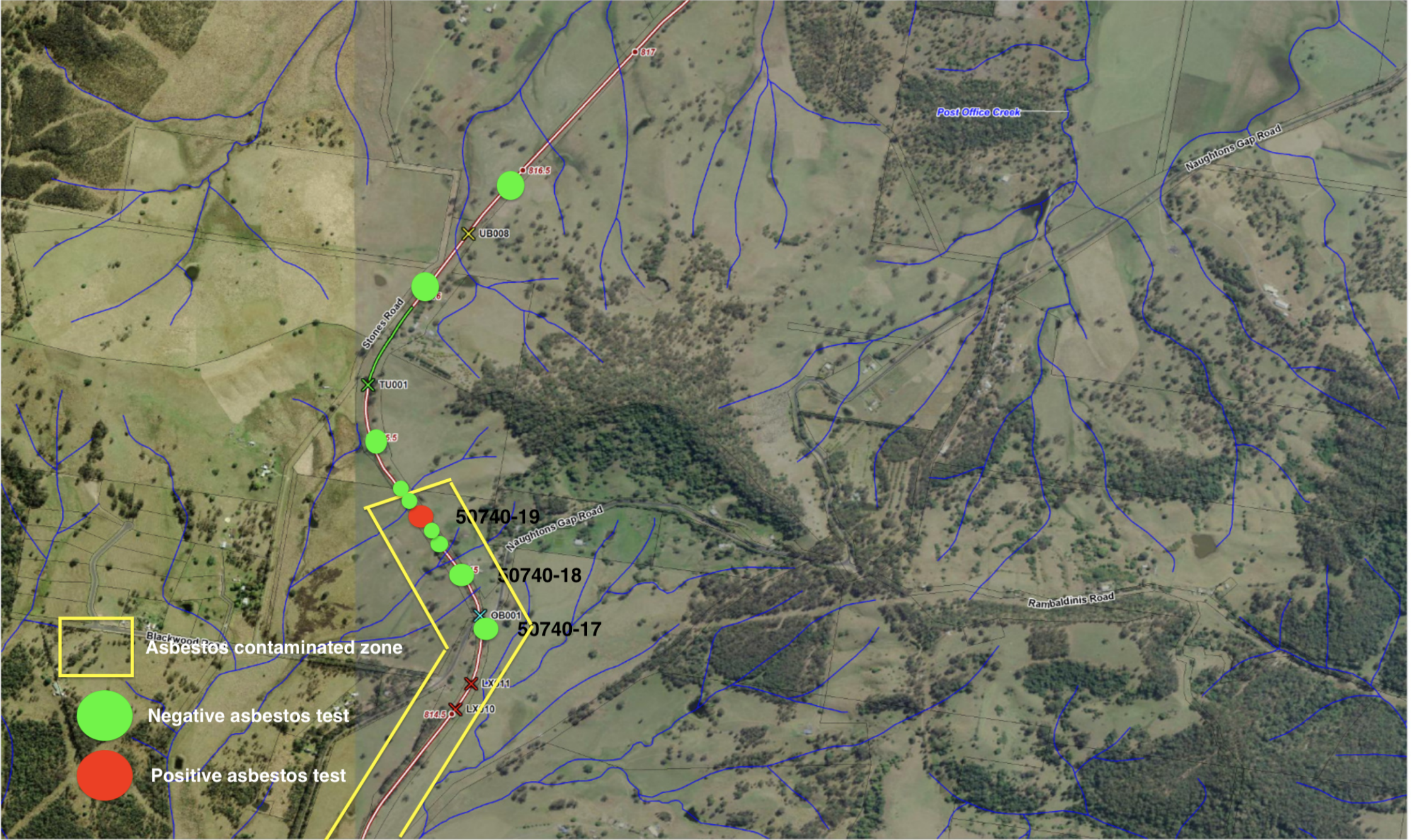
Any other holder of this document is advised that information contained hereon reflects Airsafe's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Airsafe's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

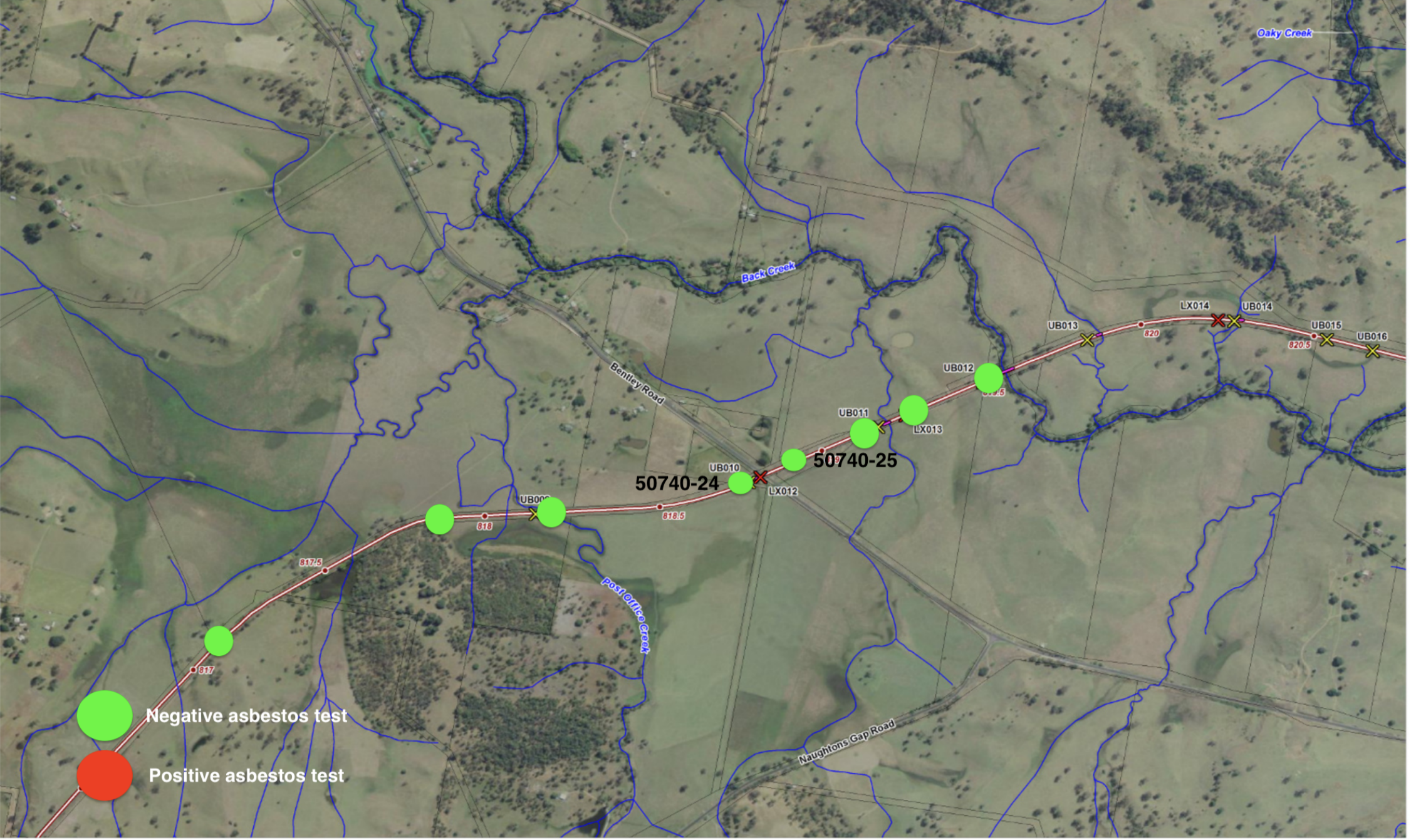
APPENDIX B – SITE MAP


50740-6
50740-21
50740-5
50740-4
50740-22
50740-3
50740-23
50740-2
50740-1
LX004
UB001
LX001
LX002
Barlings Creek
Barling Street
Queensland Road
Naughtons Gap Road
Whittons Road
Dyraaba Street
Hickey Street
Johnston Street
Richmond River
Casino
Asbestos contaminated zone
Negative asbestos test
Positive asbestos test


50740-11
50740-10
50740-9
50740-8
50740-7
North Casino
UB005
UB004
UB003
LX004
UB001
Whittons Road
Spring Grove Road
Barlings Creek
Asbestos contaminated zone
Negative asbestos test
Positive asbestos test


Stones Road
50740-16
LX010
814.5
50740-15
814
LX009
50740-14
50740-20
50740-13
UB006
813
Naughtons Gap Road
Musgraves Road
50740-12
812.5
LX008
UB005
812
LX007
UB004
811.5
North Casino
Asbestos contaminated zone
Negative asbestos test
Positive asbestos test


Post Office Creek
Naughtons Gap Road
Stones Road
Rambaldinis Road
Blackwood Road
817
816.5
814.5
UB008
TU001
OB001
LX011
LX010
50740-19
50740-18
50740-17
Asbestos contaminated zone
Negative asbestos test
Positive asbestos test


Oaky Creek
Back Creek
Bentley Road
Post Office Creek
Naughtons Gap Road
LX014
UB014
UB013
UB015
UB016
820
820.5
UB012
UB011
LX013
50740-25
50740-24
UB010
LX012
818.5
818
817.5
817
Negative asbestos test
Positive asbestos test

PLANIT
CONSULTING

Appendix D. **AHIMS**

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : J7456

Client Service ID : 659664

Sean Cochran

17A Beech Drive
Suffolk Park 2481

Attention: Sean Cochran

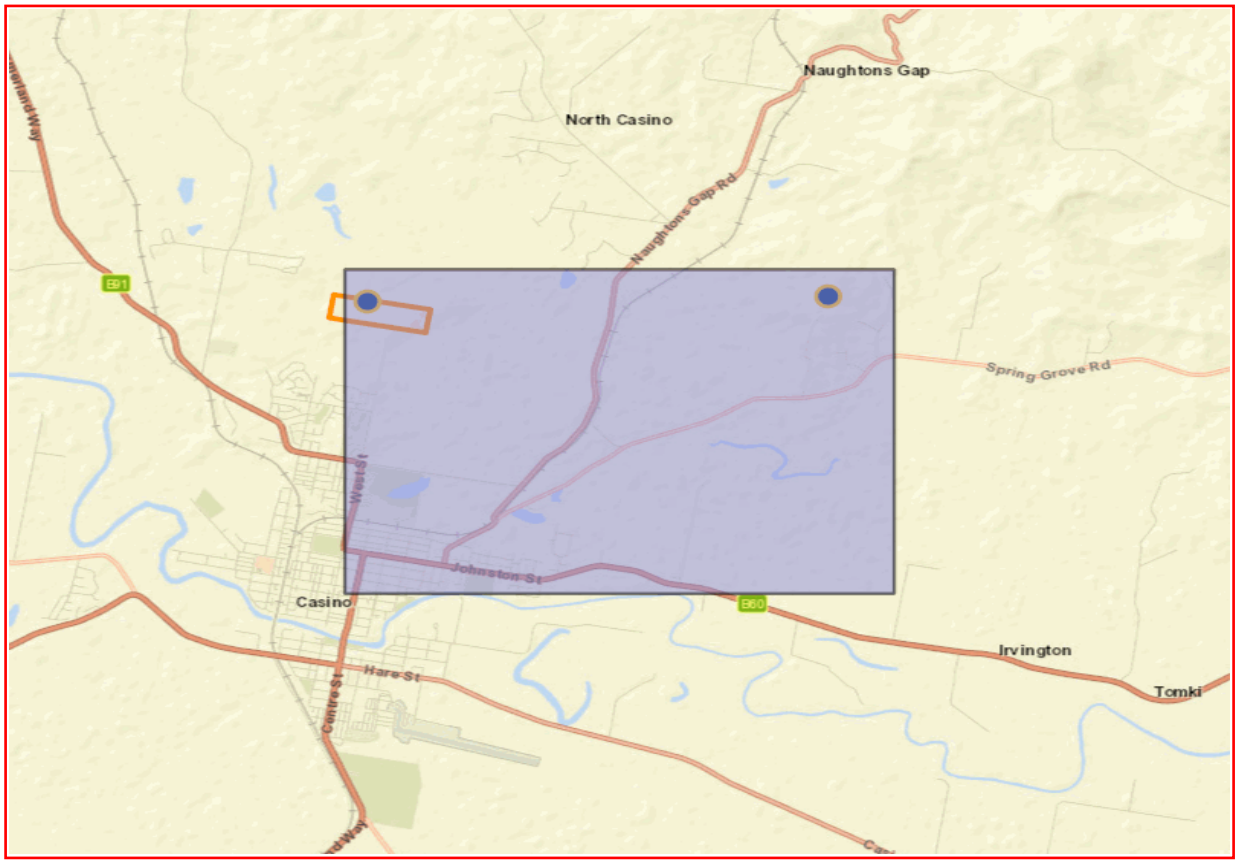
Email: sean@planitconsulting.com.au

Date: 15 February 2022

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -28.8631, 153.0448 - Lat, Long To : -28.8256, 153.1066, conducted by Sean Cochran on 15 February 2022.

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:

2	**Aboriginal sites are recorded in or near the above location.**
1	**Aboriginal places have been declared in or near the above location. ***

ID	Aboriginal Place Name
85	Casino Bora Ground

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : J7456

Client Service ID : 659672

Sean Cochran

17A Beech Drive
Suffolk Park 2481

Attention: Sean Cochran

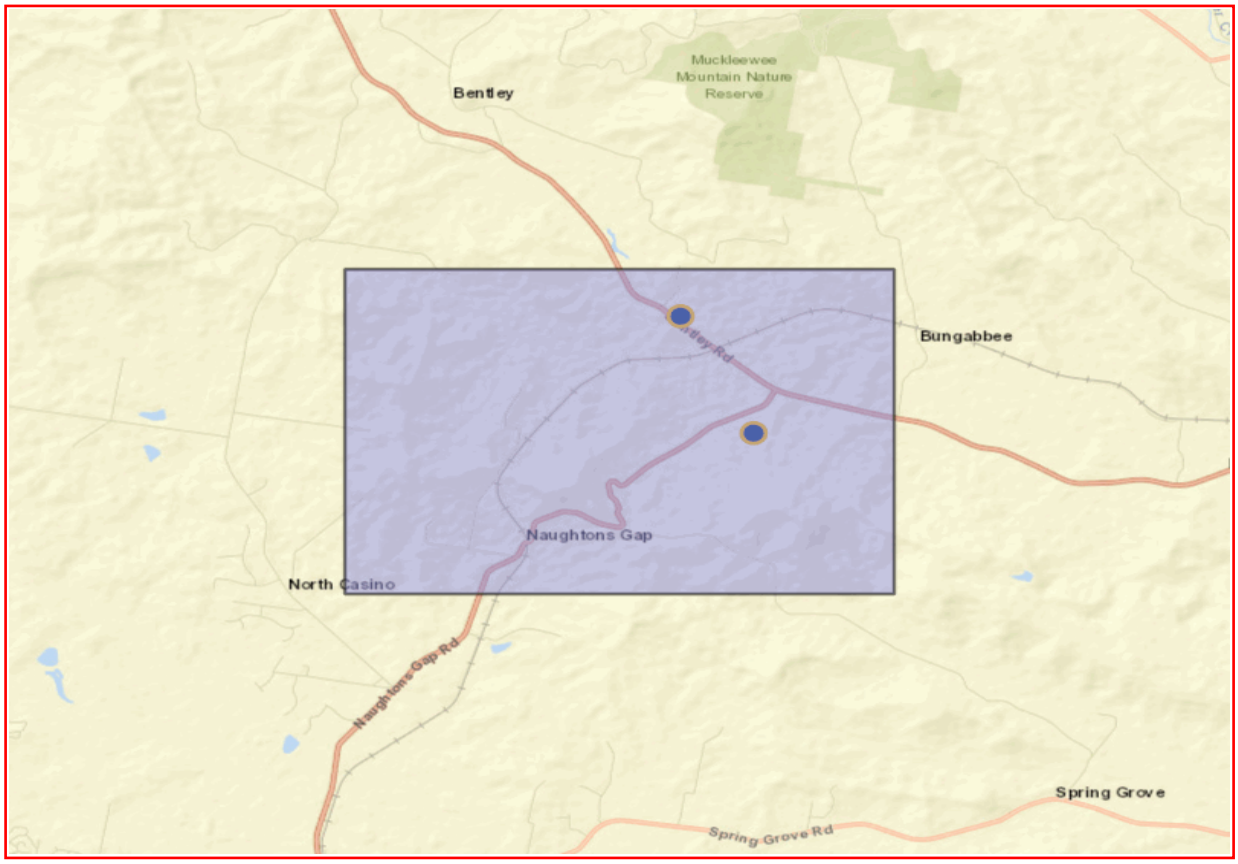
Email: sean@planitconsulting.com.au

Date: 15 February 2022

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -28.8094, 153.076 - Lat, Long To : -28.7718, 153.1378, conducted by Sean Cochran on 15 February 2022.

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:

2	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

PLANIT
CONSULTING

Appendix E. **NRRT Scoping Study**

Department of Premier and Cabinet

Casino to Murwillumbah Rail Trail Study

Final Report

Casino to Murwillumbah Rail Trail Report

Final | 6 May 2014

Job number 233848

Arup
Arup Pty Ltd ABN 18 000 966 165

Arup
Level 4, 108 Wickham Street
Fortitude Valley
QLD 4006
GPO Box 685 Brisbane QLD 4001
Australia
www.arup.com

NSW GOVERNMENT Premier & Cabinet

ARUP

Document Verification

ARUP

Job title		Casino to Murwillumbah Rail Trail Study			**Job number** 233848
Document title		Final Report			**File reference**
Document ref		Casino to Murwillumbah Rail Trail Report			
Revision	**Date**	**Filename**	C2M Rail Trail Report V1.docx		
Draft 1	6 Dec 2013	**Description**	First draft		
			Prepared by	Checked by	Approved by
		Name	James Robinson		
		Signature			
Draft 2	2 April 2014	**Filename**	C2M Rail Trail Report_Draft_2.docx		
		Description	Second Draft		
			Prepared by	Checked by	Approved by
		Name	James Robinson	Peter Dunn	
		Signature			
Final	6 May 2014	**Filename**	Casino to Murwillumbah Rail Trail Study_FINAL Report.docx		
		Description	Final		
			Prepared by	Checked by	Approved by
		Name	James Robinson	Peter Dunn	Peter Dunn
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
				Issue Document Verification with Document	✓

Contents

Appendices

Executive Summary

This report documents the outcomes of a scoping study, which investigates converting the Casino to Murwillumbah rail line which was closed to operations in 2004 for use as a rail trail.

In April 2013 the NSW Government released a detailed study focusing on the transport needs of the community along the Casino to Murwillumbah rail line. The Casino to Murwillumbah Transport Study [1]examined the feasibility, benefits and costs of reinstating passenger services on the 130km line. The study found the rail line would not meet current or future transport needs because the line did not service two of the three biggest centres in the region, namely Tweed Heads and Ballina. It also found there was no commercial demand for it to be reinstated to carry freight. An engineering examination found the infrastructure has deteriorated significantly with more than $900 million needed to clear the vegetation, stabilise landslide areas, replace timber bridges and sleepers, extensive replacement of ballast and bring the system up to the current safety and operating standards for frequent and quick train services.

An outcome of the Casino to Murwillumbah Transport Study was the recognition that the region's transport needs would be better met through an integrated approach and that there was potential for the Casino to Murwillumbah rail corridor to be converted to a rail trail for use by pedestrians and cyclists. The community had clearly shown interest in using sections of the line as a rail trail, with Byron Bay as the focal point. The study identified that a rail trail was worthy of further investigation to assess potential demand, benefits, costs and feasibility. As a result, in November 2013, the Department of Premier and Cabinet, appointed Arup Pty Ltd to undertake a scoping study to investigate converting the corridor into a rail trail.

With the recent formation of Rail Trails for NSW, the Casino to Murwillumbah Corridor is one of several corridors being assessed for possible future conversion in NSW.

This report presents the results of the Casino to Murwillumbah Rail Trail Study. The study incorporates the following assessments:

- Economic benefits
- Environmental and social benefits
- Engineering assessment and cost estimates
- Potential funding sources

[1] Transport for New South Wales, 2013, *Casino to Murwillumbah Transport Study*, Version 2.1, Transport for New South Wales, Sydney.

- Stakeholder consultation
- Rail corridor preservation
- Legislative requirements.

The Northern Rivers region is a key tourism destination, with the second highest level of international tourists in NSW. The region contains spectacular national parks such as Mount Warning, as well as long stretches of unspoilt coastlines and significant World Heritage rainforest reserves. The development of a rail trail along the Casino-Murwillumbah rail corridor presents an opportunity to leverage off the high visitation levels and further develop the region as a tourist destination as well as providing a facility for those residing in the region.

Key principles to guide the successful implementation of the rail trail include:

- Integration with surrounding land uses particularly in town centres
- Development of strong and legible connections to the rail trail within towns to service the local community
- Providing strong transport connections at either end and at points along the route. This includes connections to rail at Casino and particularly to the Gold Coast at Murwillumbah
- Developing a marketing strategy that integrates with tourist attractions along the route
- Development of a safety and emergency management plan in conjunction with key stakeholders. This should include the assessment of mobile phone coverage requirements
- Development of a signage and wayfinding strategy
- Strong co-ordination and governance between stakeholders and adjacent landholders.

Experience from other rail trails in Australia and New Zealand, together with the high visitation levels that the region currently experiences and the attractions along the rail corridor, suggest a rail trail would be highly utilised resulting in visitation levels between 25,900 and 97,100 per annum, with our base case visitation estimate of around 88,300 per annum.

The cost of implementing a rail trail along the corridor is influenced by the current condition of the rail asset and safety requirements. There are over 160 bridges along the entire route which would incur some maintenance costs if the rail trail were not developed. The preliminary capital cost estimate for the development of the rail trail is $75.5 million.

The results of the economic analysis indicate:

- The Rail Trail would be financially viable at the Base Scenario of 88,320 visitors, with an expected Net Present Value (NPV) of $121.8m and Benefit Cost Ration (BCR) of 2.54. Under this scenario, the project payback period would be approximately four to five years. This analysis conservatively assumes day visitors only.
- The Rail Trail will break even (i.e. a BCR of 1.0) assuming visitors of 34,802 p.a. As such, visitors in excess of 34,802 p.a. indicate a positive return for the

project. All case studies examined, apart from one, have higher visitations than the breakeven scenario.

If the rail trail was to be developed in stages the priority would be to develop the sections around Byron to Bangalow and to Mullumbimby first, given the high visitation to the area. This could provide opportunity to create a loop using existing roads to connect Mullumbimby and Bangalow. However there are opportunities to develop other sections of the route early. It is noted that Tweed Shire Council are developing their own proposal for the section between the Murwillumbah Station and the Gallery.

Consultation with communities and government authorities during this study demonstrated there is support for the use of the corridor as a rail trail. Such support has been an important driver for the successful development of rail trails elsewhere. The potential to involve local communities and business is high and there is some potential to offset some of the operating costs through contribution from local businesses and volunteer work.

Generally upfront funding for rail trails are provided by Government. The approach to managing ongoing operational costs is a key issue where a coordinated approach is required. This can typically be achieved through a Trust arrangement, particularly using a concession operating model whereby those that benefit commercially from the rail trail such as tour operators, sporting bodies and the like meet ongoing operating costs.

Subject to funding, the scoping assessment has demonstrated potentially strong benefits for the community and that the project is likely to be viable.

1 Introduction

1.1 Planning Context

In April 2013 the NSW Government released a detailed study focusing on the transport needs of the community along the Casino to Murwillumbah rail line corridor, known as the Casino to Murwillumbah Transport Study. The rail line ceased operations in 2004 as it was considered to be not economically viable.

The Casino to Murwillumbah Transport Study[2] examined the feasibility, benefits and costs of reinstating passenger services on the 130km line. The study found the rail line would not meet current or future transport needs because the line did not service two of the three biggest centres in the region, namely Tweed Heads and Ballina. It also found there was no commercial demand for it to be reinstated to carry freight. An engineering examination found the infrastructure has deteriorated significantly since 2004 with more than $900 million needed to clear the vegetation, stabilise landslide areas, replace timber bridges and sleepers, extensive replacement of ballast and bring the system up to the current safety and operating standards for frequent and quick train services.

Figure 1 GIS Map of the location of Casino to Murwillumbah rail line.[3]

[2] Transport for New South Wales, 2013, *Casino to Murwillumbah Transport Study*, Version 2.1, Transport for New South Wales, Sydney.
[3] Arup GIS Database map, 2012

An outcome of the Casino to Murwillumbah Transport Study was the recognition that the region's transport needs would be better met through an integrated approach and that there was potential for the Casino to Murwillumbah rail corridor to be converted to a rail trail for use by pedestrians and cyclists. The community had clearly shown interest in using sections of the line as a rail trail, with Byron Bay as the focal point. The study identified that a rail trail was worthy of further investigation to assess potential demand, benefits, costs and feasibility.

Recognising the Casino to Murwillumbah rail line takes in some spectacular scenery including farm land, lush and dense bushland, quaint villages and towns and the tourist centre of Byron Bay, the NSW Government wanted to investigate the feasibility of developing a rail trail on the Casino to Murwillumbah rail line. On the 23 August 2013, the Minister for the North Coast announced that funding would be made available to complete a scoping study to develop the Casino to Murwillumbah corridor as a rail trail.

Rail trails are growing in popularity in Australia and around the world. In other states such as Victoria, rail trails have been in operation for some time and have been very successful. The Murray to Mountains trail was developed over 10 years ago is an excellent example of what can be achieved through an integrated approach from the public and private sector. In more recent times the Queenstown Trail in New Zealand opened in 2012 and the Queenstown Trail Trust reports visitor numbers have far exceeded expectations.

The Northern Rivers attracts approximately 2.2 million visitors a year, with 1.3 million of those visitors going to Byron Bay each year. It has the second highest level of international visitors of any region in New South Wales. A rail trail would provide a potential opportunity to build on the current tourism industry and provide economic, social and health benefits to the region.

1.2 Terms of Reference

The terms of reference for the scoping study into the development of a rail trail on the Casino to Murwillumbah rail corridor are to:

- Assess the potential economic benefits of developing a rail trail on the Casino to Murwillumbah rail corridor, including its potential to enhance the regional tourism industry and generate employment and business
- Assess the environmental and social benefits and impacts of a rail trail on the Casino to Murwillumbah rail corridor
- Assess the cost of developing a rail trail on the entire Casino to Murwillumbah rail corridor, as well as developing the project in stages; for example from Byron Bay to Bangalow initially. This should include information on existing bridges and other alternatives for crossing creeks and gullies etc
- Identify and outline potential funding sources for the initial development and long term maintenance of a rail trail on the Casino to Murwillumbah rail corridor
- Consult with stakeholders about the development of a rail trail, including local governments in the Northern Rivers, the Regional Tourism Organisation, community groups and tourism operators about the potential benefits, limitations and impacts of a rail trail

- Take into account information from previous reports and studies (including the Casino to Murwillumbah Transport Study), to determine technical and other important issues relevant to the development of a rail trail on the Casino to Murwillumbah rail corridor
- Ensure that the rail corridor is preserved for the re-introduction of rail services, should a viable economic model become available
- Take into account the impact of a rail trail on the ability of private operators to run a light rail service in the Byron Bay area
- Outline options for the consideration of the current legislative requirements for dealing with rail infrastructure on the Casino to Murwillumbah rail line.

This report details the findings relating to each aspect of the stated terms of reference and is expected to form the basis of determining the case for conversion of the Casino to Murwillumbah Rail Line into a rail trail in the near future.

2 The Regional Context

2.1 Overview

This section explores the characteristics of the Northern Rivers region and the Casino to Murwillumbah rail corridor in particular to establish the context for the development of the rail trail. Key aspects that need to be considered are:

- The demographic trends of the region
- Access to the corridor
- The features and facilities along the corridor
- The market for the rail trail.

2.2 Understanding the Northern Rivers region

2.2.1 Population growth

In 2011 the Northern Rivers population was estimated at approximately 236,600 people (refer Table 1).

Between 2001 and 2011 the region experienced population growth in line with the NSW average of 0.9%. The region is forecast to grow strongly at 1.1% per annum to the year 2021 with population reaching 250,500, then at 1.0% per annum reaching 263,100 by 2031. This is 0.1% above the forecast annual growth rate for NSW and represents additional 28,600 people in the ten years from 2011 to 2021, and a further 27,300 people in the following ten years to 2031. Tweed, Ballina, Lismore and Byron are the highest population centres for the region.

The local areas (census SLAs) that are adjacent to the Casino to Murwillumbah rail corridor are Casino, Lismore, Byron and parts of Tweed (Pt B) account for 40% (95,200) of the region's current population. The remaining 60% of the population is remote from the rail corridor. This highlights the importance of providing good connections to the rail trail within the region.

Table 1 Population centres for the region[4]

	Population	Annual % Growth			
		Actual		Forecast	
SLA	2011	2001-06	2006-11	2011-21	2021-31
Tweed (A) - Tweed-Heads	55,400	2.4%	0.9%	1.8%	1.4%
Tweed (A) - Tweed Coast	11,700	3.5%	4.7%	3.2%	2.4%
Tweed (A) - Pt B	21,400	1.2%	0.4%	0.5%	0.4%
Ballina (A)	40,800	1.1%	0.2%	1.2%	1.0%
Lismore (C) - Pt A	31,600	0.4%	0.1%	0.2%	0.2%
Lismore (C) - Pt B	12,700	0.8%	0.0%	0.7%	0.7%
Byron (A)	30,800	0.7%	0.1%	1.3%	1.2%
Richmond Valley excluding Casino	11,300	1.2%	0.1%	1.0%	0.9%
Richmond Valley (A) - Casino	11,400	0.5%	0.9%	0.0%	-0.2%
Kyogle (A)	9,500	-0.3%	-0.3%	-0.3%	-0.3%
Total Northern Rivers	236,600	1.2%	0.6%	1.1%	1.0%
Total NSW	7,211,500	0.7%	1.1%	1.0%	0.9%

Referring to Figure 2, the northern rivers region has a relatively lower proportion of people aged in the 20 to 35 year old bracket and a higher proportion of older and younger residents compared to the New South Wales average.

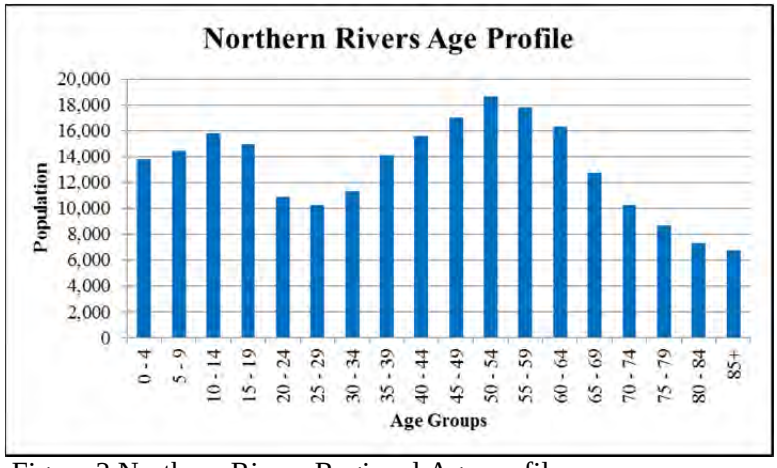


Figure 2 Northern Rivers Regional Age profile

The typical profile of rail trail users tends toward the over 35's as demonstrated by surveys undertaken on the Murray to Mountains Rail Trail and therefore the regional market could be quite strong for the rail trail.

[4] NSW SLA projections from 2006 to 2036 sourced from Demography Unit of the Department of Planning.

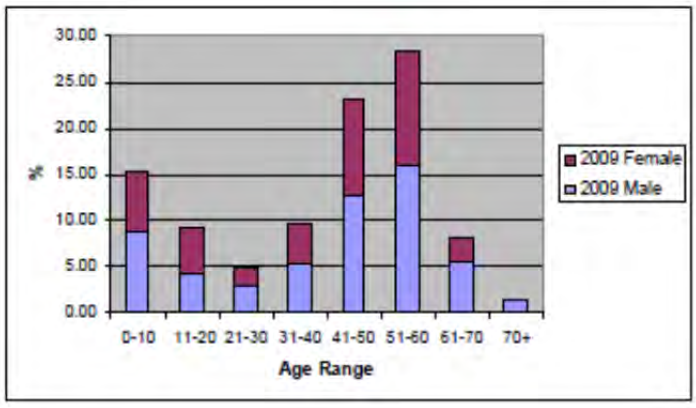


Figure 3 User profile for Murray to the Mountains Rail Trail [5]

2.2.2 Tourism

The Northern Rivers region is a key tourism destination, with the second highest level of international tourists in NSW. The region contains spectacular national parks such as Mount Warning, as well as long stretches of unspoilt coastlines and significant World Heritage rainforest reserves.

The region encompasses tourist icons such as Byron Bay and Nimbin. The hinterland areas of the Northern Rivers have some significant rainforest reserves which can be accessed through the Rainforest Way. The Rainforest Way comprises a series of loops and trails that tourists may access by road. The region's remnant ancient shield volcano, Mt Warning, is recognised as one of Australia's eight iconic national landscapes. Branded as 'Australia's Green Cauldron', the region features prominently in Australia's international tourism destination marketing as part of the Legendary Pacific Coast Touring route.

The Northern Rivers region has around 10% share of the NSW regional tourism market, including 1.8 million domestic overnight visitors, 190,000 international overnight visitors and over 2.9 million domestic daytrip visitors each year. In total the region experiences close to 5 million visitors annually who stay a total of 9.15 million nights. Visitors spent about A$1.5 billion in the Northern Rivers for the year ending September 2013.

A rail trail would potentially draw on the already high existing tourist numbers and potentially draw more tourists to the area. In addition a rail trail could diversify the tourist market to other destinations in the region.

2.3 Features of the corridor

The rail corridor winds its way through several of the regions local government areas, each with their own unique attraction. Apart from the outstanding natural setting that the Northern Rivers has to offer locals and visitors alike, there are numerous other features along the entire route of the corridor that offer the opportunity to visit.

[5] Beeton, S. Cycling in Regional Communities: A longitudinal Study of the Murray to Mountains Rail Trail, Victoria Australia, La Trobe University Bundoora, 2009.

The not for profit regional tourism association, North Coast Destination Network[7] (NCDN), promote the regions credentials as a destination of choice within the tourism market. Some of the key highlights, attractions and destinations described on the Byron Bay & Beyond webpages, within each of the Northern Rivers Places include:

The Tweed

Situated at the most northern section of the Casino to Murwillumbah rail corridor, the Tweed is positioned as the border gateway to the region and Murwillumbah itself the recognised start of the rail trail.

Some key attractions in the Tweed area include:

- Murwillumbah - The town of Murwillumbah is nestled in the heart of the Tweed Valley, The ancient shield volcano of Wollumbin (Mt.Warning) is omnipresent, being the most striking peak of several that are features of 5 World Heritage National Parks surrounding Murwillumbah.
- The Tweed Regional Gallery and Margaret Olley Art Centre will form an initial destination of the Tweed Shire's proposed pilot scheme[8]. The gallery currently attracts about 70,000 visitors per annum which is expected to increase following its expansion. See Section 4.7.1 for further information
- Tweed Heads/Coolangatta - Coolangatta is home to the Gold Coast Airport, welcoming both domestic and international visitors. Coolangatta Beach and Greenmount Beach are the Gold Coast's only north-facing beach and are a popular destination for families. Hence connections to Murwillumbah and the rail trail from the Tweed and Coolangatta region are a key consideration

Kyogle Country & Villages

Although the rail corridor does not run through Kyogle Shire itself, the tourist community appreciate the opportunity that a rail trail will present for attracting visitors to their part of the region. NCDN describe Kyogle itself "as a picturesque country town that is the absolute essence of the Australian rural character". The rail should consider feeder or loop trail or road connection to key attractions within the Kyogle Shire.

Some key attractions in the Kyogle Shire include:

- Border Ranges National Park, including the Border Loop Railway Spiral and Tunnels
- A self-proclaimed Mountain Biking destination set within the magnificent rainforests of the Border Ranges National Park.

Lismore, Nimbin & The Villages

Located at the midpoint of the Casino to Byron Bay section of the corridor, Lismore town centre itself forms a key destination along the route. This could be a potential overnight stop location for example.

[7] Source: North Coast Destination Network, Byron Bay & Beyond website
[8] Tweed Shire Council, 2013, Draft Submission to Casino to Murwillumbah Rail Trail Study, Tweed Shire Council, Murwillumbah

Other highlights of the Lismore Shire include:

- The villages of The Channon, Bexhill, Clunes and Eltham, with the Eltham pub which is over 100 year old situated directly along the route
- The alternative village of Nimbin and the nearby World Heritage National Parks which are remote from the rail corridor.

Byron Shire

Australia's most easterly point and the natural focal point for the rail trail make Byron Bay and the surrounding beaches one of the primary attractions along the route of the corridor.

Other highlights of Byron Shire include:

- Bangalow Village – renowned as "the North Coast's most sophisticated little country town". Situated directly along the rail corridor and relatively near to Byron Bay, its proximity to Byron Bay highlights the opportunity to attract day trippers to the rail trail from Byron Bay.
- Mullumbimby – another village situated directly along the rail corridor, and also relatively nearby to Byron Bay, "Mullum" provides an opportunity to attract visitors in a northerly direction and provides another opportunity to retain visitors for a greater length of stay.

Both of these locations are key candidates to develop the initial stages of the rail trail.

Richmond Valley

Situated at the Southern end of the rail corridor, the link to Casino provides direct access to Countrylink rail services to Sydney and Brisbane. Casino provides a fascinating opportunity to visit the wide open streets and Art Deco buildings within a rural setting.

Other highlights of Richmond Valley Shire include:

- Evans Head – another of the Northern Rivers highly recommended surf destinations set within a laid back fishing village

Ballina Shire

The rail connection to Ballina was lost over 60 years ago after flood damage destroyed sections of the branch line. Although the opportunity to connect with Ballina in an official rail trail capacity is no longer an option, there are opportunities to connect in other ways.

Other highlights of Ballina Shire include:

- The town of Ballina is the commercial centre and a key destination in the Northern Rivers region
- Nearby Lennox Head is home to a National Surfing Reserve and amongst the top ten surf breaks in Australia

The Clarence

The Clarence Valley is another of the local government area's that is remote from the rail corridor, but offers opportunity to combine a visit to the region and experience what the Northern Rivers is all about. With over 80 kilometres of unspoilt beaches, endless white sands and some of the world's best surf breaks, the Clarence Valley offers limitless opportunity to combine a beach visit with a rail trail experience.

Other highlights of The Clarence Shire include:

- Yamba – voted as Australia's Best Town by Australian Traveller magazine in 2009, Yamba is described as "unpretentious and unspoilt"

For more detailed information, reference should be made to the Byron & Beyond website and associated local government tourist information pages.

There are endless opportunities to develop historical and educational themes along the route that relate to the history of the region, the history of the railway itself and the history of indigenous and early settlers in the Northern Rivers region.

Examples of theming rail trails can be found in the South Australian wine regions where the "Coast to Vine trail" is a leading example of incorporating a trail into the surrounding natural and man-made features of the area through which the trail runs.

2.4 Potential use of the rail trail

Potentially the corridor could service a variety of markets which may influence the design of the path. In particular:

- Visitors that wish to undertake a 2/3 day ride along the whole route
- Day trips along sections of the route, for example Byron to Murwillumbah
- Short trips of up to half a day (walking or cycling) – potentially sections of the trail may experience higher usage in areas of higher visitation and population like Byron.
- Self-guided tours
- Tourist groups and professionally led walks or rides
- Residents may use sections of the trail for recreational purposes
- Local residents may also choose to utilise shorter sections of the trail as an alternative commuter route to work

Local community groups may utilise sections of the trail and become caretakers responsible for the upkeep of their section. Examples may include Rotary and Lions clubs.

2.5 Establishing a rail trail in the region

Railtrails Australia (RA)[9] defines a rail trail as a trail that closely follows (preferably on) the formation of a former railway line or runs beside an active

[9] Source: Rail Trail Establishment Guidelines, RailTrails Australia, 2011.

railway for the majority of its length. What sets rail trails apart from other trails are that they are gently graded and have a history as a transport corridor.

RA also states that rail trails are popular because they are:

- A wonderful car free facility for people to walk or ride bicycles (horses on some trails) in safety to school and the shops, or just to enjoy the scenery, providing health benefits. Ideal for families.
- A great asset for visitors to come and enjoy touring the area away from cars.
- A pleasant experience even in hilly country because trains, like walker and cyclists, don't like steep gradients
- A long continuous natural heritage corridor (native vegetation rehabilitation and weed control is a major activity of committees of management).

All rail trails are designed to be suitable for walking and depending on the surface can also be used by mountain bikes, hybrid bikes, pram and wheel chairs, and even four wheel "gophers". On some trails, but not all, horses are allowed.

For the best results, it has been found that the rails and sleepers should all be removed from former railways and a surface of gravel or bitumen applied. Ideally a separate dirt path besides the main trail should be provided for horses.

Figure 4 A typical rail trail setting[10]

A rail trail utilising the Casino to Murwillumbah railway corridor is expected to be formed as a cycle and walking trail initially, that may include shorter sections that are of a higher grade surfacing in areas where utilisation is forecast to be higher.

Other types of usage for the rail trail have not been investigated in detail in this report, with the exception of compatibility with the proposed Byron Bay Rail Shuttle.

[10] Source: Murray to Mountains Rail Trail Website

2.6 Access to the corridor

A key consideration is providing good access to the corridor. This will require good coordination and planning. Aspects that will need to be considered include:

- Connections to the corridor from Tweed Heads, Ballina and Coolangatta Airports, with respect to bicycle carrying facilities.
- Connections to the corridor from the XPT services that stop at Casino. For example the VLine provides additional bicycle facilities on their services to Albury to accommodate demand for the Murray to Mountain's trail in Victoria
- Whilst many rail trails are supported by transportation services at either end for uses who only wish to travel in one direction there may be potential to develop trails on existing roads or fire tracks to create a loop track in some locations for the return journey.
- A network of trails could be developed to support the rail trail, providing access to places of interest in the region. Access to remote attractions such as the village of Alstonville, Ballina and Lennox Head, for example, would add to the attractiveness of the rail trail and support local tourism.
- Better integration between bicycle facilities and public transport will increase cycle usage and cycle tourism in particular. Consideration for cyclists to carry bikes on all forms of public transport and the integration of bus and rail services should be reviewed as part of developing the rail trail.

3 Benefits of the rail trail

3.1 Overview

This section outlines the potential benefits of establishing a rail trail on the Casino to Murwillumbah Rail Corridor.

The proposed rail trail has the potential to provide significant benefit to the local community and to recreational/visiting cyclists to support tourism development and in turn, generate economic benefit for the region. A number of aspects of implementation will determine the extent to which the rail trail is effective for the community and to support tourism. These include:

- **Connectivity:** Links to facilities and attractions along the route: the proximity of routes to facilities and attractions and the ease with which these can be accessed on cycle including provision of end of trip facilities;
- **Facilities / Services:** end of trip and mid trip facilities including bike parking / storage, showers, change facilities and car/bus parking
- **Wayfinding:** Legible signage to facilities/attractions along the route
- **Publicity and marketing** to raise awareness and inform people about the rail trail, the wider network, holiday packages and the availability of bicycle hire facilities.

Provision and use of more cycle routes in the Shire will also generate sustainability benefits considering the triple bottom line approach of social, environmental and economic benefits as described in the following sections.

3.2 Social Aspects

The establishment of a rail trail presents an opportunity to create a series of community and social based benefits that have been realised on many other existing rail trails, including:

- Preserving open recreational space in the Northern Rivers region for community use, providing access to the region's scenic places and assisting in connecting local people and places along the trail.
- Provides significant opportunities for active community involvement in the trail planning, development, interpretation and future preservation work, in other words providing a major opportunity for "social capital" investment.
- Presents opportunities for likeminded people to meet and explore the Northern Rivers region

- Provides opportunities for learning and understanding, particularly with respect to how the original railway was developed and the history associated with its use during the operational years
- Contributes to the 'identity' of the Northern Rivers region which remains a key focus of tourism groups promoting the Northern Rivers as a destination of choice on the world stage
- Walking and riding a bicycle are affordable transport mode available to most people which may bring about social benefits to lower income groups. Recent evidence from the US suggests that the level of walking and cycling for transport is not as closely related to household income levels as recreational physical activity.
- In addition, walking and cycling are activities that families can partake in. Due to the relatively low gradients on rail trails, the opportunities for cycling have broader appeal.
- Provides benefits in terms of health and fitness as described in the following section
- Rail trails and the associated cycle/walking tourism that it brings usually brings economic benefits to the local communities. There is the opportunity to make rural communities more vibrant and contributing to local economies, and regional revitalisation.
- The rail trail will re-establish alternative connections between the townships on route. Since the closure of the rail operations in 2004, connections between the towns are limited to car or bus.
- Improve access for emergency vehicles and for bushfire control.

In general, rail trails can provide affordable transport and tourism options, increase physical activity and enhance social interaction and connectedness.

3.3 Health & Fitness Aspects

More than 16,000 deaths are associated with physical inactivity each year in Australia[11] . Engaging in regular physical activity reduces the risk of diseases such as cardiovascular disease, type II diabetes, osteoporosis, colon cancer, obesity and alleviates depression and anxiety.

The introduction of a rail trail presents opportunities for encouraging physical activity and contributing the wellbeing of both local and tourist users, through the following health and fitness benefits:

- Providing an opportunity for physical activity through walking, jogging and cycling.
- Providing additional opportunities to attract fitness related events to the region such as fun runs, cycle groups, mountain biking events, races, orienteering and walking and the operation of fitness related clubs/organisations.
- Rail trails also offer excellent opportunity for those with mobility disabilities, such as wheel chair users, and those with hearing or sight impairments to make use of the facilities in a traffic free environment. It is noted that the

[11] Source: National Cycling Strategy 2011-2016

gentle gradients and the ability to provide a sealed surface present numerous options for betterment along the route to meet the needs of specific communities.

- By encouraging and supporting physical activity, the rail trail could realise health and fitness benefits for the local and tourist users.

3.4 Environmental Aspects

The creation of the rail trail could bring about the following environmental benefits

- Providing active protection and enhancement of the natural values, and providing opportunities for environmental land management along the trail.
- Preserving the natural, cultural and heritage values in the Northern Rivers region and providing a way of connecting and accessing the regions heritage.
- The preservation of the rail trial may provide opportunities for wildlife corridor preservation
- The construction of the rail trail provides opportunity for environmental enhancements and improvements e.g. through changes to the drainage flows and removal of contaminated material.
- Cycling and walking produce minimal air pollution and noise pollution compared with other modes of travel, providing air quality and noise benefits. Research shows that cycle tourism brings significant environmental benefits, compared to many other types of tourism, for several reasons. Cycle tourists have a higher tendency to use public transport when reaching the start point for their tour, or for making onwards connections[12] . Furthermore, it has been recognised that holiday cyclists have a higher propensity towards active type commuting (such as cycling, walking, using public transport) than non-cycle holiday-makers.

3.5 Economic Benefits

The following section outlines the potential economic benefits associated with the conversion of the rail corridor to a rail trail. Economic benefits are comprised of direct and indirect (secondary) benefits as follows:

- Direct economic benefits result from expenditures associated with the construction and operations of the rail trail e.g. labour, materials, supplies, capital
- Indirect (secondary) economic benefits are those benefits which result from subsequent expenditure of different sectors in the economy e.g. accommodation and tourism businesses.

[12] Transform Scotland, 2013, The Value of Cycle Tourism, Sustrans Scotland

3.5.1 Demand forecasts

Cycling is now the fourth most popular physical activity for adult Australians and is attracting people to the region who would not normally have visited[13]. There is strong evidence suggesting several rail trails to date have a positive impact on tourism numbers to regional areas. Benchmark studies indicate:

- Victorian Murray to the Mountains experiences approximately 45,000 tourists per annum reflecting the considerable growth in cycling participation across Australia, an increase of 45 per cent over the period 2001-2010[14].
- Otago Central Rail Trail experienced an increase in visitors from 10,000 in 2008 to 14,000 in 2011[15], representing an average increase of 14 per cent per annum.
- NZ Hauraki Rail Trail experienced 41,000 visitors in its first year of operations (to June 2013)[16] with local businesses indicating distinct 'pockets' along the cycle trail within which the benefits of the cycle trail are already very visible[17]
- Tasmania North East Rail Trail, with a regional population of 143,000 expects to draw 22,800 visitors at five years following construction, rising to 29,900 at ten years following construction, and 35,300 at fifteen years following construction.
  - This represents an average increase of four per cent per annum.
  - Demand expectations are based on existing Rail Trails in Australia and New Zealand, market trends in cycling participation, market trends in visitor behaviour, trail usage in Tasmania and recreational activities undertaken by visitors in Australia.[18]

3.5.1.1 Expected visitors

The expected visitor range to the Northern Rivers rail trail has been estimated based on comparable Rail Trail visitation studies. In particular the Victorian High Country Murray to the Mountains Rail Trail is used a benchmark due to the following:

- The Murray to the Mountains Rail Trail is comparable in length: 116km in comparison to the Northern Rivers Rail Trail of 130km as demonstrated in below.

[13] Local Government Association of South Australia, Strategic Tourism Growth for Regional Communities, 2010.
[14] TRC Tourism, North East Rail Trail Preliminary Demand and Economic Benefit Assessment, 2014.
[15] Otago Central Rail Trail Working Group, Pioneering Otago rail trail joins national cycleway, 2012.
[16] Waikato Times, Hauraki Rail Trail paved with tourism gold, 7 June 2013.
[17] Angus & Associates, New Zealand Cycle Trail Evaluation – Four Cycle Trail Cast Studies, 1 November 2013.
[18] TRC Tourism Pty Ltd, North East Rail Trail Preliminary Demand and Economic Benefit Assessment, 2014.

Table 2 Comparison of Rail Trails

Rail Trail	Location	Length
Casino to Murwillumbah Rail Trail	Northern NSW	130 km
Tasmania North East Rail Trail	Tasmania	90km
Murray to the Mountains Rail Trail	Victoria	116km
Hauraki Rail Trail	New Zealand	77km

- Both regions are well established as tourism destinations within the State and Australia.
- Domestic visitor profiles (overnight to day trips) are comparable in each region as show in Table 3 Base estimate of Rail Trail visitors.

Drawing on these similarities, estimates of Rail Trail visitors to the Northern Rivers region are based on:

- Calculating the per cent of domestic rail trail visitors to total domestic visitors drawing on the Victorian High Country Murray to the Mountains Rail Trail as a benchmark;
- Applying this value (1.9%) to the Northern Rivers total domestic visitors. This indicates a base of 88,125 domestic visitors per annum.
- Calculating the expected international visitors to the region. International visitors are expected to account for approximately twelve per cent of all visitors to the Byron Region[19]. As rail trail tourism is expected to account for 1.9 per cent of all tourism as discussed above, it is estimated international visitors would add an additional 192 tourists per year.

Table 3 Base estimate of Rail Trail visitors

Region	Domestic overnight travel	Domestic day trip travel	Total domestic visitors	Rail trail tourists (domestic)	Rail trail tourists (international)	Total rail trail tourists
Victoria High Country20	1.1m	1.3m	2.4m	45,000	N/A	N/A
Northern Rivers	1.8m	2.9m	4.7m	88,125 (estimated)	192	88,320

The demand trends of other rail trails, such as the Hauraki, Otago Central and North East Rail trails, have been used to provide alternative estimates of demand on the Casino-Murwillumbah Rail Trail using a similar approach used to develop our base estimates. Whilst these case studies are considered to have less in

[19] Destination NSW, LGA Profile – Byron: Four year annual average to year ending September 2013, 2013.
[20] Tourism Victoria, Domestic Visitor Estimates to Victoria: year ending September 2000 to 2013, 2013.

common with the visitation characteristics of the area they provide a conservative estimate of demand for the Casino – Murwillumbah rail trail of 25,933per annum. This estimate is based on the average visitors to the Hauraki, Otago and North East Rail Trails as follows:

- Hauraki Rail Trail – 41,000 visitors per annum
- The Otago Central Rail Trail – 14,000 visitors per annum
- North East Rail Trail (expected) – 22,800 visitors per annum.

This is used in the scenario modelling to provide a conservative estimate of revenues.

3.5.1.2 Growth rate

While the Northern Rivers Region is a key tourism destination with the second highest level of international tourists in NSW, the region experienced a decrease in domestic overnight visitors over the September 2012 to 2013 period.[21] As such, conservative growth figures have been applied in line with the assumptions for the North East Rail Trail Case Study below. The growth figure applied for Casino to Murwillumbah rail trail is based on the average growth rate of Australian and New Zealand Case Studies outlined in the North East Rail Trail: Preliminary demand and economic benefit assessment below

North East Rail Trail: Preliminary demand and economic benefit assessment

The number of 'locals' to use the rail trail are expected to grow at 5% p.a. during 5 – 10 years of the trail and at a slower growth rate of 3% p.a. for the years 10 – 15 post-construction. This is a balanced figure that is consistent with broader participation trends in cycling across Australia as well as growth rates experienced on comparable rail trails[22].

As such a growth rate of 5 per cent per annum until year ten has been applied, with 3 per cent per annum applied for years 10 to 15 post construction.

3.5.2 Employment

Employment benefits from the Rail Trail are both direct and indirect.

- Direct employment benefits include employment growth directly related to rail trail construction and operations
- Indirect benefits include employment related to the rail trail in tourism, accommodation and services sectors.

The following table summarises the expected employment benefits in the short, medium and long term resulting from the Rail Trail. Potential impacts on employment are included in the direct and indirect benefits.

[21] Destination NSW, Travel to Northern Rivers Sub-Region, September 2013.
[22] TRC Tourism, North East Rail Trail Preliminary Demand and Economic Benefit Assessment, 2014.

Table 4 Direct and indirect employment benefits

Casino to Murwillumbah Rail Trail Study		
Short-term	Medium-term	Long-term
Direct: creation of jobs through rail trail such as design and construction **Indirect: creation of jobs in secondary services throughout region as construction progresses**	Direct: creation of jobs through rail trail operations such as maintenance Indirect: creation of jobs in the tourism, accommodation and services sectors resulting from patronage to the Rail Trail. Flow on benefits such as health, social and cultural experiences.	Indirect: increased employment and economic development opportunities for the regional and state economies. Enhanced reputation as a national and international cycle tourism destination.

3.5.3 Direct benefits

Cyclists generally travel light and are therefore heavily reliant on local services and businesses which means that the money should stay in the local economy. There is evidence to support that recreational cyclists are a high yield, high spending market, with a 2010 study[23] suggesting the cycle tourists will spend up to $85 per day more than the average tourist. The impact of rail trail tourists to the economy is demonstrated in the following examples:

- A 2009 study of three Victorian Rail Trails by La Trobe University24 found direct average spend per visitor of $244 per day
- The Riesling Trail in South Australia's Clare Valley estimates an average expenditure of $216 per day per visitor25
- A November 2013 case study[26] of users (represented below by 'n') on four New Zealand Rail Trails found a daily average expenditure in the region per person of NZ$154 (AU$144) based on:
  - Motu trails (n=116): NZ$133
  - Mountains to Sea (n=108): NZ$169
  - Queenstown Trail (n=41): NZ$176
  - Hauraki Rail Trail (n=396): NZ$137

The case studies above indicate an average daily spend of AU$201.

Assuming 88,320 visitors p.a. and an average case study daily spend of $201 the annual revenue assuming a single day visit is estimated at $17.8m.

Assuming a conservative level of 20,933 visitors p.a. and an average case study daily spend of $189 the annual revenue assuming a single day visit is estimated at $4m

[23] Local Government Association of South Australia, Strategic Tourism Growth for Regional Communities, 2010.
[24] Beeton, S. Cycling in Regional Communities: A longitudinal Study of the Murray to Mountains Rail Trail, Victoria Australia, La Trobe University Bundoora, 2009.
[25] ORS, Recreational Research Trail Project, 2004.
[26] Angus & Associates, New Zealand Cycle Trail Evaluation – Four Cycle Trail Cast Studies, 1 November 2013.

Comparatively, the table below shows the total direct tourism impact for three rail trail initiatives including: Tasmania North East Rail Trail; Murray to the Mountains Rail Trail; and Otago Central Rail Trail.

Table 5 Direct benefit of comparable rail trails

Rail Trail	Length	Investment	Visitors p.a.	Direct benefit	Comments
North East Rail Trail TAS	90km	$3.89m	22,800	$3.5m p.a. (predicted)	Visitors and benefits are assumed five years from construction
Murray to the Mountains Rail Trail VIC	116km	Not disclosed	45,000	$244 per person per day. This indicates $15.2m p.a. assuming 38% of overnight visitors (i.e. two day spend) and 62% of day visitors. (i.e. one day spend)	Average one to two night stay
Otago Central Rail Trail NZ	150km	Not disclosed	10,000 to 12,000 and a further 20,000 to 30,000 who walk / cycle sections	$12.2m p.a.	Assumes cyclists, walkers, and horse riding

3.5.4 Costs

The following section analyses the costs associated with constructing, operating and maintain the rail trail.

3.5.4.1 Construction Costs

Total project construction costs are estimated at $75.5m and include the following:

- Direct construction costs (preparation, build and refurbishment costs)
- Indirect costs:
  - Preliminaries: 8 per cent
  - Consultant and design costs: 6 per cent
  - Contractors OH & P: 10 per cent
  - Contingency: 15 per cent

Further details are available in Appendix C High Level Cost Estimates.

3.5.4.2 Operating and Maintenance Costs

Operating and maintenance costs are estimated at $6,800 to $8,900 per annum per km and include the following:

- Maintenance of Trail corridor vegetation and rubbish

- Maintenance of Trail surface, grading and fixing potholes
- Maintenance of Bridge structures, bracing etc
- Maintenance of Road crossings - Bollards, signage, markings etc
- Maintenance of Drainage and Culverts.

At 130km this indicates an operating and maintenance cost of $884,000 to $1,157,000 p.a.

For the purposes of the Cost Benefit Analysis below, the mid-point of $7,850 is assumed for each Scenario. The low and high points are utilised in the operating sensitivities in Section 3.5.5.2.

Further details are available in Appendix C.

3.5.5 Cost Benefit Analysis

The following section analyses the costs versus the benefit of the Casino to Murwillumbah Rail Trail.

3.5.5.1 Scenarios

Drawing on the visitors expected and the average spend per visitor from the range of case studies; the following scenarios have been developed to assess the potential benefits:

- The **Base Scenario** assumes a visitation base of 88,320 increasing at four per cent per annum
- The **Conservative Scenario** assumes visitation of 25,933 as discussed in Section 3.5.1.1 increasing at the base four per cent per annum
- The **Optimistic Scenario** assumes visitation 10% higher (i.e. 97,153) than the Base Scenario increasing at 14 per cent per annum in line with the findings from the Otago Rail Trail.

A cost-benefit model has been developed to assess the viability of the proposed Rail Trail. The cost-benefit model presents the following measures:

- *Net Present Value:* The difference between the present value of cash inflows and the present value of cash outflows. A positive NPV indicates the project is worthwhile from a financial point of view.
- *Benefit Cost Ratio (BCR):* The ratio identifying the relationship between the costs and benefits of the project. A BCR greater than one indicates the project is worthwhile as benefits exceed the investment.

As indirect benefits estimate the ‘flow-on’ benefits to the community, these are not included in the calculations and have been discussed in Section 3.5.6.

- Inclusion of indirect benefits would require the tourism expenditure on each item to be traced to each input used in its production so as to ensure the costs for receiving the benefits are realised.
- Additionally, indirect benefits do not take into account opportunity costs where the money spent may have been spent elsewhere in the economy.

The following assumptions have been applied in the cost-benefit modelling:

- A single day visit is assumed by each visitor. This is based on a case study of the NZ Hauraki Rail Trail (1.3 days[27]) which found many visitors stayed in the area rather than on the trail due to the range of tourism activities in the region. As the Northern Rivers Region is already an established tourism destination, this assumption has been applied to the cost-benefit modelling.
- All costs are estimated in 2014 real dollars
- Construction is assumed to commence in 2015
- Operations are assumed to commence in 2016
- The operating duration is calculated at 15 years
- Benefits are estimated based on the benchmarked average spend per visitor of $201 per day.

Table 6 Base Economic Impact

Base Economic Impact (NPV 2014)						
	Visitors	**Capital expenditure**	**Operating expenditure (total over life)**	**Direct benefits**	**NPV**	**BCR**
Base	88,320	$70.5m	$8.7mm	$201.1m	$121.8m	2.54
Conservative	25,933	$70.5m	$8.7mm	$59.0m	($20.2m)	0.75
Optimistic	97,153	$70.5m	$8.7mm	$221.2m	$142.0m	2.79

3.5.5.2 Sensitivities

Sensitivities have been conducted on the Base Scenario results to test the impact of key project assumptions on the NPV and BCR analysis including:

- Capital costs: +20%
- Visitor spending per day: -20%
- Total benefits: -20%.

Table 7 Economic Impact + 20% capex

Capex + 20% (NPV 2014)						
	Visitors	**Capital expenditure**	**Operating expenditure (total over life)**	**Direct benefits**	**NPV**	**BCR**
Base	88,320	$84.7m	$8.7m	$201.1m	$107.7m	2.15
Conservative	25,933	$84.7m	$8.7m	$59.0m	($34.3m)	0. 63
Optimistic	97,153	$84.7m	$8.7m	$221.2m	$134.9m	2.56

[27] Ministry of Business, Innovation and Employment, Nga Haerenga - The New Zealand Cycle Trail Evaluation Report, 2013.

Table 8 Economic Impact - 20% capex

Capex - 20% (NPV 2014)						
	Visitors	**Capital expenditure**	**Operating expenditure (total over life)**	**Direct benefits**	**NPV**	**BCR**
Base	88,320	$56.4m	$8.7m	$201.1m	$136.0m	3.09
Conservative	20,933	$56.4m	$8.7m	$59.0m	(6.1m)	0.791
Optimistic	97,153	$56.4m	$8.7m	$221.2m	$156.1m	3.40

Table 9 Economic Impact -20% total benefits

Benefits – 20% (NPV 2014)						
	Visitors	**Capital expenditure**	**Operating expenditure (total over life)**	**Direct benefits**	**NPV**	**BCR**
Base	88,320	$70.5m	$8.7m	$160.9m	$81.6m	2.03
Conservative	20,933	$70.5m	$8.7m	$47.2m	($32.0m)	0.60
Optimistic	97,153	$70.5m	$8.7m	$177.0m	$97.9m	2.23

3.5.6 Indirect benefits

Indirect benefits are often quantified in terms of indirect employment and the impact on GDP.

- Rail trails present significant employment growth opportunities for businesses in the areas of transport, merchandise, accommodation and guide services. For example, research undertaken in New Zealand found one in seven local businesses surveyed in rail trail regions reported expansions to their business such as added capacity and or added new services as a result of the trail operating in the region.[28]
- The Otago Rail Trail resulted in indirect employment benefits of 121 FTE across accommodation on the rail trail, accommodation near the rail trail, transport providers, tour operators, bike hire outlets and booking services[29].
- In addition, cycling events can also be seen as a key economic driver. For example, the Great Victorian Bike Ride – a nine day touring event – is estimated to have contributed an additional $2m[30] to the economy in GDP.

The following table demonstrates the indirect benefits for the Tasmanian North East Rail Trail, Murray to the Mountains Rail Trail and Otago Central Rail Trail.

[28] Angus and Associates in association with TRC Tourism, New Zealand Cycle Trail Evaluation – Four Cycle Trail Case studies, 2013.
[29] Northern Rivers Rail Trail Inc, Northern Rivers Rail Trail Proposal, 2013.
[30] The Standard, Big Bike Ride Helps Recycle Tourism, March 7 2014.

Table 10 Indirect benefit of comparable rail trails

Rail Trail	Indirect benefit	Indirect benefit	Comments
Tasmania North East Rail Trail	$6.8m 40 FTE	GSP increase of $3.3m	Projections based on case studies of Rail trails in Australian and New Zealand. One FTE expected for every $250,000 investment[31]
Murray to the Mountains Rail Trail	$203 per person per day	GDP increase of $1.4m	11.85 FTE expected for every $100,000 investment
Otago Central Rail Trail[32]	$6.2m 121 FTE[33]	GDP increase of $2.3m	The largest impacts are in the areas of accommodation, package operators as well as food and consumables.

Based on a range of one FTE for every $250,000 investment, it could be expected that the Rail Trail will generate approximately 302 indirect FTE.

3.5.7 Summary of economic analysis

The economic analysis is based on several key assumptions:

- **Volume:** Expected visitors drawing on the existing Northern Rivers visitor profile and applying Rail Trail tourism findings from comparable Rail Trails. In particular this includes the Murray to the Mountains Rail Trail, Hauraki Rail Trail and Otago Central Rail Trail, and predictions of North East Rail Trail visitors based on an analysis of Australian and New Zealand examples.
- **Costs:** Construction, maintenance and operating costs as detailed at Appendix C High Level Cost Estimates.
- **Benefits:**
  - Assumed spend per day based on historical spends on three Victorian Rail Trails by La Trobe University[34], the Riesling Trail in South Australia's Clare Valley, and four New Zealand case studies (Motu Trails, Mountain to the Sea, Queenstown Trail and Hauraki Rail Trail).
  - The number of days spent on the trail. A single day visit is assumed by each visitor as a conservative assumption. This is based on the NZ Hauraki Rail Trail (1.3 days[35]) experience which found that as an already established tourism destination (as is the case with Northern Rivers), many visitors stayed in the area rather than on the trail due to the range of tourism activities in the region.

[31] TRC Tourism, North East Rail Trail Preliminary Demand and Economic Benefit Assessment, 2014.
[32] User Survey, 2010/11, Central Otago District Council, June 2011
[33] Rail Trails Australia, Inquiry into Tourism in Local communities, November 2013.
[34] Beeton, S. Cycling in Regional Communities: A longitudinal Study of the Murray to Mountains Rail Trail, Victoria Australia, La Trobe University Bundoora, 2009.
[35] Ministry of Business, Innovation and Employment, Nga Haerenga - The New Zealand Cycle Trail Evaluation Report, 2013.

The results of the economic analysis indicate:

- The Rail Trail is financially viable at the Base Scenario of 88,320 visitors, with an expected NPV of $121.8m and BCR of 2.54. Under this scenario, the project payback period is approximately four to five years.
- The Conservative Scenario of 25,933 would result in an expected NPC of $20.2m and BCR of 0.75. A BCR less than 1.0 indicates the project would not be financially viable at with a capital cost of $70.5 million.
- The Rail Trail will break even (i.e. a BCR of 1.0) assuming visitors of 34,802 p.a. As such, visitors in excess of 34,802 p.a. indicate a positive return for the project.

4 Challenges and Constraints

4.1 Overview

This section outlines some of the challenges and constraints that will need to be considered when developing the rail trail.

4.2 Safety

While most of the corridor is readily accessible by local roads, there are some sections that traverse through private property or undeveloped areas that have limited or no direct access.

In initial discussion with emergency services personnel, this does not present a significant concern at this stage, but should be reviewed as the trail is developed to ensure the ongoing safety of users is maintained.

Key safety concerns raised to date include:

- Limited access areas may provide constraints in reaching the scene of an emergency
- It was noted during site inspections of the corridor during 2012, the large number of highly venomous snakes in the area, including eastern brown snakes. There will be risks involved with opening access to the public, especially given the remote nature of some parts of the route
- Trail and road intersections present key risk locations that need to be considered on a case by case basis to determine the most suitable solution for crossing of roads. As a minimum, clear signage and road line marking will be required to ensure the safety of all users
- During discussions with Stakeholders the topic of bushfire fighting control and management was raised on several occasions with the rail corridor identified as an alternative opportunity to deal with threat management and/or direct fire control during the bushfire season
- Interaction with livestock will be an issue unless all fencing can be repaired or upgraded. There are several locations where the corridor is currently being used for grazing.
- Access to, and the costs associated with providing drinking water and toilet facilities for trail users will be required to examined as part of developing the for trail
- In sections that are located on embankments there may be a need to ensure the safety of users by flattening the adjacent embankment or installing safety barriers that prevent users from falling down.

- Existing culvert locations may in some cases need to be identified or protected to prevent falling off the trail and into the drainage channel to ensure the safety of trail users.
- Trail user etiquette and education signage may be required to ensure both walkers and cyclists can utilise the trail harmoniously. RA propose a Code of Conduct for display at major points that typically includes:
  - Observe local signs and restrictions
  - Do Not disturb plants and animals (including any livestock)
  - Respect adjacent landholder's property and livestock
  - Take rubbish home with you or place it in bins if provided
  - Keep dogs on a leash
  - Cyclists alert other users of your approach and pass at reduce speed.

As part of establishing an operating rail trail it is recommended that a Safety Strategy and Emergency Management Plan be developed in conjunction with key stakeholders, including the District Emergency Officer.

4.3 Mobile phone coverage

The Casino to Murwillumbah Rail Line traverses some of the most picturesque country in the Northern Rivers region and while this presents a unique opportunity for locals and visitors to experience some of the locations up close, there are issues relating to the isolated and remote areas along the route.

It is known that mobile phone coverage is reduced or non-existent along several parts of the corridor, particularly in the more undulating areas. Visitors, in particular, who may be unfamiliar with the region, are more at risk in an emergency situation and this should be reviewed with the District Emergency Management Officer ahead of opening to agree any specific operational strategies that should be in place. Further consultation with mobile phone operators may be appropriate in due course should there be key locations that warrant improved coverage.

It is recommended that an assessment of mobile phone coverage requirements is made as part of developing a Safety Strategy and Emergency Management Plan for the operation of the rail trail.

4.4 Security

Consideration for the security for the private properties that adjoin the rail trail will be required during the development and operation of the trail, particularly as the corridor crosses or adjoins many private properties that to date have had no public access.

Similarly, the remote setting of some parts of the corridor will present challenges for ensuring the security of trail users.

Consideration of user and private property owner security should be considered as part of developing the overall safety Strategy for the trail.

4.5 Accessibility for construction and maintenance

It was noted in the Condition Assessment of the corridor undertaken for the Casino to Murwillumbah Transport Study that access to sections of the corridor was a significant restriction. The access issues ranged from heavy vegetation, locked private property or no adequate access roads or tracks. The same accessibility concerns would exist for the construction and maintenance of the rail trail.

In addition the following key concerns will be required to be addressed prior to opening of the rail trail:

- Vehicular access control, including prevention of motorcycle and all-terrain vehicle use
- Private property access
- Construction access
- Maintenance access.

Given the requirement to enter or cross many adjacent private properties in order to construct the trail it is recommended that a Construction and Maintenance plan is developed in conjunction with landowners and key stakeholders.

4.6 Engineering Issues

The construction of the rail trail along the Casino to Murwillumbah corridor is recognised to be more difficult than some other examples in existence, mainly due to the constrained access, variable terrain, high annual rainfall and significant number of bridge locations that will be required to be modified or replicated to ensure continuity of the trail.

The existing asset database consists of the following registered types:

Table 11 Asset register summary[36]

Asset	Registered
Underbridges	164
Overbridges	23
Small Culverts	298
Large Culverts	38
Level Crossings	119
Tunnels	9

There are also a number of known slope failure locations that will require remedial works to protect trail users from further landslip events.

Other significant issues that will require resolution as the trail is developed include:

[36] Transport for New South Wales, 2012. *Casino-Murwillumbah Structures Database,* Transport for New South Wales, Sydney.

- Determination of flooding immunity requirements and the requirement to address any cross drainage constraints that may contribute to ongoing maintenance issues such as erosion
- Approach to the use of causeways for smaller waterway crossings in lieu of a bridge. As a starting point it is not proposed to introduce causeway crossings, however, this is a key cost saving opportunity that can be adopted as part of an overall staging strategy
- Where the trail is proposed to avoid reuse of an existing timber bridge, and is not proposed to be demolished and replaced, the bridge will require isolation and ongoing inspection to ensure the safety of adjacent trail users
- Engineering inspections will be required for all under-bridges that are proposed to be reused to confirm the structural integrity and serviceability
- Engineering inspections will be required for all tunnels to confirm structural integrity and serviceability. In addition, consideration of the Fire and Life Safety requirements will become a critical aspect of allowing uncontrolled access within the tunnels
- There are a number of existing level crossing locations that may require further risk assessment to establish the need for any further control measures, particularly in locations with skewed approach and sighting distance concerns.

4.7 Impact of other proposals

In addition to existing campaigns to reinstate rail services, there have been a number of other proposals identified during the course of completing the stakeholder sessions that would impact on the ability to create and operate a rail trail.

4.7.1 Tweed Shire Council

At its meeting held 16 May 2013, Tweed Shire Council after considering the findings of the Casino to Murwillumbah Transport Study[37], formally resolved:

"to actively support and promote the establishment of a rail trail on the Casino to Murwillumbah rail corridor, particularly the section extending south from Murwillumbah."

Since this time the Council has been an advocate for the rail trail and is leading the way with a pilot 2.3km section of rail trail from Murwillumbah Station to the Tweed River Art Gallery.

An item has been included in the forward infrastructure program for 2014/15 for commencement of the pilot 2.3km section of rail trail.

The Tweed Shire Council proposal is directly compatible with the proposal for a rail trail and during stakeholder sessions with council representatives it was made

[37] Transport for New South Wales, 2013, *Casino to Murwillumbah Transport Study*, Version 2.1, Transport for New South Wales, Sydney.

clear that the project is ready and awaiting clarity of legislative changes required allowing works to proceed.[38]

4.7.2 Byron Bay Community and Tourist Rail Shuttle

This proposal consists of operating a 660 series railmotor between the existing Byron Bay station and the proposed North Byron Beach Resort located to the north of Bayshore Drive.

The corridor width in the vicinity of the proposed service is generous and, subject to finalisation of safety requirements, would likely allow for both rail and trail to co-exist for the majority of the proposed operating route. The corridor becomes constrained immediately to the north of the Belongil Creek bridge, and while it would be possible to engineer a solution for co-existence, there is an alternative, cost effective option, that would allow for diversion of the rail trail along Bayshore Drive to connect with existing bikeway paths that run along Ewingsdale Road. Further options might allow for a bespoke pathway connection from the corridor into Sunrise Boulevard and although not explored further at this stage, could be considered as the trail design evolves.

In discussion with the proponents of the rail shuttle, passive provision is expected to be included into the replacement bridge structure crossing Belongil Creek meaning that either option for the rail trail can be accommodated without impact to the rail shuttle service.[39]

4.7.3 Rail Explorers

The Rail Explorers is a private proposal that promotes the idea of utilising the existing railway to operate rail bikes and pedal carts. There are two proposed stages, the first between Byron Bay and Bangalow. Stage 2 proposes to link Byron Bay with Mullumbimby.

The proposal would be largely incompatible with a rail trail given the limited formation widths beyond the Byron Bay town centre that would necessitate a completely new trail to be formed adjacent to the existing formation. It is therefore considered that co-existence could be possible; this would likely require considerable investment and engineering of compatible solutions.[40]

4.7.4 Northern Rivers Railpark

The Northern Rivers Railpark is proposed to cover 99km of the railway between Lismore and Murwillumbah. Similar to Rail Explorers, this is a private proposal that promotes the idea of utilising the existing railway to operate rail bikes and ultra-light rail trams known as “rail cruisers”.

Similar to the Rail Explorers proposal, the Railpark would be largely incompatible with a rail trail for the same reasons described above. It is therefore considered

[38] Tweed Shire Council, 2013, *Draft Submission to Casino to Murwillumbah Rail Trail Study*, Tweed Shire Council, Murwillumbah.
[39] Byron Bay Community and Tourist Rail Shuttle Proposal, undated.
[40] RailExplorers- Byron Bay, undated.

that co-existence could be possible; this would likely require considerable investment and engineering of compatible solutions.[41]

4.7.5 Grab The Rail (Byron Bay) Town Bypass

This proposal seeks to create an alternative vehicular bypass through Byron Bay town centre utilising a section of the rail corridor from the existing Shirley Street level crossing to Old Bangalow Road level crossing, a length of approximately 2.5km. The bypass is proposed to be established in three stages, with Stage 1 and Stage 3 making use of the existing corridor.

The corridor width in the vicinity of the proposed bypass is generous, particularly around the Byron Bay Station locality. Subject to further investigation and planning it is considered likely that a shared corridor could be laid out that meets the needs of both a rail trail and road bypass. It may also be possible to include both the rail trail, bypass and the proposed Byron Bay Community and Tourist Rail Shuttle within the corridor, however this would require careful planning to ensure the compatibility between schemes. No further assessment of the proposal has been made at this stage.[42]

4.7.6 Burringbar

During the course of completing the study, advice was provided regarding a private development near Burringbar that has expressed an interest in developing a short section of trail adjacent to their development. No further details have been provided at the time of writing.

[41] Small Northern Rivers Railpark – Business Plan, undated.
[42] www.facebook.com/grabtherail

5 Implementing the rail trail

5.1 Staging opportunities

Consideration for a staged approach for delivery is necessary given the significant length of the corridor. While it is essential to reach agreement of the status of the corridor as a whole in terms of conversion, there will be a need to strategise the delivery across the route to ensure consistency in build, theme and ongoing maintenance.

It will be essential that general principles for developing the rail trail are agreed and confirmed from the outset with a governing entity established and in place to administer the development across all local government areas. Further discussion on the model available for the governance and administration of the rail trail is discussed in Section 7.

The following highlights key areas that are considered worthwhile for early development as opposed to an end to end approach for conversion.

5.1.1 Murwillumbah to Tweed Regional Gallery

As described in Section 4.7.1, the Tweed Shire Council are promoting the connection between Murwillumbah Station and the Tweed Regional Gallery as the ideal “pilot” for the development of the trail.

Tweed Shire Council has allocated funding in the 2014/15 and 2015/16 forward infrastructure plans. During stakeholder sessions Council representatives have stated that they are willing to complete this section as a pilot scheme and a precursor to the wider development of the rail trail.[43]

5.1.2 Mullumbimby to Murwillumbah

This section of the corridor could easily be considered Stage 2 of the pilot scheme proposed between Murwillumbah and the Tweed Art Gallery and would form a logical progression to connect Byron Bay to Murwillumbah.

In the Tweed Shire Council submission to this study, it was identified that the section from Murwillumbah to the Shire boundary at Yelgun could be timed for delivery to coincide with a similar progression north from Byron Bay.

Delivery of this section could be further broken down into sub sections that could be completed as funding becomes available and delivered across a number of

[43] Tweed Shire Council, 2013, *Draft Submission to Casino to Murwillumbah Rail Trail Study*, Tweed Shire Council, Murwillumbah.

years. Each sub section should aim to connect with either a town or key location along the route to avoid leading users into a “dead end” scenario.

While the terrain through this section presents some wonderful opportunities for visitors to experience the Northern Rivers pristine environment, this also presents some more difficult challenges with a proportionally higher number of bridge locations in this section to be navigated. This will in turn influence the costs associated with completing this section.

5.1.3 Byron Bay to Mullumbimby

Byron Bay forms the focal point for the rail trail and it would be logical to consider Byron Bay as the starting point for the rail trail development.

This section would likely be developed in parallel with the northern link with Murwillumbah to ensure the maximum benefit is derived at both ends of this section of the route.

5.1.4 Lismore Town Centre

During stakeholder discussions, it became apparent that there may be opportunity to convert a short section through Lismore that encompasses the river crossing and connects as far as the Lismore Show Grounds, Lismore Turf Club or with additional support as far as St John’s College at Woodlawn.

This concept further developed as an idea that sits within a hierarchy of usage and could present a case for developing a higher order surfacing, such as concrete that would cater for the increased usage. Although forming a section of the rail trail itself, the classification into part of Lismore’s overall bikeways and pathway strategy may allow for alternative sourcing of funding for this specific section.

5.1.5 Byron Bay to Bangalow

Similar to the Lismore discussion above, a case could easily be developed for the Bangalow town centre. Given the general linear layout of the Bangalow township and the link that the corridor creates between each end of the urban area, this section would cater for a combination of local users and allow opportunities for park and walk style access for visitors to the town, reducing congestion and parking issues within the village itself.

As an example, a section could be developed from as far as Friday Hut Road through Bangalow village to as far as the intersection with the Pacific Highway. This could be developed as a higher order pathway in a similar vein as the Lismore proposal. The funding for a premium section of pathway would not necessarily draw upon the same sources as the other trail sections given the additional usage profile from the remainder of the trail.

The longer link between Byron Bay and Bangalow has been raised in most forums as a desirable connection that would form an instant attraction in the region. The relative short distance also provides an opportunity to develop a key section of the trail early in the construction of the overall trail.

5.1.6 Bangalow to Lismore

This section is not dissimilar to the section between Byron Bay and Murwillumbah in terms of terrain and experience and traverses some very appealing landscapes and winds its way through intimate village settings such as Nashua, Booyong, Eltham and Bexhill before connecting with Lismore.

5.1.7 Lismore to Casino

Given the lower concentration of township locations along this section, it is likely that this will form the final link in the connecting the trail with Casino, logically heading west from Bangalow.

5.2 Connections to the Route

The case for expanding the trail beyond the physical existence of the rail line will likely gather momentum as the realisation of the opportunity to connect presents itself. Although beyond the scope of this study, logical extensions include:

- Tweed Heads and Coolangatta Airport
- Kyogle and beyond
- Creation of loop trails across the Northern Rivers region could conceivably allow for a network of trails to be created that includes the rail trail as the primary “connector” or link between individual trails.

5.3 Supporting services

Before cycle tourism can flourish in an area, cyclists have a range of requirements which need to be met, beyond the provision of good cycle routes and access to key tourist attractions. The development of the rail trail should be complimented by the development of end of trip facilities, services and other facilities.

- End of trip facilities include bike parking and storage, toilets, shower and change room facilities at a range of locations such as transport nodes, tourist attractions, accommodation locations and townships.
- Services include bicycle hire, commercially operated cycle tour companies and provision of information to cyclists, such as maps and description of routes, location of facilities and location of tourist attractions.
- Better integration between bicycle facilities and public transport will increase cycle usage and cycle tourism in particular. Cyclists should be allowed to carry bikes on all forms of public transport and specialist bike buses may be operated by private operators. Car and bus parking at the main entry points into the rail trail will also be required.

6 Construction and Maintenance

Railtrails Australia (RA) defines a rail trail as a trail that closely follows (preferably on) the formation of a former railway line or runs beside an active railway for the majority of its length. What sets rail trails apart from other trails are that they are gently graded and have a history as a transport corridor[44].

6.1 Shared Path Specifications

The Cycling Aspects of Austroads Guides (March 2011) provides guidance as to the specification of a shared path or cycle path as follows:

Table 12 Typical shared pathway design parameters

Parameter	Discussion
Path design speed	20km/hr (for shared paths) 30km/hr (for exclusive bicycle paths)
Desirable Width (shared paths)	2.5m (local access path) 3.0m (commuter path) 3.5m (recreational path)
Horizontal Alignment	10m minimum radius (for 20km/hr design speed) 25m minimum radius (for 30km/hr design speed)
Gradient	See below figure – dependent on length of segment

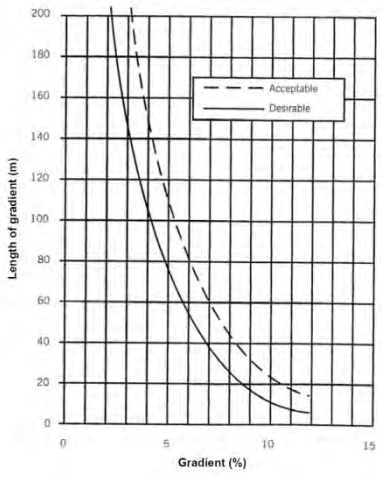


Figure 5 Desirable gradient dependent on length of segment

[44] Source: Rail Trail Establishment Guidelines, RailTrails Australia, 2011

On the basis of adopting the AustRoads guidelines for design, the Casino to Murwillumbah corridor is suitable for conversion on this basis given the gentle grades associated with the former railway. The corridor width is adequate for preparing a 2.5m wide pathway on the formation and the horizontal alignment, although tight in railway terms in some places, will not compromise a shared path.

It is recommended that the AusRoads Manual is used as the basis of developing plans for the rail trail as the design and specifications are established.

Within the trail itself their will a hierarchy of usage based on the physical location and the predicted utilisation that will influence the specification to be adopted. This may lead to higher order pathway specifications being adopted along specific sections to cater for greater usage. This hierarchy can be broadly categorised into the following groups:

- Urban pathway – typically concrete and of high durability to cater for the context of higher usage in an urban setting
- Trail – expected to form the majority of the route, and form the basic ingredients for developing the trail
- Connecting pathways & Paper Roads (Loop trails) – likely opportunity to develop trail links along unformed roads that create loop trails or links to other attractions
- Private pathways – e.g. connection to business nearby the rail trail

6.2 Engineering Requirements for Conversion

The following section describes the approach for dealing with the conversion of the corridor for usage as a rail trail and examines the engineering aspects associated with construction. Where practical a default option has been nominated for use in terms of generating a construction cost estimate and forms the basis of the engineering assessments undertaken in Appendix B.

6.2.1 Station Buildings

There are existing station buildings at Old Casino, Lismore, Bangalow, Byron Bay, Mullumbimby and Murwillumbah. Some of the buildings are part leased, or utilised as CountryLink travel centres. In addition, the Byron Bay Station Yard Group, Lismore Station and Murwillumbah Yard Group are all heritage listed in the State Heritage Register.

All existing lease arrangements can remain in place, unaffected by the Rail Trail. There are further opportunities to develop additional facilities at these locations, as well as developing new facilities in other areas along the route.

Examples of the type of development that were raised during the stakeholder sessions include:

- Development of WiFi Hubs at key stations locations
- Refreshment stops and facilities
- Establishment of café style rail trail tourism centres
- Development of cycle hire and bike servicing stations

The establishment of the rail trail would allow for these facilities to be reused and by doing so will in some cases introduce improvements into an otherwise underutilised, and in some cases derelict, asset.

Figure 6 Existing station buildings at Bangalow

There are numerous proposals already in existence relating to the opportunity for reuse of station facilities, particularly as meeting points, refreshment stations and general facilities.

6.2.2 Track, Sleepers, Ballast and Formation

The ability to service foot traffic on rail, sleepers and ballast is dangerous and places individuals at high risk of slips, trips and falls, particularly in wet weather scenarios. As such, it is not possible to simply allow foot traffic onto the existing corridor without first making the surface suitable for walking.

In a majority of locations, the removal of track, sleepers and ballast material will be required, where a trail cannot be economically formed adjacent to the existing line and remain within the existing railway corridor boundary. Given the relative narrowness of the corridor along the majority of the route, there will only be select locations, such as the Byron Bay town centre where existing rails, sleepers and ballast can remain and a trail formed immediately adjacent.

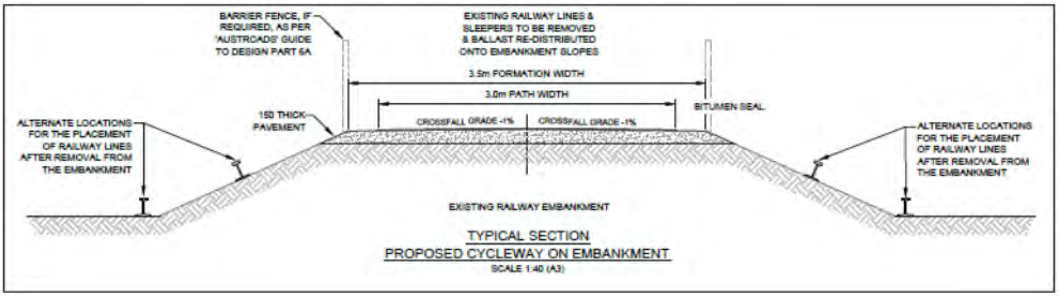


Figure 7 Typical Section, Proposed Rail Trail Murwillumbah to Tweed Regional Art Gallery, Tweed Shire Council[45]

[45] Tweed Shire Council, 2013, *Draft Submission to Casino to Murwillumbah Rail Trail Study*, Tweed Shire Council, Murwillumbah.

In certain locations, typically where the formation or corridor width allows, it may be possible to form the trail adjacent to the rail, allowing for existing rail sections to remain in place as a reminder of the origins of the rail corridor.

Recovery of the rail and steel sleepers should be considered, subject to the economies of collection across the route. The scrap value of “cascade rail”, less the cost of retrieval, may provide a one off dividend that can be invested into the development of the rail trail.

Although generally in poor to very poor condition, there are sections where the timber sleepers may have sufficient residual value for reuse within the rail trail for retaining and landscaping purposes. Contamination issues aside, where numbers are concentrated, sleepers in sufficiently good condition may be able to be sold providing a secondary possibility for capital raising.

Ballast material will be required to be spread, removed or relocated within the corridor, subject to treatment for environmental and contamination issues. It is possible that ballast could be collected for reuse or sold, however, given the linear distribution of material it is unlikely to be economic, especially given the large amounts of vegetation contamination now present along the corridor.

In most cases the existing ballast material may be able to be reused and spread to form the base layer for the capping formation layers to be used as the basis for the rail trail surfacing.

It is recommended that an assessment of any materials identified for reuse or on selling is undertaken to ensure contamination issues are properly dealt with.

6.2.3 Rail Trail Surfacing

A capping material will be required to form the trail surface, particularly in sections where the existing capping layers are unsuitable or of poor quality. There are several possible alternatives that can be employed with increasing costs associated with the sourcing and installation.

6.2.3.1 Compacted Road Base

The selected default material to be used in forming the trail surface is compacted road base, or similar, given the relative ease with which the trail can be constructed and the low cost of sourcing material. Although maintenance frequencies are likely to be higher over the life of the trail, the availability of locally based, skilled resources and equipment within local government and road maintenance organisations will ensure that maintenance costs are contained at efficient levels.

Many rail trails are surfaced using gravel based materials given the relative ease of conversion. There are numerous examples across Australia with good examples to be found in Victoria on sections of the Great Victorian Rail Trail and the Murray to the Mountains Rail Trail.

Maintenance of gravel surfacing would concentrate on pothole filling and would generally be undertaken manually meaning routine inspection and maintenance regimes would be required.

This surface type has been selected as the preferred surfacing material and has been adopted for the purpose of developing the high level cost estimates contained within Appendix C.

6.2.3.2 Asphalt

Utilising asphalt materials provides more durability than a road based gravel type material; however, this is generally a more expensive solution that will require more intensive installation and machinery to construct.

There are a number of very good examples where asphalt has been used for the surface of choice, both within Australia and overseas. A recent example in NSW is the Fernleigh Track in Newcastle that traverses approximately 16km from Adamstown to Belmont. For the Casino to Murwillumbah rail trail, it is expected that asphalt materials would generally only be used in short sections or in areas that are likely to see much higher usage.

Frequency of maintenance of asphalt surfaces is greatly reduced when compared with road base materials, but this comes with the added cost at time of installation.

6.2.3.3 Concrete

Concrete pathways present the premium surface treatment for a rail trail, matching the quality and durability of normal pathways seen in urban environments.

High quality cycle ways and walking paths are usually constructed with concrete with numerous examples of this type of surfacing to be found throughout NSW and Australia.

The higher relative cost to procure and install would see this type of surfacing solution only become viable in highly utilised areas, or where a section of the rail trail connects directly with an existing pathway or cycle route. In discussions with several stakeholders it was noted that this type of surfacing would be an attractive proposition in town centres such as Bangalow and Lismore where a connecting pathway could be provided to link with existing footpath networks effectively enhancing the local footpath connectivity within the town centres.

Maintenance of concrete pathways is virtually non-existent for the life of the path, with works reduced to protection rather than physical works to the pathway itself.

6.2.3.4 Other solutions

There are examples of timber boardwalk style trails in existence around the world. While the added cost of construction would generally rule this option out, there may be opportunity for localised “features” to be incorporated and this style may be appealing in developing themes in discrete locations, such as waterway crossing points.

Rubberised or timber infill materials may also present an opportunity, particularly in locations where the existing rails may wish to be retained for heritage reasons. Such locations may include at stations or special areas of interest.

It is likely that combinations of the above surface materials will be employed across the route, and the use of higher specification materials such as concrete are

likely to be viable in areas of significant traffic or difficult access for future maintenance.

Such areas where the warrant for installation of more durable surfacing may be recommended include:

- High density areas near towns or villages,
- Areas identified as suitable for integration with existing pathway networks,
- Areas with restricted or difficult access, for example land locked sections between consecutive bridge locations,
- Approaches to bridge abutment locations,
- Approaches and inside of all tunnels,
- Approaches and connections with road crossings and level crossing locations,
- Areas with unusually high risk of flooding or erosion
- Areas of special interest, for example station locations

It is expected that decisions on any requirement for enhanced surfacing will be made as the design of the rail trail evolves in subsequent stages.

6.2.4 Drainage

Since the closure of the line in 2004, the culvert and drainage efficiency has reduced considerably due to the reduced levels of maintenance and the increase in debris, vegetation and blockages. The recommendations made in the Casino to Murwillumbah Rail Line Study Condition Assessment[46] will largely remain valid, particularly where a culvert location is for the purpose of maintaining catchment to catchment water flow.

Where an existing culvert was essentially required to ensure adequate trackside drainage, a value judgement can now be made as to the requirement, given that prevention of overtopping of the formation will no longer be necessarily required. A local based assessment of the flooding impacts and the risk of accelerated erosion will determine the best solution on a case by case basis.

In most cases, simply removing existing blockages and debris will be sufficient for the purpose of maintaining adequate drainage at culvert locations.

There are a number of key locations where remedial works will be required:

- Locations that form part of a catchment transfer,
- Locations where drainage forms part adjacent township drainage, for example within the location of the existing Byron Bay Station and town centre

For the purpose of developing the high level cost estimates contained within Appendix C, it has been assumed that all existing culverts are cleared for debris only to restore flow. An allowance for ongoing maintenance that includes regular vegetation and cleaning maintenance should be included.

[46] Transport for NSW, Arup: Stage 1. (2012). Casino to Murwillumbah Rail Line Study: Stage 1 Condition Assessment. Sydney: Arup.

6.2.5 Embankments / Cuttings

There are a number of locations along the corridor that have been the subject of landslips.

In most cases minimal works will be required for establishing a rail trail, mainly to remove debris and ensure a sufficient level of safety for users to ensure that any further slip is controlled in a manner that will not cause injury. Unlike the derailment risk that can be caused by a landslip in an operating railway environment, there is little impact other than personal safety of users that would be affected, and as a result a more pragmatic approach to the treatment and prevention of further slips can be taken.

The requirement for more substantial treatment works should be considered on a case by case basis. The known slope failure locations that will require some form of remedial works to protect trail users are as follows:

- McNaughton's Tunnel Slips 815.672km and 816.3km
- Saint Helena Escarpment 876km to 879km
- Haynes Tunnel Slip 904.279km

In some areas where steep embankments exist, a risk assessment should be undertaken to determine the need for the installation of safety barriers to prevent inadvertent access or falls.

6.2.6 Level Crossings

There are over 100 level crossing locations along the length of the corridor, with more than half currently accessible by the general public.

Table 13 Number of Registered Assets

Asset	Registered
Active Public	11
Passive Public	42
Private	56
Pedestrian	10
Total	119

Although the primary function of a level crossing is to reduce the risk of collision between vehicles and trains, essentially the same risk will remain for collision between motor vehicles and trail users.

In a rail trail scenario, the crossing functionality at road interfaces will change to a normal pedestrian crossing and this will require the installation of specific pedestrian signage and appropriate road marking to ensure the safety of both trail and road users.

"Active Public" level crossing locations will require the most attention, as these locations are either located in high traffic volume areas, areas with limited approach visibility or in situations where the signed road speeds are greater than 60 km/hr. Active crossings are designed to operate with flashing lights and alarm

bells providing warning of an approaching train. This key functionality is not appropriate to replicate for a rail trail, although normal pedestrian crossing signalling should be investigated further where there is a high risk of collision over interaction. This key risk will require mitigation as the design of the trail evolves in subsequent stages.

Figure 8 Active Level Crossing - LX097 Upper Burringbar Road CH 919km 539

“Passive Public” level crossing locations are similar to the Active level crossings, with the exception of incorporating flashing lights and alarm bells. The requirement for pedestrian crossing signalling should be investigated further.

It is recommended that a road safety auditor undertake a sight safety investigation to determine the requirement for additional crossing controls over and above standard signage and road marking requirements for all Active and Passive level crossing locations along the route.

Most Private and Pedestrian level crossing locations will be retained with only minor signage modification required. The majority of private crossing locations are used by adjacent property owners and their right to cross the corridor should remain protected. There will be a requirement to consult with landowners about the change in usage as the Rail Trail is developed.

Wherever possible, closure of a level crossing should be considered, however, this generally would only be practical for the unused private crossings along the route.

6.2.7 Fencing

For most of the corridor, particularly those which are not currently accessible to the public, there is little or no fencing installed. In other areas the quality and condition of fencing varies, with private property owners providing quality fencing for their own needs, usually for containment of livestock, as opposed to creating separation from the rail corridor.

It was noted in the Condition Assessment[47] that fencing around the towns has deteriorated and collapsed over the length of the line. There will inevitably be some requirement for the rail trail to be fenced in some areas, requiring existing

[47] Transport for NSW, Arup: Stage 1. (2012). Casino to Murwillumbah Rail Line Study: Stage 1 Condition Assessment. Sydney: Arup.

fencing to be restored or new fencing installed to delineate private property and minimise the public risk.

Fencing requirements have not been examined in detail with a view to the approach for fencing be based on a case by case basis and reviewed with adjacent landholders as the rail trail is developed as the standard of fencing, and the actual requirement may vary dramatically. Similarly the assumption of responsibility is that the adjacent private land owner may have responsibility for fencing their own property and as such no direct allowance for upgrading existing fencing has been included at this stage.

Controlled access will be required at entry points to the trail, particularly at existing level crossing locations. Except for maintenance and emergency vehicles, motorised vehicles will not be permitted to use the rail trail. Access control measures such as bollards, locked gates, horse stiles and chicanes will prevent access to the trail by motorised vehicles.

6.2.8 Bridging

6.2.8.1 Underbridges

The Casino to Murwillumbah Rail Line has a high concentration of underbridges along the route, the majority of which are constructed with timber. In a majority of cases there will be significant remediation work required to ensure the structural integrity of the bridge is satisfactory for use as a rail trail. However, without the benefit of design information for the majority of the bridges, an individual inspection will be a requirement to confirm the loading capacity and residual life remaining.

There are a number of alternative options available for dealing with underbridge locations, depending on the obstacle encountered, categorised as follows:

Table 14 Categorisation of Bridge Solutions

Category	Bridge Solution
1	Modification of Existing Bridge Structure
2	Repair and Restoration of the Existing Bridge Structure
3	Replacement of Bridge Structure to Match Existing Dimensions
4	Replacement of Bridge Structure with Adjacent Bypass Structure
5	Route Bypass to Avoid Obstacle

Category 1 – Modification of Existing Bridge Structure

There are a number of locations where the existing structure condition and residual asset life will enable the bridge to be modified for use as a rail trail. Subject to a detailed engineering assessment that confirms the structural integrity, asset life and suitability for conversion, the bridge can be modified to provide safe access for foot and cycle traffic. In this situation, it may not be necessary to replicate the existing approach gradient and alignment allowing for shorter

approach structures to be formed at approaches instead of directly replicating the existing structural dimensions.

Modifications to the structure will include the installation of suitable decking and supporting members along with suitable handrails, or barrier fencing. There are numerous options available for use that are currently utilised on other cycleway and footpaths that can be adapted.

There are a high number of existing dual material structures comprising steel and timber, that could partly reuse the steel sections with replacement sections installed in place of the life expired timber components along the route.

An example of this type of structure is shown in Figure 9 below:

Figure 9 Example of Dual Material Structure, UB027 CH826.684km

Category 2 - Repair and Restoration of the Existing Bridge Structure

Where it is desirable to maintain the grade and alignment of the existing rail line for the trail, there may be a requirement to repair and restore the existing structure. Examples of where this may be applicable could include constrained locations where there is insufficient land to accommodate a bypass. Similarly, this may apply in locations where it is not possible to divert the trail to connect with a local road to bypass the obstacle encountered, or where the topography precludes an alternative option.

This scenario may also be applicable to locations where there may be a case for investing in repair, restoration and modification of the existing structure. Such examples where this approach would be warranted would be the existing steel truss and wrought iron bridges such as those located at Naughtons Gap, Lismore, Bangalow and Burringbar. These locations present an ideal opportunity to showcase late 1800’s bridge construction techniques and would form key attraction locations in their own right along the route.

Similar to Category 1, Category 2 structural modifications will include the installation of suitable decking and supporting members along with suitable handrails, or barrier fencing.

An example of this type of structure is shown in Fi gure 12 below:

Figure 10 Steel Truss Bridge, UB012 CH819.510km

Category 3 - Replacement of Bridge Structure to Match Existing Dimensions

Where it is desirable to maintain the grade and alignment of the existing rail line for the trail, but the existing structure is not suitable for repair or modification, it will be necessary to replace the existing super structure with a suitable alternative that incorporates necessary walkway standard decking, handrails and barriers.

Figure 11 Typical short length underbridge

There are a number of locations where this will be practical given the short length of the structure and the requirement to maintain the crossing. This solution may also be necessary in locations where there is insufficient land within the corridor to form a bypass structure or at grade solution adjacent to the existing bridge. Similarly, this solution may apply in locations where it is not efficient to divert the trail to connect with a local road to bypass the obstacle encountered, or where the topography precludes an alternative option.

Category 4 – Replacement of Bridge Structure with Adjacent Bypass Structure

Where there is the opportunity to form an adjacent bypass structure, in most cases this will be more economic and simpler to construct. The existing structure will be required to either be demolished or isolated and made safe to ensure access is restricted.

This option will allow for the retention of some existing structures, where safe to do so, for the purpose of providing points of interest along the route and a link to the heritage aspects of the railway corridor. Similar examples of this approach can be found on other rail trails in Australia and overseas.

Adjacent structures will typically consist of shorter length bridging solutions, but may also allow for installation of a "causeway" crossing where practical and allowable. The crossing location would be formed adjacent to the existing alignment with ramped approaches connecting back to the formation. Causeway style crossings may present greater cost saving opportunities due to the relative simplistic construction but may require further specific approvals to be sought, particularly in constant flowing water scenarios.

Figure 12 Example of Pedestrian bridge[48]

For the purpose of providing an estimate of cost, a walkway structure has been nominated and calculated as nominally 30% saving on structure length has been applied. This provides an upper bound cost for the solution that may be optimised through further investigation of the application of causeway style crossings.

Category 5 – Route Bypass to Avoid Obstacle

Where an existing bridge structure is uneconomic to repair, difficult to access or unable to be replaced with an adjacent bypass structure, it may be possible to reroute the rail trail to connect with an existing roadway, path or track to bypass the obstacle.

In addition, where the rail corridor passes nearby with a key location, town or connection point, resolving bridging can be avoided by routing the trail through to the chosen location.

[48] Landmark Products Pedestrian Bridges, www.landmarkpro.com.au

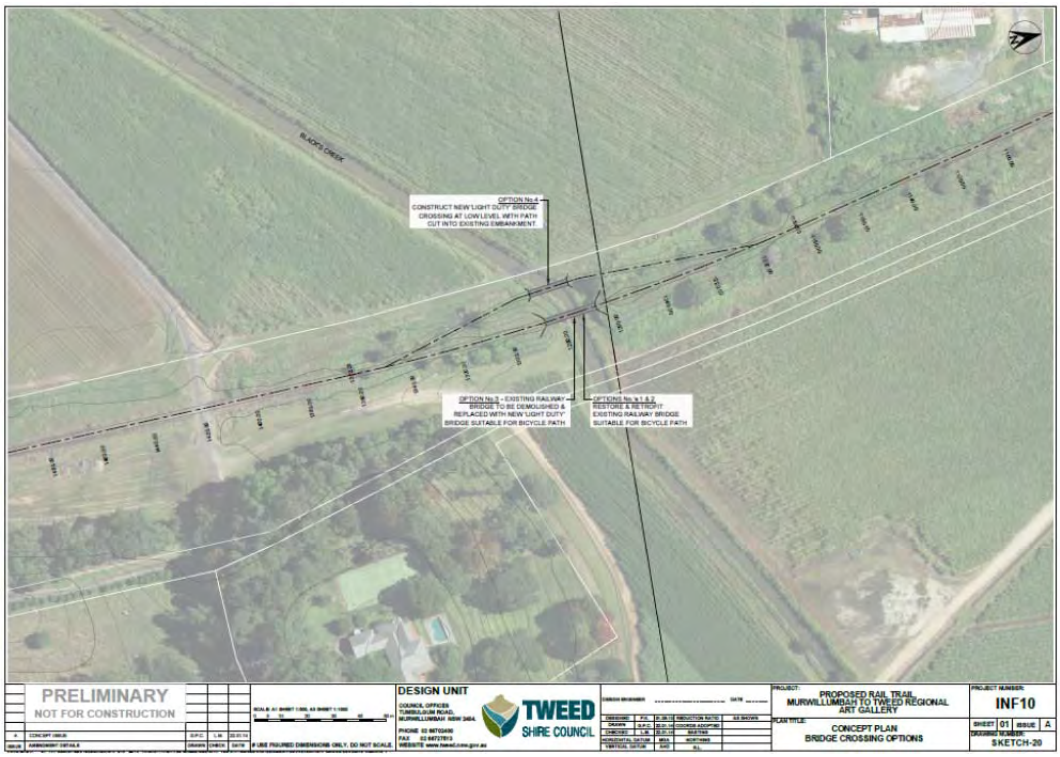


Figure 13 Proposed Bypass solution currently being investigated by Tweed Shire for the Proposed Rail Trail Murwillumbah to Tweed Regional Art Gallery, Tweed Shire Council[49]

Adopting route bypasses may also allow for economic staging of the rail trail by deferring expenditure where this option exists. Such an approach may allow for larger sections of the trail to be developed more quickly, while retaining a continuous link between adjacent sections. Adoption of this solution as a prioritisation approach to the staging and implementation strategy could directly reduce the burden for sourcing capital in the initial development phases of the trail itself.

6.2.8.2 Overbridges

Existing overbridges will be required to be maintained as currently mandated by the relevant structure owner.

Figure 14 Typical Overbridge, OB001, CH 814.840km

[49] Tweed Shire Council, 2013, *Draft Submission to Casino to Murwillumbah Rail Trail Study*, Tweed Shire Council, Murwillumbah.

Subject to a decision on the legislative requirements for a rail trail, there are opportunities that may be considered at bridge structure lifecycle renewal points as follows:

- Where the corridor is not subjected to providing passive provision for the future operation of trains, an existing overbridge structure may be able to be replaced with a structure that is not subject to the impact loading requirements for bridges that cross rail corridors.
- Similarly, an existing overbridge structure may be removed and replaced by the creation of a level crossing. This possible opportunity may present a saving to longer term maintenance for the existing asset owner, but will only be practical in situation where the topography allows and the usage and frequency of traffic is relatively low. For example, this may be appropriate at overbridge locations that provide connection to a property or are on a local road that does not have high traffic volumes

Consideration for the future requirements of new, or replacement overbridges may be necessary in terms of defining standard of construction and impact loadings to be considered. Refer to Section 8 relating to the governance and legislative requirements of the rail trail, including the development approval requirements for works adjacent to a rail trail that exists within a railway corridor.

6.2.9 Tunnels

There are nine tunnels along the route, seven of which are located between Byron Bay and Murwillumbah. The incorporation of the tunnel locations within a rail trail setting, present a fascinating opportunity to showcase late 1800's arch tunnel construction. The heritage value alone will ensure the tunnels become a focal point and a key attraction point along the route.

In considering the safety of users, there may be a requirement to install the following:

- Lighting and emergency lighting, particularly in the longer length tunnels
- Means of emergency communication

Figure 15 Naughtons Gap Tunnel, TU001 CH815.672km

Further investigation with emergency services representatives will be required to determine specific requirements at each tunnel location as the rail trail is developed.

Remedial works will be required at the tunnel locations to ensure the safety of those who use the trail. Works to the tunnels are expected to include the following:

- Inspection of all cracking and lining to ensure the integrity of the tunnel walls
- Rectification of drainage issues

It is recommended to place a higher specification surface treatment to avoid dust issues and air quality concerns.

During site inspections undertaken during the Condition Assessment[50], it was noted that vandalism and graffiti was prominent at tunnel locations that are readily accessible. Security will be a key issue during operation of the rail trail.

6.2.10 Signage and Wayfinding

Signage will form an important aspect of the overall rail trail experience, not only to serve as in indication of route and location, but also for the purpose of identifying key points of interest.

There is a wealth of information and operating examples that can be adapted for use, including the incorporation of historic or indigenous educational signage or interpretation. It is expected that the detail of a proposed signage strategy will be formed as the trail theme is defined. Early suggestions include:

- Historic, place based and educational signage, including railway heritage
- Indigenous heritage and locality information
- Interpretative displays of environmental features such as types of species and ecosystems.
- Trail distance and wayfinding, including directional signage for connecting trails and pathways, and direction to facilities

Figure 16 Existing Signage

[50] Transport for NSW, Arup: Stage 1. (2012). Casino to Murwillumbah Rail Line Study: Stage 1 Condition Assessment. Sydney: Arup.

7 Funding

7.1 Government

There is currently an approximate annual budget of $750,000.00 allocated for the purpose of maintaining the corridor. This is administered via the Country Rail Contracts division within Transport for NSW.

This funding is generally utilised for routine inspection and maintenance of bridges at road crossings, with some of the funds also utilised to control vegetation growth, particularly in areas that are accessible or interface with public areas.

This existing funding stream should be reallocated for ongoing maintenance of the rail trail in the formative years, say the first decade of operation, until such times as the rail trail derives sufficient income and funding revenue from other areas. Re-evaluation of the continuing funding should be undertaken at that time to ascertain the warrant for continued government sourced funding.

Further Government funding may be available as identified below:

- Federal Government funding through the **Department of Infrastructure and Regional Development** *Regional and Local Community Infrastructure Program* (allocation by Council) and *Community Infrastructure Grants Program.*
- State Government funding through **Destination NSW**. Destination NSW administers the majority of government grants and funds for tourism, which include the Regional Visitor Economy Fund, Regional Flagship Events Program and International Business Development Program:
    - The *Regional Visitor Economy Fund* is the new tourism funding scheme launched by the NSW Government in April 2013. The fund is available to regional tourism organisations, individual businesses and local governments. The total value of the Regional Visitor Economy Fund is $21.6 million over three years.
    - In 2013/14 the NSW Government will contribute more than $7.2 million dollars to the two funding streams: $3.7 million in regional tourism organisation quarantined funds and $3.5 million in the contestable pool of funds.
    - The *Regional Flagship Events Program* is available for events in regional New South Wales that have tourism potential and which may serve as flagships for the region in raising the profile and image of an area and boosting visitation.

7.2 Non-government funding

The formation of partnerships with business and industry is considered vital to the ongoing viability of the rail trail. Affiliation with, and support from business and industry can assist with credibility, future funding and in-kind support, and should be an important aspect of further investigation into a Business Case for the rail trail.

Potential partners in the Northern Rivers Region may include industry partners in the region with a community interest. These may include:

- Infrastructure partners – in particular the Northern Rivers Region has an emerging gas industry. Industry partners may see value in providing funding to demonstrate support for the community in which they are working. For example BHP Billiton contributed over $200,000 to the Victorian Coast to Crater Rail Trail in recognition of "the health benefits to the local community when they can walk or cycle away from traffic enjoying the natural setting their region has to offer"[51]
- Education partners – the Northern Rivers Region has well developed educational facilities with two campuses of Southern Cross University, nine TAFE campuses, the School of Audio Engineering (SAE) at Byron Bay and nearly thirty other cultural educational institutions.

Other partners may include businesses which will benefit from the development of the rail trail. In this case, it is often the case that a Trust is established to raise funds for the rail trail. This approach has been taken in the Hauraki and Otago Rail Trails and is detailed in the Case Studies at Section 7.3.

The Hauraki Rail Trail established a concession system whereby those that benefit commercially from the rail trail are required to meet the ongoing operating costs – through applying for a concession to operate on the Rail Trail. In the long term, it is hoped that the commission on sales and bookings will meet all costs associated with the operation, marketing and maintenance of the rail trail.

7.3 Case studies

The table below demonstrates successful funding models for previous rail trails. Such funding structures may be implemented for the Casino to Murwillumbah rail trail.

Table 15 Funding case studies

Case study	Management structure	Funding and governance
Murray to the Mountains Rail Trail	Managed by the Murray to Mountains Rail Trail Management Join Special Committee, as part of the Wangaratta Rural City Council.	Victorian Government funding including through the: Provincial Pathways Program (part of the Victorian Government Moving Forward Program) Regional Infrastructure Development Fund.
Otago Central Rail	Otago Central Rail Trail	In 1993, the Department of Conservation (DoC)

[51] Bicycle Victoria, Media Release: More than $200,000 donated to Coast to Crater Rail Trail, accessed March 2014.

Trail	Trust	conditionally bought the Clyde to Middlemarch rail corridor as a recreational reserve, clearing the way for the growth of the OCRT and leaving the Otago Central Rail Trail Charitable Trust to seek funding support. Further funds were raised through the Otago Central Rail Trail Trust.
Hauraki Rail Trail	Hauraki Rail Trail Charitable Trust	Funding for construction by Hauraki District Council, Thames-Coromandel District Council, Matamata-Piako District and Central Government. Funding for operating costs is based on a concession operating model whereby those that benefit commercially from the Rail Trail meet the ongoing operating costs.
The Great Victorian Rail Trail	Mitchell Shire Council, Murrindindi Shire and Mansfield Shire	Federal Government's Regional and Local Community Infrastructure Program ($13m), State Government ($1m) and Local Governments ($1m) including Mansfield, Murrindindi and Mitchell Shires.
Coast to Crater Rail Trail	Glenelg Shire Council	State Government ($250,000), Heritage Victoria ($150,000) with a BHP Billiton contributing $200,000 to the rail trail in recognition of the benefits to the community.
Brisbane Valley Rail Trail	Department of State Development, Infrastructure and Planning (DSDIP)	Funded by the Department of State Development, Infrastructure and Planning (DSDIP) and the Council of Mayors South East Queensland. The Department of State Development, Infrastructure and Planning (DSDIP) currently holds a sublease for the purpose of developing the rail trail in the corridor. The Esk and Nanango Shires also hold subleases over certain sections. There are a number of access permits held by adjoining landholders on a short-term basis.

As demonstrated in the Case Studies above, up-front costs for rail trails have been funded either through Government in full (including Federal, State and Local Governments) or through Government with a portion of Industry, as is the case with the Coast to Crater Rail Trail.

Operating costs can be managed through a Trust, in particular through the use of a concession operating model whereby those that benefit commercially from the rail trail (e.g. tour operators, sporting bodies, nearby schools) meet the ongoing operating costs.

8 Governance

8.1 Legislation

8.1.1 Corridor Ownership

The Casino to Murwillumbah branch line is owned by the NSW Government. The NSW Government has no plans to sell any of the corridor or the assets contained within and will seek to protect the status of the corridor for possible future use should the case for operating a rail service become available.

How the corridor could be established for use as a Rail Trail is discussed in more detail in the following section.

8.1.2 Current Status of Maintenance

The Casino to Murwillumbah line is currently maintained as part of the CRN Non-operational Network.

The maintenance contract is currently held by John Holland Rail who is responsible for maintaining the rail corridors comprising the CRN Non-operational Network to ensure that the local environment is preserved and that public safety is maintained. Maintenance of the CRN Non-operational Network generally includes the following [52]:

1. noxious weed and animal control;
2. other vegetation management where required;
3. maintenance of fencing;
4. safety-related inspections and works in relation to structures;
5. other works required to ensure that the CRN Non-operational Network does not create any undue or unfavourable local impacts; and
6. any other work required to rectify a safety hazard.

8.1.3 Corridor Preservation

The Casino to Murwillumbah branch line is currently owned by the NSW Government with Transport for NSW (TfNSW) as the lead agency that owns the non-metropolitan rail networks, comprising:

[52] Country Regional Network – Operations and Maintenance Deed – Exhibit A - Scope of Works and Technical Criteria V1.0.

- The Country Regional Network (CRN) is owned by TfNSW and managed by a contracted rail infrastructure manager, John Holland Rail (JHR)
- The Leased Network (NSW Interstate and Hunter Valley Networks), owned by TfNSW and leased to and managed by the Australian Rail Track Corporation (ARTC).

The Casino to Murwillumbah line is currently designated as CRN Non Operational network.

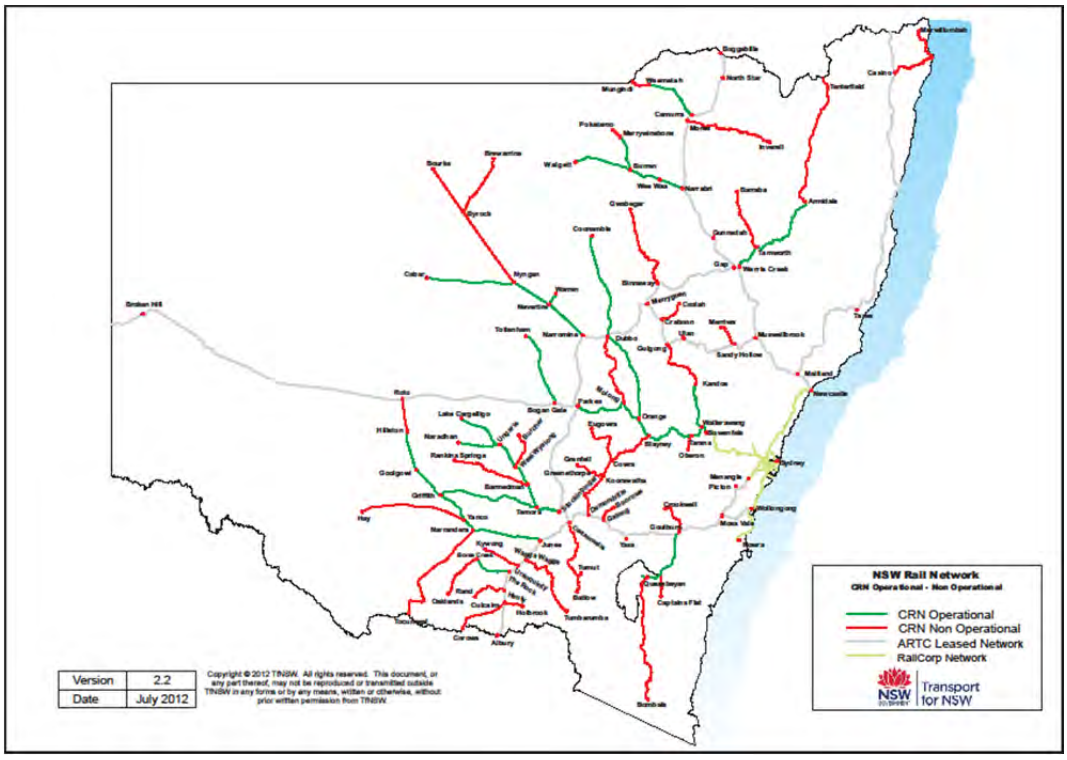


Figure 17 CRN Route Map [53]

As noted in Section 2.26 of the Legislative Council General Purpose Standing Committee No 4, Report 10, dated November 2004, into the Closure of the Casino to Murwillumbah Rail Service, the rail corridor is governed under section 99A of the Transport Administration Act 1988, and as such the Casino to Murwillumbah railway line requires a specific act of Parliament to alter the current status.

In order to allow the corridor to be utilised for the purpose of creating a rail trail there will be a necessary change to the status required under the Transport Administration Act.

8.2 Planning Implications

By conversion to a trail the ability to reinstate an operating train service is removed and any requirement to reinstate the railway will incur costs associated with reconversion back to a railway. This is in addition to the costs already identified in the Casino to Murwillumbah Transport Study relating to the repairs already needed to safely operate.

[53] TfNSW Website http://www.transport.nsw.gov.au/sites/default/files/b2b/resources/crn-op-non-op-map-july12.pdf

The existing corridor is currently protected for use as a railway and as such, there are existing planning powers in place to ensure future developments do not impact on the ability to run trains. Once the status of the corridor has been changed to closed, it will be appropriate to consider the planning implications and the options available for retaining passive provision for a future use for rail services.

8.2.1 Planning Approvals for the Rail Trail

The planning approvals pathway for the construction of the rail trial will require confirmation; however, it is likely that an Environmental Impact Assessment would need to be undertaken. The Local Council LEP's may also need to be amended for the Land Use Zoning of the rail corridor.

It is anticipated that construction of the rail trail will require planning approval, including seeking approval from TfNSW as the determining authority. Additionally, the land use changes from rail to cycle/pathway will require amendments to the LEPs.

8.2.2 Planning Approvals for Adjacent Developments

An alteration in the Legislation to allow the conversion to a rail trail will require a decision to be made on the planning approvals requirements and planning powers with respect to developments adjacent to the rail corridor.

Local government currently administer the planning approval process for developments adjacent to the railway and the changes to the legislation will result in possible changes being required made to the local government planning approval process. The need to preserve the corridor for the future running of trains presents a key challenge to implementing the rail trail that must be addressed before any conversion works can commence.

In considering the planning requirements, there are three alternative options available for consideration of adjacent developments:

Option 1 – Do nothing - Retain "passive provision" for future operation of trains

This option will specifically retain the same planning constraints and policies that exist today, with the only change being a Legislative amendment to allow the alteration of the corridor for the purposes of conversion to a rail trail. This means that all existing planning constraints and approval processes that are administered by local council will be retained. Similarly all third party works across the railway corridor will remain subject to existing requirements. For example, bridge loading, clearance and impact criteria will remain in force, despite trains not running.

Continuing to adhere to existing requirements would impact on the economic viability of a rail trail by increasing costs associated with construction and conversion, but will also continue to affect the cost of adjacent developments by building in costs that could be removed given that trains will not likely be running in the near future.

Option 2 - Retain "passive provision" for future operation of trains in specific locations

This option is similar to option 1, but would only retain the specific planning constraints in discreet locations, such as the Byron Bay town centre and the immediate locality.

Enacting this option would take into account the proposed rail shuttle service that is currently proposed for operation in Byron Bay and would allow for the development of future light rail schemes within the Byron Bay town centre should they propose to utilise sections of the corridor.

A detailed assessment would need to be undertaken to ensure key locations were clearly identified. Possible locations may include sections of the corridor that traverse through townships or cross existing (or planned) road corridors.

Option 3 – Preservation of the corridor only

This option would allow the specific planning requirements for works adjacent to the railway corridor to be removed, meaning that any future developments over or adjacent to the corridor would only become subject to normal local, state and federal planning approvals requirements. This option will erode the passive provision for the running of trains in future; meaning that if trains are returned at a later stage there may be a need for significant upgrade to any works completed adjacent or over the corridor to ensure the safety as an operational railway

The removal of passive protection could provide opportunities to encourage further investment and development adjacent to the route. The impact of the removal of passive protection is beyond the scope of this study.

8.2.3 The way forward

The establishment of a rail trail will require a decision to be made on which of the above mentioned options is most appropriate for the future needs of the corridor, that may also include any future connection with South East Queensland.

It was noted in the Casino to Murwillumbah Transport Study, that further work be completed to determine whether a rail corridor to Gold Coast via Tweed Heads should be identified for future land use and transport planning purposes. It should also be noted that parts of the existing rail corridor between Byron Bay and Murwillumbah were identified for possible reuse within the Engineering Feasibility Assessment of Heavy Rail Corridors to South East Queensland[54].

Without clarity on the future connection requirements with South East Queensland, it may be sensible to retain full passive provision across the entire route.

8.3 Governance and Administration

The following section outlines some possible governance and administration arrangements that could be employed for the process of conversion and longer term operation and maintenance.

[54] Transport for NSW, Arup: Stage 4. (2012). Corridor options – Future Rail Connection to South East Queensland. Sydney: Arup.

8.3.1 Transport for NSW

Transport for NSW via the CRN could be tasked with being the administrator of the rail trail. While this may present an opportunity during the formative phase for the trail itself, the use of such resources administering the rail trail longer term is not considered appropriate, unless there are specific requirements relating to the preservation of the corridor for the future use as an operating railway.

8.3.2 Other Government Agencies

There are several rail trails that have been developed in other states by government agencies.

In Victoria, the Department of Sustainability and Environment (DSE) has the primary responsibility for managing the crown land that the Rail Trails are on, with locally based committees and Councils responsible for implementing bicycle facilities on Rail Trails.

In Queensland, the Brisbane Valley Rail Trail is a comparable example that is under the responsibility of the Department of State Development, Infrastructure and Planning. In this example, the government agency continues to support a trail ranger to undertake management and maintenance of the trail until long term sustainable management arrangement can be put in place.

Management and administration of the rail trail could be vested within a similar agency of the NSW Government. This may present certain opportunities for efficiency should other rail trail proposals for existing disused or abandoned railways also gain approval. With the recent establishment of Rail Trails for NSW, there is now a forum specifically supporting the establishment of rail trails in NSW.

8.3.3 Coalition of Regional Councils

The Northern Rivers local government areas have a strong history of working together to achieve beneficial outcomes for the region. The Northern Rivers Regional Organisation of Councils (NOROC), represents the Ballina, Byron, , Kyogle, Lismore, Richmond Valley and Tweed local government areas.

Figure 18 Northern Rivers Regional Organisation of Councils [55]

A NOROC endorsed management body for the purpose of administering the rail trail could be established, similar to existing operations such as the Richmond-Tweed Regional Library, which is run on behalf of Lismore City, Ballina, Byron and Tweed Council's. This concept embraces the idea of "pooling" resources to maximize efficiency, ensure consistency and minimize waste in terms of duplication of activities.

8.3.4 Rail Trail Entity

A dedicated entity could be established specifically for the purpose of administering the trail that takes an exclusive lease or licence for the corridor which would fund, manage and maintain the rail trail. This may include Federal or State Government funding, and would place responsibility for the ongoing development and operation of the trail with the Rail Trail Entity.

8.3.4.1 Northern Rivers Rail Trail Inc.

In May 2013, the not for profit community group, Northern Rivers Rail Trail Association Inc, was formed by local philanthropists known as the Sourdough Group, community volunteers, local government councillors and staff and leaders of the tourist industry. The group came together with a common vision to preserve this very valuable community asset, the 130km of disused rail corridor between Murwillumbah and Casino and converting it to a modern cycle and walking trail.

Four of the six local authorities in the Northern Rivers Region currently support it and the other two are in the process of considering its benefits to their communities.

This working model could be empowered by the State Government to administer the Rail Trail, balanced with executive representation across Local, State and Federal agencies to ensure equitable outcomes and robust management is applied.

[55] Source: NOROC Website

8.4 Operational Requirements

The day to day operation of a rail trail will require a coordinator to be appointed. The rail trail co-ordinator will be responsible for all operational and maintenance aspects relating to the rail trail. There are examples where this hasn't occurred and this has impacted on the quality and economic benefits of the trail.

Further investigation and planning for the operation of the rail trail should be undertaken as part of establishing the administration responsibilities.

8.4.1 Promotion and Marketing

With the recent formation of Rail Trails for NSW and existing Rail Trail promoters, such as Rail Trails Australia, the Casino to Murwillumbah Rail Trail can take advantage of these existing platforms for generating awareness within the community.

With additional support from a number of NSW Government MP's and some of the LGA's in the Northern Rivers the promotion of the rail trail is unlikely to require specific advertising and can rely on Government linked tourism bodies to undertake the promotional aspects alongside formal announcements from within Government.

The marketing of the rail trail is of great importance for it to reach its potential. Other rail trails such as Queenstown and Murray to the Mountains have effective websites and tourism campaigns. Package deals are offered including travel and accommodation along the route and this provides an additional income stream that offsets the cost of operating and maintain the trail itself.

9 Conclusions & Recommendations

The Northern Rivers region is a key tourism destination, with the second highest level of international tourists in NSW. The region contains spectacular national parks such as Mount Warning, as well as long stretches of unspoilt coastlines and significant World Heritage rainforest reserves. The development of a rail trail along the Casino-Murwillumbah rail corridor presents an opportunity to leverage off the high visitation levels and further develop the region as a tourist destination as well as providing a facility for those residing in the region.

Key principles to guide the successful implementation of the rail trail include:

- Integration with surrounding land uses particularly in town centres
- Development of strong and legible connections to the rail trail within towns to service the local community
- Providing strong transport connections at either end and at points along the route. This includes connections to rail at Casino and particularly to the Gold Coast at Murwillumbah
- Developing a marketing strategy that integrates with tourist attractions along the route
- Development of a safety and emergency management plan in conjunction with key stakeholders. This should include the assessment of mobile phone coverage requirements
- Development of a signage and wayfinding strategy
- Strong co-ordination and governance between stakeholders and adjacent landholders.

Experience from other rail trails in Australia and New Zealand, together with the high visitation levels that the region currently experiences and the attractions along the rail corridor, suggest a rail trail would be highly utilised resulting in visitation levels between 25,900 and 97,100 per annum, with our base case visitation estimate of around 88,300 per annum.

The cost of implementing a rail trail along the corridor is influenced by the current condition of the rail asset and safety requirements. There are over 160 bridges along the entire route which would incur some maintenance costs if the rail trail were not developed. The preliminary capital cost estimate for the development of the rail trail is $75.5 million.

The results of the economic analysis indicates:

- The Rail Trail would be financially viable at the Base Scenario of 88,320 visitors, with an expected Net Present Value (NPV) of $121.8m and Benefit Cost Ration (BCR) of 2.54. Under this scenario, the project payback period

would be approximately four to five years. This analysis conservatively assumes day visitors only.

- The Rail Trail will break even (i.e. a BCR of 1.0) assuming visitors of 34,802 p.a. As such, visitors in excess of 34,802 p.a. indicate a positive return for the project. All case studies examined, apart from one, have higher visitations than the breakeven scenario.

If the rail trail was to be developed in stages the priority would be to develop the sections around Byron to Bangalow and to Mullumbimby first, given the high visitation to the area. This could provide opportunity to create a loop using existing roads to connect Mullumbimby and Bangalow. However there are opportunities to develop other sections of the route early. It is noted that Tweed Shire Council are developing their own proposal for the section between the Murwillumbah Station and the Gallery.

Consultation with communities and government authorities during this study demonstrated there is support for the use of the corridor as a rail trail. Such support has been an important driver for the successful development of rail trails elsewhere. The potential to involve local communities and business is high and there is some potential to offset some of the operating costs through contribution from local businesses and volunteer work.

Generally upfront funding for rail trails are provided by Government. The approach to managing ongoing operational costs is a key issue where a coordinated approach is required. This can typically be achieved through a Trust arrangement, particularly using a concession operating model whereby those that benefit commercially from the rail trail such as tour operators, sporting bodies and the like meet ongoing operating costs.

Subject to funding, the scoping assessment has demonstrated potentially strong benefits for the community and that the project is likely to be viable.

PLANIT
CONSULTING

Appendix F. **SES Consultation**

Suite 9A, 80-84 Ballina Street Lennox Head NSW 2478
PO Box 161, Lennox Head NSW 2478
(02) 6687 4666
info@planitconsulting.com.au
www.planitconsulting.com.au

Our Reference: J6805
4 August 2022

State Emergency Services (SES)
Via Email: nhz.admin@ses.nsw.gov.au

ISEPP Consultation
RVC – Northern Rivers Rail Trail

Dear Sir/Madam,

RVC (RVC) proposes to the construction and operation of a 13.4km stretch of pedestrian and cycling 'rail trail' including associated rail infrastructure facilities, parking, amenities and the like within the RVC area between the Old Casino Station (south) and Bentley (north). Detail designed plans are currently being prepared and RVC are preparing an assessment of environmental impacts of the rail trail based on a nominated Project Boundary alignment provided at Appendix A Development consent is not required for the proposal in accordance with Clause 2.92, Division 15 (Railways) of State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&ISEPP). The proposal is consistent with rail infrastructure facilities as defined under Clause 2.91 of T&ISEPP. The proposal becomes an 'activity' for the purposes of Part 5 of the Environmental Planning and Assessment Act 1979.

The proposal includes railways works on flood liable land. Consultation is required with SES in accordance with clause 2.13 of I & T SEPP.

Planit Consulting have been engaged by RVC to prepare a Review of Environmental Factors (REF) for the proposed rail works. Please provide any responses you may have regarding the proposal within 21 days of the date of this letter.

Should you have any queries in relation to the proposal, please do not hesitate to contact me during normal business hours on 0481 158 085 or email to sean@planitconsulting.com.au.

Yours sincerely,

Sean Cochran
Planit Consulting Pty Ltd

PLANIT
CONSULTING

Appendix G. **NRRT Consultation Report**

Community Consultation Report

Northern Rivers Rail Trail

Stage 2: Casino to Bentley Rail Section

Disclaimer

Contact

For more information about this report contact:

Contact: Muller Enterprise
Postal: PO Box 1663 Ballina NSW 2478
Street: Suite 4, 48 Tamar Street Ballina NSW 2478
Telephone: +61 2 6681 4772
Email: info@mullerenterprise.com.au

Acknowledgement

Muller Enterprise wishes to express its appreciation to the people who contributed to the community consultation process that is described in this report. Without these people's generosity and candour, the material below would not be as insightful or informative.

Muller Enterprise acknowledges the Traditional Owners of the land on which we operate, and we honour and celebrate the cultural diversity and heritage of all Aboriginal Nations and their people.

About

Muller Enterprise was established in 2006, and in the period since has become a trusted, independent advisor to government, corporate and non-government organisations on:

- Public Policy Evaluation & Design
- Cost Benefit, Economic & Social Impact Assessments
- Strategy
- Stakeholder Management
- Marketing and Communications
- Information Management & Technology

Document Information:

Prepared By:	Description:	Version:
Andy Vidler - Muller Enterprise	Initial draft	V0.1 (19 February 2020)
Andy Vidler - Muller Enterprise	Data analysis updates	V0.2 (20 February 2020)
Andy Vidler - Muller Enterprise	Written submissions updates	V0.3 (21 February 2020)
Andy Vidler - Muller Enterprise	Final version	vFINAL (28 Feb 2020)

Table of Contents

Executive Summary

The NSW Department of Planning, Industry and Environment sought to consult with the community on the potential closure of the currently disused Casino to Bentley rail corridor in the Northern Rivers area of NSW.

The consultation involved an in-person public consultation session, held in Casino on 17th February 2020, and an invitation for public feedback was issued seeking email submissions for those unable to attend the sessions in person.

The aim of the community consultation was to:

- inform the NSW Government on whether there is strong community support for the potential closure of a section of the rail line to progress the Casino to Bentley Rail Trail (Northern Rivers Rail Trail, or NRRT Stage 2) project, and the entire rail line to enable the development of other rail trail projects in this region, and
- share information and gain understanding of local perspectives, opportunities and concerns in relation to the proposed rail trail.

The community consultation process aimed to balance the provision of information to the community with an opportunity for the community to voice opinion, raise their concerns and ask questions.

A total of 30 people attended the consultation session. Attendees known to own land directly adjacent to the proposed rail trail numbered 12 people (representing 40 % of attendees).

Of the questions raised a large proportion (84%) were focussed on specific aspects of the NRRT Stage 2 project. As specifics, of the proposed project were not available, in many cases definitive answers could not be provided and instead answers reflected the NSW Government's general position or approach. Further detailed engagement with the community in relation to specific characteristics and undertakings for each project will therefore be necessary.

Several key subjects emerged from the consultation that could, with further detailed analysis and consultation, assist the community to understand the potential risks and benefits of the rail trail proposal.

Broadly they are:

- Establishment of a detailed plan for the proposed project, dealing with the wide range of subjects raised by the community, and especially adjacent or neighbouring landholders. These included:
    - biosecurity management practices,
    - the implications for adjacent landholders in relation to access and security
    - ongoing trail maintenance costs and how these can be offset by the economic opportunity the rail is intended to bring

A total of three (3) written submissions were received on the subject of the Casino to Bentley section of the NRRT Stage 2 Rail Trail. All were from local land holders. One of these was conditionally supportive of the rail trail, with that support premised on appropriate management and access arrangements being put in place. The other two written submissions outlined a series of issues and concerns about the rail trail which were deemed as objections to it proceeding.

Introduction

The Northern Rivers Region of NSW has a disused railway corridor running from Casino to Murwillumbah. The corridor has not been used for regular freight or passenger services for many years[1].

In other jurisdictions around Australia and internationally, such disused rail corridors have been repurposed as 'rail trails' or similar purposes – essentially adjusting the use of rail corridors for non-rail purposes, usually as a corridor for recreational uses, most typically by people wishing to walk or ride bicycles.

A proposal has been put forward to the NSW Government by the Richmond Valley Council to repurpose a 13.5km section of the southern end of the rail corridor as a rail trail between Casino and Bentley. This southern proposal joins another proposal seeking to establish a rail trail at the northern end of the Northern Rivers rail corridor. That proposal from Murwillumbah to Crabbes Creek – known as 'Northern Rivers Rail Trail Stage 1' is well advanced having received funding from both Commonwealth and NSW Governments.

As with all current and disused Transport for NSW rail corridors, the repurposing of the Casino to Bentley rail corridor would require a legislative amendment to the *Transport Administration Act 1988.* Before any legislative amendment is considered by the Parliament, the NSW Government's Department of Planning, Industry and Environment has undertaken a process of community consultation in the Northern Rivers region on the subject of the potential closure of the rail corridor.

As part of that consultation, a session was held in the region to provide the community with information about what might be involved in such a repurposing of the rail corridor, to gather direct input from the community and to capture community perspectives on the subject. The session was held on Monday the 17th February 2020 at the Casino Community and Cultural Centre.

In addition to the session, community members, particularly those unable to attend in person, were invited to provide written feedback to the NSW Department of Planning, Industry and Environment.

This report outlines the nature and outcomes of the consultation, and summarises the perspectives captured through the consultation process.

[1] A solar-powered train – operated by not-for-profit and heritage-accredited 'Byron Bay Railroad Company' - has run since late 2017, travelling for 3km between two stops around Byron Bay. The licence granted by Transport for NSW to use that portion of the track is non-exclusive, and it is reported aspects of the design for this section of the track can accommodate a rail trail alongside the train tracks.

Purpose

The community consultation session aimed to:

- Gauge community sentiment on the subject of formally closing the rail corridor
- Explain the process being undertaken by the NSW Government in relation to a third-party rail trail proposal, and
- Respond to questions from the community and stakeholders on the subject.

Facilitator assessment of sentiment

It is clear from subjects raised by people at the session and the collated material set out in this report that whilst the local community broadly appears to support the idea of a rail trail, there are a range of concerns held by those people who live and work on properties adjacent to the corridor.

The broader community support is premised on their beliefs that the rail trail will bring a range of both economic and non-economic benefits to the area.

The economic benefits they anticipate are centred on increased visitors to the area, as well as the associated opportunities for local businesses that will bring.

Non-economic benefits that are anticipated include increased community health from use of the proposed facility, improved status of the area as a destination with accessible natural/environmental charms, as well as being positively disposed to the idea of preserving the corridor for the public, improved emergency services and environmental protection reasons.

The broad community and the adjacent landholders both expressed concerns about the ongoing management of the trail once it is operational, particularly that the cost of maintenance might lead to an additional impost on ratepayers.

Many members of the community from properties neighbouring the existing rail corridor were not supportive of the rail trail. Their position is based on a range of concerns, including:

- The rail trail acting as a new source of biosecurity risk,
- Physical access risks – referring to both access to the trail itself and also unauthorised entry onto adjoining properties,
- Landholder amenity impacts, including anticipated increases in anti-social behaviour and littering,
- Council's capacity to manage the ongoing maintenance cost burden that may arise from a rail trail facility,
- Adjustments and/or cancellation of existing farm access arrangements in the rail corridor
- Emergency services (health and fire) access and incident response arrangements.

It should be noted that there were also adjacent property holders that are supportive of the rail trail as long as a range of considerations were adequately addressed.

Community Consultation Process

The community consultation agenda was divided into two parts. The initial part of the process was focussed on the provision of information and providing an opportunity for attendees to ask questions about specific aspects of the project and related matters. It included:

- NSW Department of Planning, Industry and Environment presentation on the NSW Government position on rails trails broadly, as well as the status of the process relating this to specific rail trail proposal, and
- Questions from the floor put to the presenter in the public forum.

The second part of the agenda was centred on capturing community perspectives. It involved an open and participatory process including the following steps:

- Attendees were invited to individually document their views on the rail trail and provide some insight into the reasoning behind their views.
- The views of attendees were grouped into a number of broad themes and attendees were invited to validate the themes as being an accurate reflection of the views expressed.
- Attendees were then each invited to indicate which of the themes they personally considered their top priorities.

Consultation Attendance

The Community Consultation Session was held in the Casino Community and Cultural Centre on 17th February 2020.

The NSW Department of Planning, Industry and Environment (DPIE) facilitated the event and an invitation was shared with NRRT Inc and Council to share with the community and other interested parties to attend.

People unable to attend the session in person were able to submit their views via email.

In total 59 invitations were issued, and the Department received 24 acceptances. On the day, there were a total of 30 attendees.

Of the 30 workshop attendees, 12 were landholders.

Organisations with representatives in attendance included:

- Casino Golf Club
- Casino Returned Servicemen's Memorial Club
- Destination North Coast
- Northern Rivers Rail Trail Inc.
- Rous County Council
- Richmond Valley Council

Questions to the presenter

A total of 20 questions were asked to the presenter during the Community Consultation session. The full list can be found in Table 1.

In general, attendees wanted to know about:

- The operations and management of the Rail Trail (8).
- Decision-making processes and timing (7)
- Access and safety arrangements (4)
- Corridor preservation (1)

Table 1. Questions asked of the presenter

Question	Rail trails in general	NRRT Stage 2 rail trail project specific
Is there a scheduled date for the Transport Management Act (1988) changes to go to Parliament?		✓
What is the status of the existing leases and licences when the land is transferred to Crown Lands?		✓
Will existing fencing across this rail corridor need to be removed?	✓	
Who will need to pay for the restoration of existing fences that will remain in place?	✓	
How will the Council be able to pay for the on-going maintenance costs of the rail trail?	✓	
Will the cost of maintenance fall to the Council and therefore onto the ratepayers?	✓	
If the cost of operating the rail trail cannot be maintained by the Council, will it be allowed to fall into disrepair?	✓	
Has there been any progress with the other councils, for example Lismore Shire Council and Byron Shire Council, linking the middle section of the rail trail between Crabbes Creek in the north and Bentley in the south ?	✓	
What will happen to the Byron solar train if the track rail corridor is closed?	✓	
Is the plan to have a rail trail alongside the 3km section that currently carries the Byron solar train?	✓	
Can the land be sold if it becomes managed by Crown land?		✓
Can the revenue from existing leases that is currently paid to Transport for New South Wales be used as revenue to aid the cost of maintaining the rail trail?	✓	
On reversion to Crown land will it be unencumbered I see a 99-year lease possible or community use i.e. maximum 21-year lease or another Crown land type?	✓	
What surface will the Trail be made of?	✓	
There is existing erosion at the culverts - will this be fixed?	✓	
Fences, who pays to fix them?	✓	
Who collects the rubbish?	✓	
If the Rail Trail extends across the four LGAs what structure or governance will operate and manage the Trail as one overall entity, for example, the Joint Organisation of Councils?	✓	
Is there a website URL for an explanation of how the keeping public ownership of the corridor will work?		✓
Are people allowed to ride horses on the rail trail?	✓	

Community perspectives

Attendees were asked to write down any points they might like to make about the rail trail. They were then asked to place each point on one of three boards labelled 'Support', 'Object' or 'Neutral' to reflect the general sentiment of the point in relation to the rail trail. Table 2, below, outlines all of the attendee points made.

Table 2. Casino Community perspectives

Don't Support	Neutral	Support
Count = 19	Count = 10	Count = 33
Note: The wording provided in the table below has been faithfully transcribed from each of the written comment cards provided by the attendees, however in some cases, where short-hand, abbreviations, grammar and/or handwriting made it difficult to read, some edits have been made to aid readability.		
How can Council ensure that this will not impact on ratepayers or be subsidised by an increase in rates and the current increase in rates is yet to see an improvement in roads in sections of the Richmond Valley EG Bungawalbin-Whiporie Road Lagoon Road, Stones Road.	We've heard about trespassers using the tunnel for illegal drug use etc now what strategies are plans will be in place to eradicate this type of behaviour	Need it ASAP - strongly support this Project, great for health & tourism, also connecting places and provides a safe place to cycling/walking. Cycling is a growing industry.
Fencing must be wildlife-friendly	Don't make it too safe we need adventure and kids to test themselves	The rail trail will be possibly the Northern Rivers greatest assets second to the coast as a tourism feature. The picturesque diversity is immense.
When will timber bridges be upgraded and who pays ?	How will future maintenance costs be managed without burdening community in particular the landowners who are adjoining the proposed rail trail	our roads have no verge so it's dangerous for cyclists, but they have nowhere to go, nowhere to ride your horse either and nowhere to take dogs for long walks
The crossing of the rail-trail for stock and machinery purposes must be preserved	Agreements between the Walkers/riders/users are needed, so that they do this knowing there are risks and they will not sue the Council.	Support the rail trail for horses cyclists and by allowing dogs will increase the use result responsible people will be able to bring their dogs for walks - currently nothing like this.
Council must have a mechanism to respond to emergencies that occur on the Trail, it should not be the responsibility of the landowners.	Will access to the Trail be at all public roads- there may be parking issues	Great for kids to cycle off the roads
There are issues around road-crossing safety at points along the trail.	The rail trail will provide remote first aid opportunities for training providers across the region	Provides a wildlife corridor
Biosecurity is a big issue.	What security strategies and support are or will be available for landowners ?	Provides a firebreak

Don't Support	Neutral	Support
At the Bentley end of the Trail there is no parking or facilities, will there be water provided ?	Will there be rest areas and toilet facility facilities ? Where will they be located ? How frequently will they be placed along the Trail ?	Good for local businesses
There is an issue around maintenance of the Trail	Could young stock (cattle/sheep/goats) be used to maintain the grass along the trail ?	Free access for schools - there are 22 schools between Casino and Murwillumbah that are within 1 km of the track, kids can ride to school, they'll get healthier and school sport will be an option and it's a safe family environment
The weed management is already a problem with John Holland on the disused train line - with a rail trail it will be worse.		Locals will be able to safely exercise and recreationally walk and cycle from Casino to Bentley and back - it will be a great health and recreation facility for the community.
Dumping of rubbish will be a problem		Emerging business proposals - bicycle company has detailed business case and a Bentley farmer has a farm stay idea
The rail trail needs to be accessible to everyone, not just cyclists and walkers - make it wheelchair friendly.		An estimated 52,000 visitors a year - the area can't pass this up
There are micro-bats that live in the tunnels along the track, they have not been disturbed without the trains - what will be the environmental impact to those bats when they are opened ?		Tourism dollars will be flowing once it is opened - Airbnb's - Transport to and from - Kids selling ice blocks on the weekend - Lunch packages - Build it and they will come!
Fencing issues are problem for landowners.		Health benefits - promote an active industry; school excursions/tours. Tourism: promote as a health tourism option; benefits from the Trail would be numerous
Lismore has people sleeping under bridges, Casino will have a rail trail - the rail trail could become a halfway house for people camping/living on the Rail Trail.		Family health options - Pleasant 28 km ride return about 2 hours for families
Trespassing will be a problem. People using the rail trail might think they are being 'helpful' if they see a cow calving, but if they get involved, they will not be helping.		Mental health: create walking tours for people with different health issues
		Key is to have access and ability to leave for the public entity to raise money for upkeep
		The rail trail will open up more of the region's history for the public for example Bridges tunnels and landforms.

Don't Support	Neutral	Support
		Casino needs a safe location for families to ride bikes which is currently not available.
		It will provide a safe facility for active use = good for health
		If it brings more business into the community, I am all for it.
		The RFS is supportive - it gives access to land not easily accessed by road.
		Currently there is no way to do weed control along the corridor as we can't access it by opening up the line, weed biosecurity can again be controlled.
		Tourism benefits to the local community
		If the corridor is not used it will fall into bits and likely to be sold off to adjacent landowners like the Booyong to Ballina line a rail trail is supported as it will use the corridor and prevent a sell-off.
		Casino is the ultimate start off for the rail trail - Sydney to Casino & Brisbane to Casino will bring increased overnight stays and tourism in Casino.
		We're super excited about the energy and buzz it might bring to town and the surrounding area opportunities for out of town cafe experiences creative sculpture parks and potentially glamping sites.
		Connecting outdoor activities for example the Kyogle mountain bike track, the region's National Parks - people can make it part of their additional tourism plans
		A rail trail actually increases property values.
		Opportunity to build nature corridors for wildlife - also creates opportunities for education, and an opportunity to participate in plantings.
		Opportunity for additional farm incomes - for example, private mountain bike tracks off trail, cafes, farm tours.
		The rail trail will provide access for the fire brigade and SES vehicles
		Use it or lose it.

In total, 62 points were made by the attendees in this exercise.

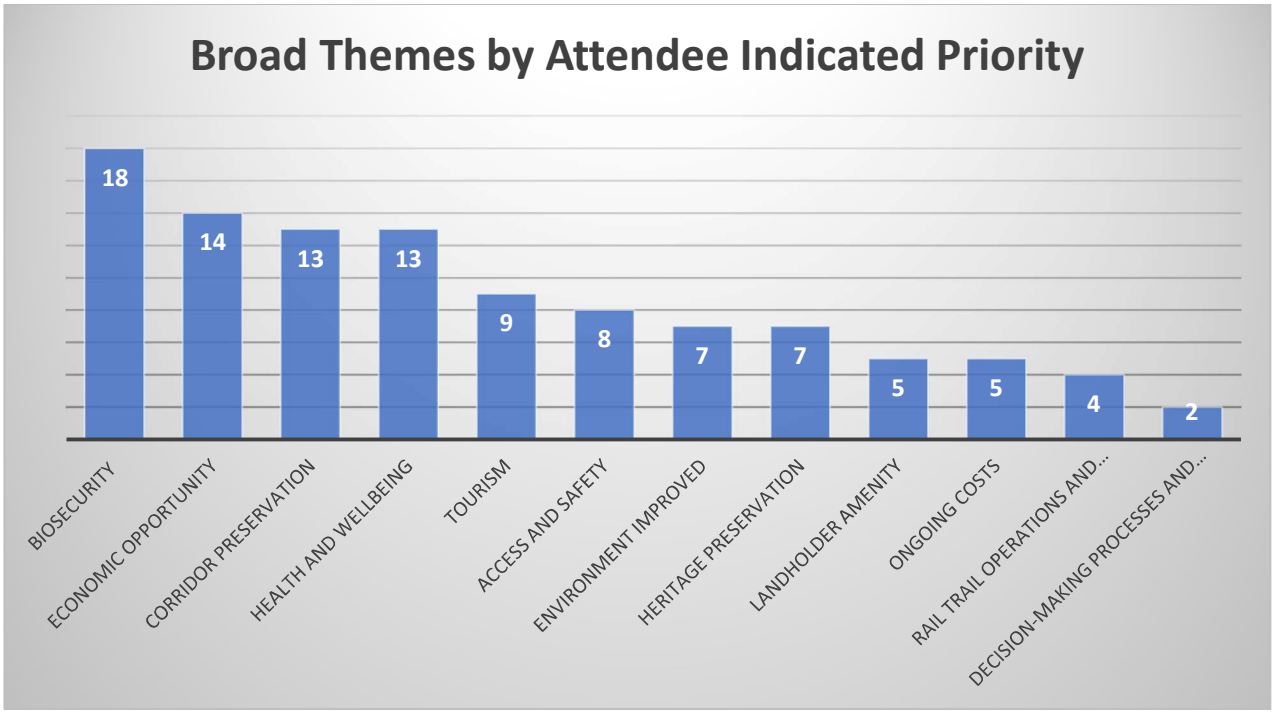
After attendees were asked to provide written points under the headings of 'Support', 'Do Not Support' or 'Neutral' as shown above, it was clear that a range of common themes were emerging.

Those themes were identified openly in the forum by the facilitation team with attendees' participation and validation in real time. Points of a similar theme were clustered together, which resulted in 12 broad themes. These were:

• Economic opportunity • Health and Wellbeing • Access and Safety • Biosecurity • Corridor preservation	• Landholder Amenity • Environment improved • Heritage preservation • Ongoing costs	• Tourism • Rail trail operations and management • Decision-making and timing

Each attendee was provided with 5 sticker dots with which they were asked to indicate which of the 12 themes were of the highest priority to them.

The outcomes of this exercise is shown in the graph below:

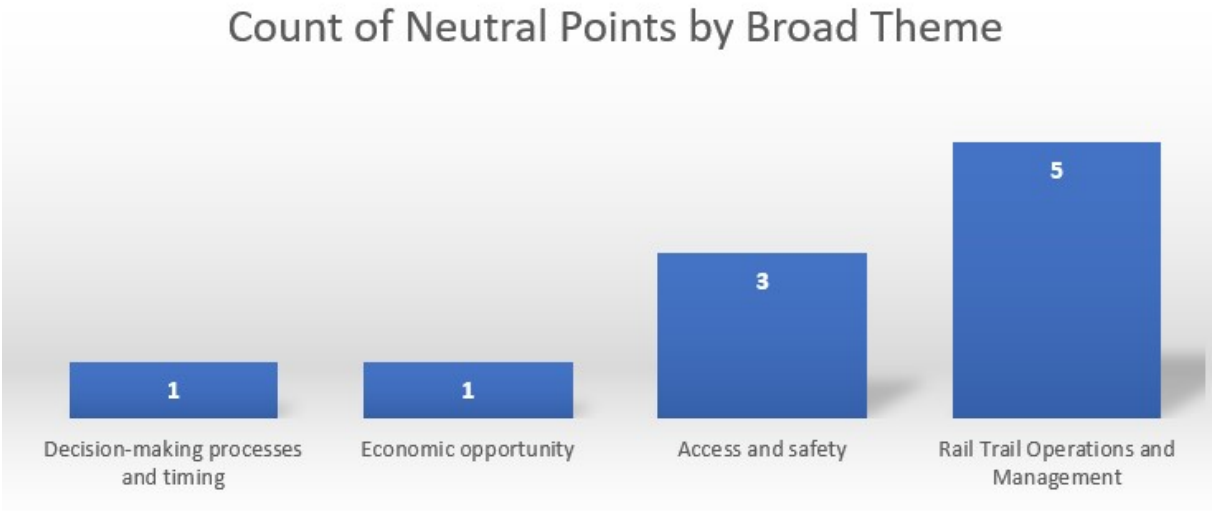


Data Analysis

The broad themes were derived from the initial exercise asking attendees to make their points in the categories of 'Support', 'Neutral' or 'Object'. When these categories are applied the themes emerging in each are shown in graph form below:

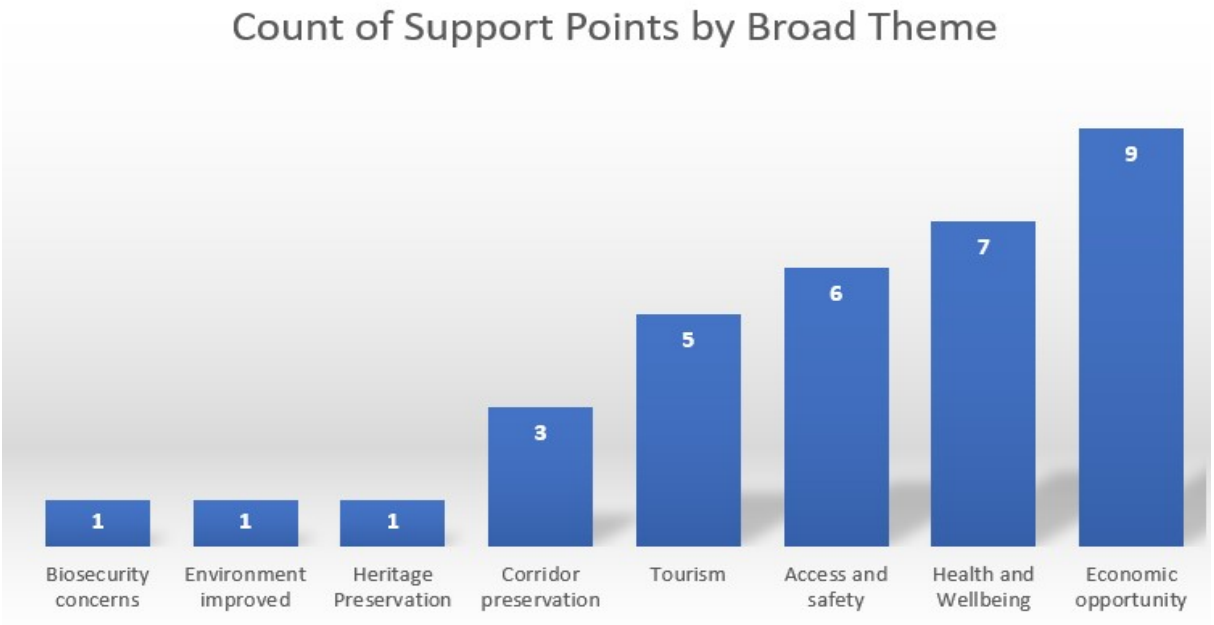
Neutral

The table below shows each of the perspectives associated with a 'Neutral' sentiment towards the rail trail, and each bar in the chart represents the level of priority 'points' attendees allocated to these.



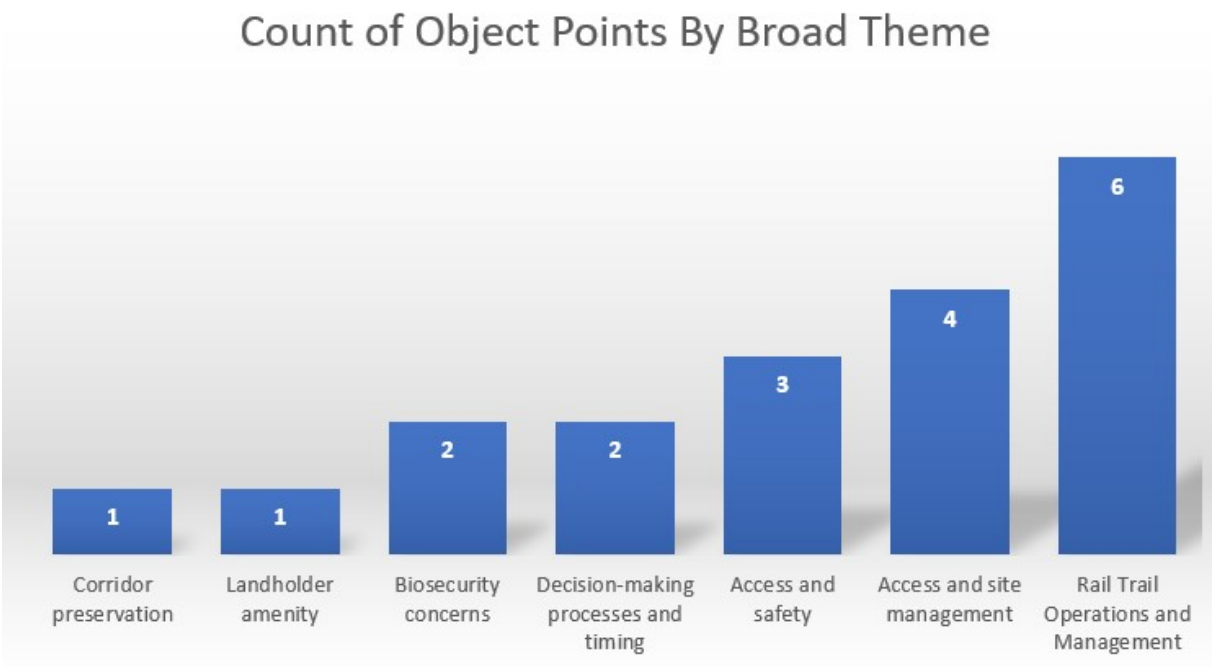
Support

The table below shows each of the perspectives associated with 'Support' sentiment towards the rail trail and each bar in the chart represents the level of priority 'points' attendees allocated to these.



Object

The table below shows each of the perspectives associated with 'Object' sentiment towards the rail trail and each bar in the chart represents the level of priority 'points' attendees allocated to these.



Analysis of the data shown in the charts above provides some insights into community perspectives. They include:

1) Even though biosecurity was not raised as a perspective numerous times, it was the subject of highest priority among the attendees.

2) Supporters of the rail trail consider the economic opportunities the most significant factor, and collectively the attendees consider economic opportunity the second highest priority consideration.

3) Corridor preservation was also not raised as a point by numerous people when asked to identify matters initially, however when it comes to the priorities of the group broadly it ranks as a priority. This may be because as a broad theme it supports many considerations including:

    a. Prevention of public land being sold into private ownership.

    b. The preserved corridor is expected to provide a form of wildlife corridor.

    c. The preserved corridor is expected to provide some degree of improved access to fight fires and potentially for first responders to attend to other emergencies.

4) Access and Safety is a theme that appeals to people attending the session regardless of whether they support, object or are neutral to the rail trail. Reasons for this may be again that the broad theme supports a range of points of view, for example:

a. Adjacent landowners are anxious to ensure that fencing and signage is appropriate and that it is properly maintained for multiple reasons, not least stock management and protection as well as discouraging trespass.

b. Supporters contrast cycling on the rail trail and cycling on roads, and strongly view the former as preferable from a safety perspective, particularly for children.

Written Submissions Analysis

Before during and after the Casino consultation session, people with an interest in the subject were invited to provide feedback to the Department of Planning, Industry and Environment. A total of 3 written submissions were received, and all of these were received from people local to the proposed route of the NRRT Stage 2 Casino to Bentley Rail Trail.

Two of the written responses opposed the development of the rail trail, whilst one was supportive on the basis that a range of matters could be addressed through appropriate planning and management.

The written submissions raised a range of issues similar to those raised in the community consultation session. Specifically, the issues raised in written feedback included:

a) Misuse (illegal camping, theft, anti-social behaviour) of the rail trail space, particularly tunnels.
b) Fencing establishment and maintenance .
c) Littering.
d) Signage.
e) Emergency service access.
f) Facilities (toilets, water) for rail trail users.
g) Weed control.
h) Trespass and associated safety risks to residents and livestock, as well as trespassers themselves.
i) The need for farmers and their stock to traverse the rail corridor to access property on both sides.
j) A perceived lack of demand for a rail trail.
k) Impact on ratepayers associated with Council costs to maintain the rail trail.

~~~//~~~
~~~