

Briner Bridge upgrade

Socio-economic assessment

Roads and Maritime Services | October 2018



Document Management

Revision History

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Executive Summary

Introduction

Roads and Maritime Services propose to upgrade Briner Bridge over the Coldstream River near Tucabia (the proposal). The bridge is currently load limited to 33 tonnes and requires regular, ongoing maintenance. The upgrade would increase the capacity to 44.0 tonnes and reduce maintenance requirements whilst retaining the heritage significance of the truss span. Briner Bridge is listed on the Roads and Maritime Section 170 Heritage & Conservation Register (Section 170 Register) and would be nominated for listing on the State Heritage Register upon completion of the upgrade works. In developing plans to upgrade the bridge, Roads and Maritime Services are working closely with the NSW Office of Environment and Heritage. This report documents the socio-economic impacts of the proposed bridge upgrade work.

Proposal objectives

The objectives of the proposal are to:

- Increase traffic loading on the bridge from 33 to 44 tonnes (T44 traffic loading)
- Alleviate sight distance issues associated with the vertical alignment of the bridge
- Reduce future maintenance.

The proposal

Key features of the proposal include:

- Increasing the width of the bridge deck to 5.4 metres between barriers to allow two cars to pass
- Restoration and strengthening of the Dare Truss span
- Restoration of the deck on the truss span with stress laminated timber
- Replacement of the timber approach spans with reinforced concrete and steel girder approach spans
- Replacement of the timber abutments with new reinforced concrete abutments
- Replacement of timber piles below ground with new driven piles
- Replacement of timber trestle piers with steel trestle piers
- Replacement of the timber handrail with a new steel traffic barrier
- Installation of a temporary bridge linked to Coldstream Terrace for public access during construction
- Establishing site facilities associated with the works.

A temporary two span bridge would be built immediately upstream of Briner Bridge to enable traffic to cross Cold Stream River during construction of the new bridge. New approach roads would be built to tie in with Coldstream Terrace. The approach roads would have two lanes, and the bridge would be one lane controlled by temporary traffic lights. The intersection of Bowlings Road and Coldstream Terrace would be temporarily modified for the duration of the works to tie in to the temporary bridge approach roads. The temporary bridge would be removed, and the intersection restored upon completion of the works.

Traffic would have access across the temporary bridge for most of the works, however full closures would be required on occasion to allow a crane to work from the temporary bridge approach road to install elements to the river spans. The temporary bridge would be removed prior to forecasted flood events and it would take up to one week to reinstate the temporary bridge post flood event. This would result in the full closure of Coldstream Terrace (over Coldstream River) until the temporary bridge is reinstated (approximately one week). Traffic would be diverted via Tyndale or Glenugie to access the Pacific Highway, Ulmarra and Grafton.

The construction is expected to begin in early 2019 and would take approximately 14 months to complete, including installation and removal of the temporary bridge and restoration of the project area.

The construction methodology involves:

- Community notifications prior to undertaking the works
- Establishment of site compounds and environmental controls
- Construction of a temporary bridge and approach roads
- Closure of the existing bridge to the general public (approximately ten months) and rehabilitating the bridge
- Roadworks and traffic switch and removal of the temporary bridge
- Site compound decommission and site stabilisation.

Some access/navigational restriction would be in place under the existing and temporary bridges during the works. There would be reduced clearance and access at times during the construction of the temporary bridge and upgrade of the current bridge. The public would be notified of all restrictions.

Socio-economic issues and management measures

The main socio-economic issues identified from the assessment relate to the following:

Access and connectivity

The proposal has potential to affect access and connectivity for road users, including residents, businesses, tourists and transport. A second temporary bridge would be constructed to reduce access and connectivity impacts during works on the Briner Bridge. Alternate detours to Tucabia would be required during some weekends and flood event closures of the temporary bridge. The alternate detour routes via Tyndale and Glenugie would add 18 kilometres and 10 kilometres to travel distances (respectively). In most instances, the impact would be an inconvenience, with minor additional travel time and fuel cost incurred.

The bridge closure and detour options are not expected to adversely disadvantage people as there is a lack of reliance on alternative modes of transport in the local community which could otherwise be impacted. People have access to private vehicles for their transport, meaning most people can effectively use the detours. Any closure and detour could generally be tolerated in the short-term. It is largely acknowledged that the works have a long-term benefit for the bridge's longevity and serviceability.

Briner Bridge would be a designated construction site during the construction phase. Therefore, access to Coldstream River would be restricted around the bridge during construction. Access under the bridge via watercraft would also be restricted during certain periods of construction. This would need to be communicated to the users of the river as part of the consultation phase of the proposal.

The works are important to maintain the bridge and connectivity for the local community into the future. Not undertaking the works may result in additional degradation and could lead to bridge closure and larger and long-term socio-economic impacts.

Local business, industry and economy

Impacts to businesses stem from reduced transport links across the Coldstream River due to the temporary bridge closure, requiring local traffic to use detours. Subsequent effects of this on business and local economic activity can relate to reduced efficiency, increased travel time, fuel costs and the need for additional logistics planning or resourcing. Additional planning and appropriate notice would enable businesses to adequately plan for the changed road conditions during the works. No long-term or unmanageable impacts are considered likely.

Tourism

Any closure of the temporary bridge reduces route options to access a tourist site or business within Tucabia (eg bed and breakfast), these sites would still be accessible via the detour routes of Tyndale and Glenugie. This would ensure that tourism places and businesses remain accessible. Both routes travel through Tucabia so it would be unlikely that there would be a decrease in tourists travelling through the town as a result of the proposal. Both options also provide a scenic route to Wooli/Diggers Camp or Minnie Water. Whilst some inconvenience could be experienced, it is not expected to be significant. People planning to visit a place would continue to be able to readily access them. Despite inconvenience, the detours would ensure that tourism places and businesses remain accessible.

Local amenity

The local environment and amenity could be adversely impacted because of the works. Water quality, noise and vibration, air quality, traffic and parking and visual impacts all have the potential to be affected. In most of these contexts, the potential impacts posed by the proposal are not significant and would be of a temporary duration. Noise generated by the works could adversely impact nearby sensitive receivers (dwellings). However, specific safeguards and management measures would be implemented to minimise and appropriately manage any such impacts.

Property and land use

No property acquisition would be required for the proposal. The site compounds would be primarily located within the existing road reserve. There would be some short-term occupation of private property for the fabrication and storage of bridge elements and positioning of cranes. Other land use and property impacts relate to the road closure and detours, as well as construction related amenity impacts, as assessed further in this report.

Utilities and services

A Clarence Valley Council water valve is located on the Ulmarra side abutment and a Clarence Valley Council submarine watermain pipeline is located along the northern side of the bridge. The submarine watermain pipeline would not be affected by the proposal. Consultation would be undertaken with Clarence Valley Council regarding relocation/removal of the stop valve in proximity to the proposed work. Above ground Telstra cables are also located along the northern side of the bridge and would not be affected by the proposal. Subterranean cables located running underneath the approach spans on the Ulmarra side of the bridge would require relocation in order to install the temporary bridge approach road.

Social and recreational infrastructure

No key social or recreational infrastructure would be affected. Some short-term restriction on the use of and access along the Coldstream River in the vicinity of the works would be required, however this would only affect particular sections of the river at a time and no significant impact on social/recreational activity is expected.

Health and safety

Health and safety issues could arise if road users are not aware of the proposed work or potential disruptions. Emergency services and their response could be affected by the bridge closure (dependant on origin and destination). However, the available detours would maintain access to the localities either side of the bridge and emergency services/agencies would be consulted.

Community and cultural (heritage) values

Road infrastructure is generally highly valued and relied upon in rural and regional contexts. The proposal is consistent with the community value linked to the provision and maintenance of quality road infrastructure. However, in the short-term the closure and detours could affect values associated with connectivity and severance of this local river crossing. Any such impact would be managed and would be removed at the completion of the works. While construction activities could detract from the amenity of the surrounding environment, this would be short-term and such values would be maintained post-construction/long-term.

Although Briner Bridge is a listed heritage item under Section 170 register listing under Heritage Act, the proposal does not present any significant adverse impact to the existing bridge. The changes resultant of the capacity upgrade would not devalue the heritage significance of the bridge, nor impact application to have the bridge listed in the State Heritage Register.

Cumulative impact

Although the proposal has the potential to contribute to cumulative impacts such as construction noise, air quality, ecological impacts and traffic, these are not expected to be significant given the context of the site and nature/scope of works. Mitigation measures within the Review of Environmental Factors (REF) and Construction Environmental Management Plan (CEMP) would ensure any such effects are minimised and managed appropriately.

Management measures

As outlined above, the proposal would present various potential impacts. While the proposal is not expected to result in significant detriment or long-term socio-economic effects, short-term effects would have a varying degree of impact for the local community. A number of safeguards and mitigation measures have been specified and would be implemented, along with those in the REF and CEMP, to assist in avoiding (where possible) and minimising or mitigating any socio-economic impacts. These can be appropriately addressed through consultation, notification and specific measures as recommended in this report and summarised below:

- Notification to key stakeholders and parties potentially affected by the proposal
- Community consultation, including key affected parties and stakeholders
- Noise and vibration specific notification and consultation

- Advanced signage and traffic management to maintain safety, minimise delays, and facilitate use of the detours
- Waterway/maritime management to maintain safety and adequate access
- Specific measures to maintain connectivity for school transport bus services
- A complaint handling process
- Relevant health and safety protocols.

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1. Introduction

1.1. The proposal

Roads and Maritime Services NSW (Roads and Maritime) proposes to upgrade Briner Bridge over the Coldstream River near Tucabia (the proposal). The bridge is currently load limited to 33 tonnes and requires regular, ongoing maintenance. The upgrade would increase the capacity to 44 tonnes and reduce maintenance requirements whilst retaining the heritage significance of the truss span. Briner Bridge is listed on the Road and Maritime Section 170 Heritage & Conservation Register (Section 170 Register) and would be nominated for listing on the State Heritage Register upon completion of the upgrade works. In developing plans to upgrade the bridge, Roads and Maritime Services are working closely with the NSW Office of Environment and Heritage.

Key features of the proposal include:

- Increasing the width of the bridge deck to 5.4 metres between barriers to allow two cars to pass
- Refurbishment and strengthening of the Dare Truss span
- Refurbishment of the deck on the truss span with stress laminated timber
- Replacement of the timber approach spans with reinforced concrete and steel girder approach spans
- Replacement of the timber abutments with new reinforced concrete abutments
- Replacement of timber piles below ground with new driven piles
- Replacement of timber trestle piers with steel trestle piers
- Replacement of the timber handrail with a new steel traffic barrier
- Installation of a temporary bridge linked to Coldstream Terrace for public access during construction
- Establishing site facilities associated with the works.

A temporary two span bridge would be built immediately upstream of Briner Bridge to enable traffic to cross Cold Stream River during construction of the new bridge. New approach roads would be built to tie in with Coldstream Terrace. The approach roads would have two lanes, and the bridge would be one lane controlled by temporary traffic lights. The intersection of Bowlings Rd and Coldstream Terrace would be temporarily modified for the duration of the works to tie in to the temporary bridge approach roads. The temporary bridge would be removed, and the intersection restored upon completion of the works.

Traffic would have access across the temporary bridge for most of the works, however full closures would be required on occasion to allow a crane to work from the temporary bridge approach road to install elements to the river spans. The temporary bridge would be removed prior to forecasted flood events and it would take up to one week to reinstate the temporary bridge post flood event. This would result in the full closure of Coldstream Terrance (over Coldstream River) until the temporary bridge is reinstated (approximately one week). Traffic would be diverted via Tyndale or Glenugie to access Ulmarra, the Pacific Highway and Grafton.

The construction methodology involves:

- Community notifications prior to undertaking the works
- Establishment of site compounds and environmental controls

- Construction of a temporary bridge and approach roads
- Closure of the existing bridge to the general public (approximately 10 months) and rehabilitating the bridge
- Roadworks, traffic switch and removal of the temporary bridge
- Site compound decommission and site stabilisation.

Some access/navigational restriction would be in place under the bridge during the works. There would be reduced clearance and access at times during the construction of the temporary bridge and upgrade of the current bridge. The public would be notified of all restrictions.

Typical plant and equipment used for the works would include:

- | | |
|--------------------------------------|---|
| • Franna cranes | • Site sheds |
| • Manitou | • Decontamination showers |
| • Delivery vehicles | • Toilet |
| • Containers | • Scaffold and containment |
| • Generators | • Boat and barge |
| • Piling machines | • Elevating work platform (EWP) (possibly on barge) |
| • Concrete trucks | • Winches |
| • Concrete pumps | • Vibratory rollers |
| • Moving gantries/ launching trusses | • Compactors |
| • Paving machines | • Curing machines |
| • Asphalt trucks | |
| • Rollers | |

Construction is expected to begin in early 2019 and will take approximately 14 months to complete, including installation and removal of the temporary bridge and restoration of the project area.

Work would be undertaken during the hours detailed below:

Monday – Friday	7:00 am to 6:00 pm
Saturday	7:00 am to 6:00 pm. Noisy work would be confined from 8.00 am to 4.00 pm
Sunday and Public Holidays	Generally no work (with the exception of works required during temporary bridge closures). 7:00 am to 6:00 pm when required. Noisy work would be confined from 8.00 am to 4.00 pm.

Work would be undertaken outside of standard hours on weekends to minimise traffic impacts on the community.

1.2. Study objectives

This socio-economic assessment has been carried out as a specialist component of the REF for the Briner Bridge upgrade to identify and assess the potential socio-economic impacts to the community as a result of the construction and operation of the proposal, identify options to avoid or reduce socio-

economic impacts and recommend management and mitigation measures to address unavoidable impacts.

1.3. Consultation

Roads and Maritime has undertaken community consultation in 2016 which resulted in a change in methodology from the 2016 proposal to include a temporary crossing to minimise travel impacts to the community during upgrade of Briner Bridge.

As per the requirements of the State Environmental Planning Policy (Infrastructure) 2007, consultation with Clarence Valley Shire Council, State Emergency Service and NSW Maritime has occurred. Roads and Maritime has also previously met with Clarence Valley Shire Council to discuss the proposal and potential implications of the temporary bridge closure.

DPI Fisheries were also consulted regarding the potential impacts of the bridge works on key fish habitat and comments by DPI Fisheries has been incorporated into the biodiversity assessment component of the project.

The Roads and Maritime Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI – Stage 1) was previously undertaken in September 2018 by Roads and Maritime's Aboriginal Cultural and Heritage Advisor, Mr Barry Williams. Mr Williams advised that the proposal was unlikely to have an impact on Aboriginal cultural heritage (refer to Appendix D of REF).

Review of the National Native Title Tribunal (NNTT) Online Register (September 2018) indicates the site compound/fabrication area is subject to NCD2015/003 - Yaegl People #2 (Lot 1 DP 1104017). Notification is required to any representative Aboriginal/Torres Strait Islander bodies for an area concerned where an act is to take place. Roads and Maritime Services is therefore required to issue notification to representatives of the Native Title holders for their consideration and comment prior to undertaking the works.

Key findings of the consultation informed the proposal, the potential impacts and required impact avoidance or mitigation measures.

A communications officer has been appointed to the proposal. A project-specific consultation strategy would be developed and implemented in accordance with the Roads and Maritime Community Involvement – Practice Notes and Resource Manual and Roads and Maritime Minor Project procedure, Communications for minor projects (ILC-MP-TP0-301).

The following stakeholders are to be contacted as part of ongoing consultation:

- Clarence Valley Shire Council
- Residents and businesses within a minimum of 2.7 kilometres of the proposal
- Emergency services
- Tucabia Rural Fire Service
- Bus operators
- Local schools.

Roads and Maritime would undertake a media announcement, letterbox drops (notice to the local community and affected parties) and post information on the Roads and Maritime website and Facebook page, including updates as works progress.

**LEGEND**

- [Yellow box] Study area
- [Red box] The site
- [White box] Cadastre
- [Yellow box] Site compound and fabrication area
- [Cyan dashed box] Temporary bridge / access road
- [Green cross-hatch] Vegetation clearing
- [Dashed blue line] Temporary construction site access
- [Blue box] Temporary jetty location

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The Site





0 1.5 Km

The Locality



2. Methods

2.1. Personnel

Qualifications and experience of personnel involved in the assessment is provided in Table 2-1.

Table 2-1 Qualifications and experience

Name	Qualification	Years of experience	Role
Simon Waterworth	Bachelor of Urban and Regional Planning Masters in Business Administration	21	Assessment advice and review
Sean Cochran	Graduate Diploma in Urban and Regional Planning	7	Socio-economic impact assessment

2.2. Methodology

The socio-economic impact assessment was prepared in accordance with *Environmental Impact Assessment Practice Note - socio-economic assessment (EIA-N05)*. Given the locality, scale/scope of the proposal and the likely impacts anticipated, a moderate level of assessment was deemed appropriate (based on the Practice Note's assessment levels of *basic, moderate and comprehensive*). The *Draft methodology for assessing the significance of socio-economic impacts* has also been applied to the preparation of this assessment. The assessment of significance of socio-economic impacts considers sensitivity and magnitude impacts to determine the overall level of significance of the impact when compared to the baseline conditions as shown in Table 2-2 below.

Table 2-2 Roads and Maritime significance of the impact matrix

		Magnitude			
		High	Moderate	Low	Negligible
Sensitivity	High	High Impact	High-Moderate	Moderate	Negligible
	Moderate	High-Moderate	Moderate	Moderate-low	Negligible
	Low	Moderate	Moderate-Low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

To facilitate the assessment, a study area needs to be determined to guide the establishment of the socio-economic profile and assessment. The extent of the study area for the socio-economic impact assessment depends on the extent or scale of potential impacts, including both direct and indirect impacts, and the context of the area surrounding the project (ie whether it is in an urban, rural or regional setting).

The study area for this assessment has been derived based on the largely rural context of the locality, the scale/scope of the proposal and the anticipated impacts. The primary study area for this assessment is based on the Tucabia NSW State Suburb. Not only does this provide for a set of area based statistical information relevant to the proposal footprint and immediately surrounding community, it encompasses the main area likely to be subject to anticipated impacts resulting from the proposal.

In addition to this primary study area, this assessment also considers a broader context of the Clarence Valley LGA, with comparisons also drawn from the State of NSW.

The location of the bridge site and associated works areas (the site) is shown at Figure 1-1. A locality plan relevant to the study area is provided at Figure 1-2.

The preparation of the socio-economic assessment involved the following:

1. **Scoping**: identify the range of issues of concern relevant to the social and economic environment of the study area and the nature of the likely impact of the proposal.
2. **Social and economic environment**: describe the existing social and economic environment of the study area to provide an understanding of the potentially affected individual, groups or communities. This can involve both quantitative and qualitative indicators to describe the socio-economic profile.
3. **Assessment**: identify and assess the social and economic benefits or impacts of the proposal, who is affected, to what extent and for how long.
4. **Developing management and mitigation measures**: including measures to enhance the proposal's benefits and avoid, minimise or mitigate its potential adverse impacts.

These steps are further described in the following sections.

2.2.1 Scoping

Scoping of issues involves consideration of the range of potential socio-economic impacts of the proposal. The range of potential impacts was assessed through:

- Completion of a preliminary scoping checklist and consideration of potential or likely impacts and their effect
- Site visit (20/08/2018) of the study area and a desktop survey of land uses surrounding the existing bridge and its approaches and near to the proposal.

2.2.2 Social and economic environment

A description of the existing social and economic environment provides a basis for development of a community profile and predicting likely changes and impact management strategies (refer to Chapter 3). Socio-economic data/information include quantitative and qualitative indicators (also informed by consultation). These are relevant to establishing an understanding of the social and economic environment, and include:

- Review of existing State and local government, plus other organisations, strategies relevant to the existing and future land use and social and economic environment of the study area
- A description of the regional context of Clarence Valley Shire and the local context of Tucabia and surrounds
- Key transport networks and travel patterns
- Key population, housing and demographic indicators, based on a review of data from the *Australian Bureau of Statistics (ABS) 2011 and 2016 Census, id The Population Experts* demographic resources, and Department of Planning and Environment for the Tucabia State Suburb, including the Clarence Valley LGA and NSW
- A review of existing land uses in the study area including primary industries, commercial, residential, riverside, tourist and recreational land uses
- Analysis of the local and regional economy, including gross regional product, industry, employment and income and nature of local business within the study area
- Review of social infrastructure, including open space and community services and facilities closest to the proposal
- Identification of existing community values, including those relating to lifestyle and amenity, neighbourhood and local character, access, connectivity and community.

Consultation regarding the proposal would be undertaken as outlined in Section 1.3. Key findings of the consultation would inform the proposal, the potential impacts and required impact avoidance or mitigation measures. It should also be noted that consultation undertaken in 2016 resulted in a change in methodology from 2016 proposal to include a temporary crossing to minimise delays to the community during the upgrade.

2.2.3 Assessment

The assessment in Chapter 4 has been informed by various reports and demographic data as outlined previously, a site inspection, consultation undertaken by Roads and Maritime and by considering and understanding relevant research and literature. The assessment involved identifying, analysing and assessing the likely social and economic impacts or benefits of the proposal.

2.2.4 Management and mitigation measures

Specific management and mitigation measures have been developed to address the identified socio-economic impacts for this proposal (refer to Chapter 5).

3. Existing environment

3.1. Policy context

This chapter provides an overview of government strategies and policies relevant to the proposal and socio-economic considerations. A visual plan showing land uses within Tucabia is provided at Figure 3-3.

3.1.1 North Coast Regional Plan 2036

The North Coast Regional Plan 2036 applies to 12 North Coast Councils including Clarence Valley Shire Council. The Plan provides the strategic policy, planning and decision-making framework to guide the region to sustainable growth over the next 20 years. It contains goals and directions for achieving the vision for the North Coast which is: *a stunning environment, thriving and interconnected economy, vibrant and engaged communities and great housing choice and lifestyle options* (Development of Planning and Environment 2017).

The proposal is consistent with the overall intent of the North Coast Regional Plan 2036. It supports an interconnected economy and community through important maintenance of a bridge asset that connects business and the community either side of the Coldstream River.

3.1.2 Clarence Valley Settlement Strategy 1999

The Clarence Valley Settlement Strategy 1999 was prepared to guide and manage future growth within the shire for a 20-year planning horizon. The strategy was developed to address urban and rural issues on a cooperative valley-wide basis and includes focus towards retention of small rural residential settlements in areas linked to existing settlements which can provide services and community identity. This Strategy provides an analysis for the Clarence Valley LGA, including its towns and settlements in relation to potential/planned growth.

The upgrade of the Briner Bridge provides essential rural linkages and is therefore consistent with the strategy focus of connecting communities and providing essential services to rural settlements.

3.2. Regional context

Briner Bridge is located in the Clarence Valley LGA which has a dispersed settlement pattern over a sizeable area (10,440 square kilometres). In addition to numerous small villages and rural localities, settlement is based around the City of Grafton, which is the primary focus of commercial, industrial, institutional and administrative activities. Other main towns include Yamba, Maclean and Iluka. The LGA includes a number of smaller villages and towns along the coast or inland, particularly near the Clarence River. Tucabia, which is the closest settlement to Briner Bridge, is located approximately 1.5 kilometres southeast of the site.

The Clarence River provides a link between several rural villages and communities. The rural area is used for forestry, agriculture and grazing, including beef and sugarcane growing. Fishing is an important industry on the Clarence. Tourism and recreation have become a major industry in recent years, particularly in coastal areas, national parks, State forest and nature reserves including beaches, rainforests, mountains and rivers.

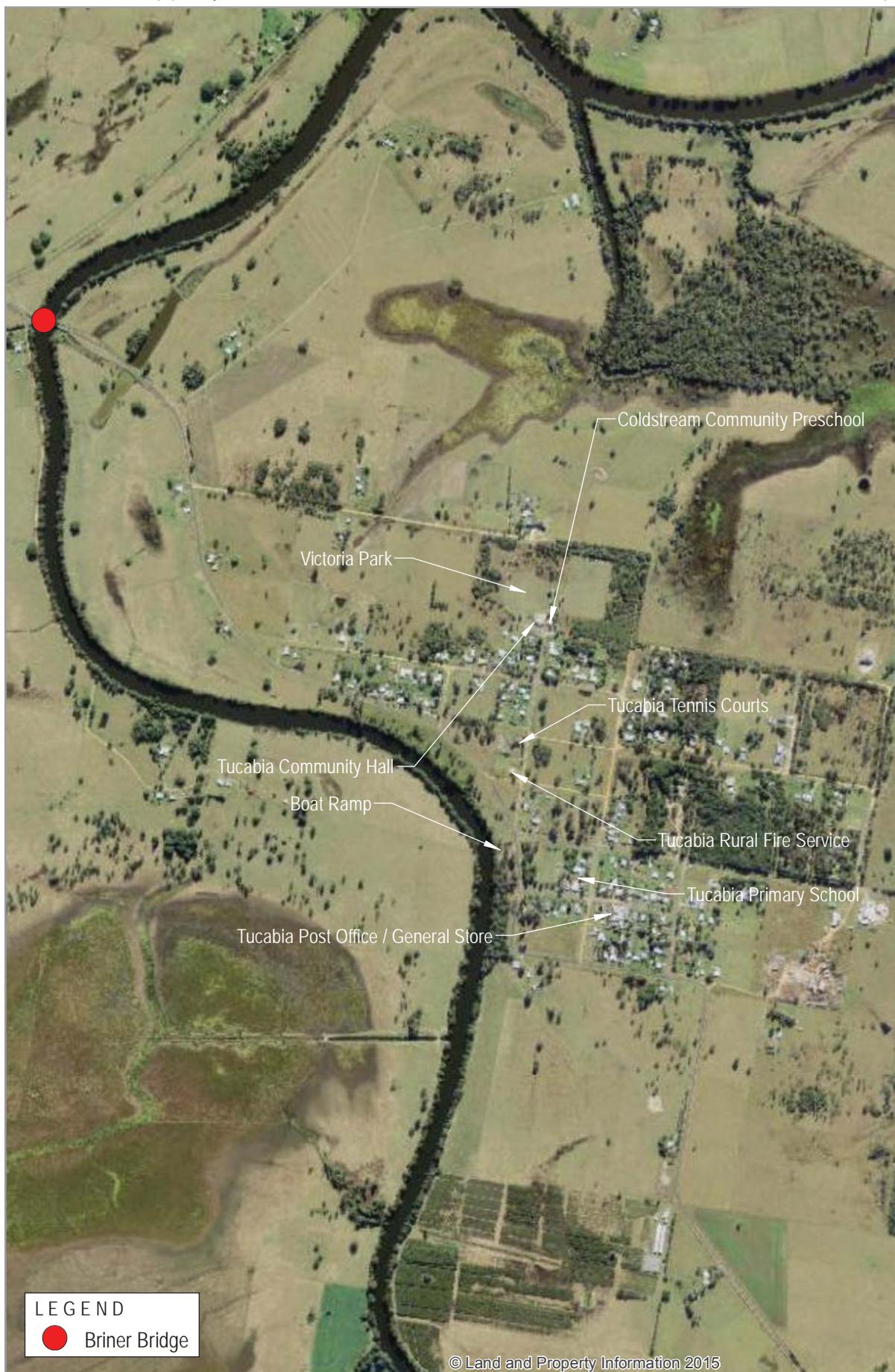
The Clarence Valley is strongly reliant on road transport, with a road system which radiates out from Grafton and includes the Pacific and Gwydir highways and Summerland Way. The Clarence River is a highly valuable natural resource and represents the region's key competitive advantage. Council has identified the role of the Clarence River as a link between settlements in council's strategic planning initiatives. The Clarence River Way Master Plan (2009) is council's main document that outlines the

importance of the Clarence River and establishes the river as the primary driver for destination development. The initiatives, strategies, actions and objectives conveyed in the plan identify the value that the Clarence River and its tributaries provides to the region in terms of environmental, economic, community and social activity.

Briner Bridge is located over Coldstream River, which is a major tributary of the Clarence River and separates the villages of Tucabia and Ulmarra. Briner Bridge therefore plays a critical role in connecting the two villages. Tucabia does not have a specific commercial area and has a limited number of commercial uses. The main commercial premise in town is the Tucabia general store, which also operates as the local petrol station, newsagency, bottle shop, café, chemist and post office. Tucabia also has a public primary school, a community preschool, a community hall and sporting fields and facilities.

Ulmarra is served by a small traditional commercial area focused on Coldstream Street, west of the Pacific Highway. Commercial premises include a service station, hotel, coffee shops/restaurants, tourist accommodation, tourist related and other retail shops, post office, newsagency, the Clarence Valley NSW Rural Fire Service Control Centre. Ulmarra also has a public primary school and sporting facilities.

There are variations in the socio-economic structure of communities of Tucabia and Ulmarra compared to Grafton. The two villages have a higher proportion of residents on low incomes and more vulnerable sections of the community. There is a dependence on Grafton and Maclean for services to meet the needs of both communities.



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3.3. Environmental amenity

The landscape adjoining the proposal is predominantly a rural context, with interspersed rural residential uses. The landscape is generally flat to gently undulating, with low-lying areas subject to periodic flooding. It is largely cleared of vegetation, except for remnant and regrowth vegetation along the river corridor and road margins.

The surrounding area presents a typical rural setting within north-eastern NSW. There is a strong presence of primary industry/agricultural activity (predominantly grazing and dairy industries) in the area. The landscape is picturesque, and the general amenity of the area would be considered high. The nearby presence of the current Pacific Highway (6.5 kilometres west) and future Pacific Highway alignment (4.0 kilometres east) allows for efficient regional road connectivity; however, background road noise is present at various locations.

3.4. Heritage

Non-Aboriginal heritage

The bridge is listed as Briner Bridge over Upper Coldstream River under s.170 of the NSW Heritage Act.

Details regarding the heritage significance of the bridge under the Section 170 register include:

The Briner bridge is a Dare type timber truss bridge and was completed in 1908. In 1998 it was in good condition. As a timber truss road bridge, it has strong associations with the expansion of the road network and economic activity throughout NSW, and Harvey Dare, the designer of this type of truss. Dare trusses were fifth in the five-stage design evolution of NSW timber truss road bridges. They were similar to Allan trusses, but contain improvements which make them stronger and easier to maintain. This engineering enhancement represents a significant evolution of the design of timber truss bridges, and gives Dare trusses some technical significance. In 1998 there were 27 surviving Dare trusses in NSW of the 40 built, and 82 timber truss road bridges survive from the over 400 built. The Briner bridge is a representative example of Dare timber truss road bridges, and is assessed as being Regionally significant, primarily on the basis of its technical and historical significance.

Upon completion of the proposal, Briner Bridge would be nominated for listing on the State Heritage Register.

Aboriginal heritage

The proposal is located over a river and within a landscape where Aboriginal objects may occur because of Aboriginal people's use of the water course in their everyday lives and for traditional cultural activities. However, given the highly disturbed nature of the area, it is unlikely that 'in situ' (original location) Aboriginal objects or relics would exist. The Upper Coldstream Biodiversity Project 2013-2017 identifies strong cultural ties for the Yaegl community regarding the Coldstream River and adjoining landscapes. The Roads and Maritime Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI) was previously undertaken in November 2015 by Roads and Maritime's Aboriginal Cultural and Heritage Advisor, Mr Graham Purcell; identifying the proposal was unlikely to have an impact on Aboriginal cultural heritage. A second PACHCI was also undertaken by Mr Barry Williams in 2018 with consistent findings as the previous PACHCI.

Notification is required to any representative Aboriginal/Torres Strait Islander bodies for an area concerned where an act is to take place. The site is located within Crown Land. Review of the National Native Title Tribunal (NNTT) Online Register (September 2018) identifies that the site compound/fabrication area is subject to NCD2015/003 - Yaegl People #2 (Lot 1 DP 1104017). Roads and Maritime Services is therefore required to issue notification to representatives of the Native Title holders for their consideration and comment prior to undertaking the works.

3.5. Socio-economic profile

In order to better understand the composition and dynamics of Tucabia and Clarence Valley Shire's community, including social, economic and lifestyle influences, a socio-economic and demographic analysis is undertaken.

This section describes the key socio-economic characteristics of the area including population, demographic, household and economic characteristics. Data is provided for the main study area of the Tucabia NSW. Data is also presented for the Clarence Valley LGA and State of NSW for comparison.

The information in this section provides a demographic overview of the Tucabia suburb and provides for an appropriately scaled local study area. This is then compared with the Clarence Valley LGA and State of NSW. Data from the ABS Census (2016 as available at the time of preparing this report) and *id The Population Experts* provides indicators that highlight different aspects of the social and economic structure of the community, locality and region. In turn, it helps to identify the profile and composition of the community and relative susceptibility to social impact resulting from the proposal. The relationship between these indicators can be complex. It is generally accepted that no single socio-economic factor can predict a person's or community's susceptibility to impact.

3.5.1 Population and age structure

In the 2016 Census, there were 367 people in Tucabia. Of these 50.7 per cent were male and 49.3 per cent were female. Aboriginal and/or Torres Strait Islander people made up 3.5 per cent of the population. There were 108 families in Tucabia with an average of 1.6 children in each family. The largest number of residents in Tucabia were in the 55 to 59-year bracket (14.5 per cent) followed by the 65 to 69-year bracket (10.9 per cent). The median age of people in Tucabia was 54 years. This is compared to the Clarence Valley LGA where the 2016 Census population was 50,671, with the largest numbers of residents in the 60 to 64-year bracket (8.3 per cent). The Clarence Valley LGA had a median age of 49. Compared to NSW, the State had 7,480,228 people, with the median age being 38.

In Tucabia in 2016, children aged 0-14 years made up 13.2 per cent of the population and people aged 65 years and over made up 23 per cent of the population. Across the LGA children aged 0 - 14 years made up 16.4 per cent of the population and people aged 65 years and over made up 25.7 per cent of the population. This is compared with NSW which has 18.5 per cent of people 0 - 14 years and 16.2 per cent aged 65 years and over.

Table 3-1 shows population trends of Tucabia in comparison to the Clarence Valley LGA and NSW for the 2011 and 2016 Census. As can be identified from Table 3-1, Tucabia has had a high growth rate during this period; however, the broader Clarence Valley LGA experienced a low increase in population between 2011 and 2016. The population growth trend was slightly higher for NSW (refer to Table 3-1) compared to the LGA.

Table 3-1 Population trend 2016 (Source ABS 2011 and 2016)

Region	Population 2011	Population 2016	Change 2011-2016	Percentage change
Tucabia	287	367	80	27.8%
Clarence Valley LGA	49,665	50,671	1006	2.0%
New South Wales	6,917,658	7,480,228	562,570	8.1%

3.5.2 Cultural diversity

In 2016, the proportion of the population who were Aboriginal and/or Torres Strait Islander people made up 3.5 per cent of the population in Tucabia, lower than the proportion of indigenous people living in the Clarence Valley LGA (6.5 per cent) and higher when compared to NSW (2.9 per cent).

In Tucabia, 86.1 per cent of people were born in Australia. The most common other countries of birth were England 3.6 per cent and New Zealand 0.8 per cent. In Clarence Valley LGA, 83.8 per cent of people were born in Australia, with other common countries of birth being England 2.5 per cent, New Zealand 1.1 per cent, Germany 0.3 per cent, Netherland at 0.3 per cent and Philippines 0.3 per cent. This is different from the NSW response where 65.5 per cent were born in Australia and China (3.1 per cent) and England (3 per cent) were the highest responses for country of birth.

In Tucabia (2016), 91.8 per cent of people only spoke English at home. The only other response for languages spoken at home included Russian at 0.8 per cent.

In Clarence Valley LGA, similarly to Tucabia, 90.3 per cent of people only spoke English at home, with the two other highest languages spoken at home included German 0.2 per cent, Cantonese 0.1 per cent, Spanish 0.1 per cent, Mandarin 0.1 per cent and Dutch 0.1 per cent. In NSW, a much lower proportion of people (68.5 per cent) only spoke English at home.

3.5.3 Household family structure

There were 160 private dwellings in Tucabia in 2016, with an average household size of 2.2 people per household. Clarence Valley LGA had 24,848 private dwellings with a similar proportion of average people per household compared to Tucabia at 2.3 people per household. The average people per household for NSW is 2.6 people per household.

In 2016, of the families in Tucabia, 29.1 per cent were couple families with children, 53.4 per cent were couple families without children and 17.5 per cent were one parent families, with the majority being female single parents (82.4 per cent). The proportion of couple family households with children was slightly higher in the LGA (32.9 per cent) than Tucabia, whereas one parent families were higher (18.1 per cent) and 48.4 per cent of people in the LGA were couple families without children. Single parents in the LGA were predominantly female (81.3 per cent).

The majority of NSW recorded couple families with children at 45.7 per cent which presents higher than rates for Tucabia and the LGA. In NSW, couple families without children was 36.6 per cent and one parent families comprising 16 per cent. Single parents in NSW were also predominantly female (82.2 per cent).

3.5.4 Education, workforce and occupation

In Tucabia in 2016, 25.3 per cent of people were attending an educational institution. Of these, 23.2 per cent were in primary school, 20.0 per cent in secondary school and 17.8 per cent in a tertiary or technical institution. This is compared to 27.5 per cent and 31.1 per cent of people attending an educational institution in Clarence Valley and NSW respectively.

On average, Tucabia had a higher proportion of people who had not completed Year 11 or equivalent (23.2 per cent) compared to the Clarence Valley LGA (18.2 per cent) but was lower than that for regional NSW (47.9 per cent) and NSW (35.4 per cent).

In 2016, the Tucabia had a labour force participation of 44.4 per cent and an unemployment rate of 7.4 per cent. The labour force participation was higher than that recorded for the LGA (38.0 per cent) and lower than regional NSW (56.4 per cent) and the NSW rate of 59.7 per cent.

An outline of the workforce's occupation responses in Tucabia in comparison to the LGA and NSW is provided in Table 3-2.

Table 3-2 Occupations comparison 2016

Occupation	Tucabia (%)	Clarence Valley LGA (%)	NSW (%)
Professionals	12.3	15.4	22.7
Technicians and trades workers	14.3	14.2	13.2
Managers	12.3	11.7	13.3
Clerical and administrative workers	6.5	12.2	15.1
Labourers	11.7	12.8	8.7
Community and personal service workers	12.3	13.8	9.5
Sales workers	16.9	10.7	9.3
Machinery operators and drivers	13.6	7.4	6.4

Source: ABS 2016 Census.

Based on available information (2016 Census data) the most common occupations in Tucabia included sales workers 16.9 per cent, technicians and trades workers 14.3 per cent, and machinery operators and drivers 13.6 per cent.

Industry is discussed in Section 3.6 of this report.

3.5.5 Income

Household income is one of the most important indicators of socio-economic status. Low income households refer to those receiving less than \$650 per week (before tax in 2016). High income households refer to those receiving more than \$3,000 per week (before tax in 2016).

In 2016, the median weekly household income in Tucabia was \$900. This was similar to the median weekly household income for the Clarence Valley LGA which was \$997; both lower than the NSW average of \$1,486.

Tucabia recorded low income households of 26.0 per cent with 2.4 per cent being high income. Clarence Valley LGA presented lower with 30.6 per cent for low income households, and both being higher than the NSW low income rate of 19.7 per cent. Clarence Valley LGA presented 5.2 per cent and NSW presented 18.7 per cent for high income households.

3.5.6 Mortgage and rental stress

Mortgage stress is defined as per the NATSEM (National Centre for Social and Economic Modelling) model as households in the lowest 40 per cent of incomes who are paying more than 30 per cent of their usual gross weekly income on home loan repayments. Similarly, rental stress, relates to households in the lowest 40 per cent of incomes who are paying more than 30 per cent of their usual gross weekly income on rent.

In 2016, 5.4 per cent of Clarence Valley Shire's households purchasing their dwelling were experiencing mortgage stress compared to 9.8 per cent in regional NSW. Tucabia presented mortgage stress of 15.2 per cent.

In 2016 Tucabia presented rental stress of 2.2 per cent compared to a higher rate of 11.7 per cent within the Clarence Valley LGA and 32.5 per cent in regional NSW.

3.5.7 Dwelling characteristics

Tucabia (160 private dwellings), the Clarence Valley LGA (22675 private dwellings) and NSW (3,059,599 private dwellings) recorded comparable proportions of occupied private dwellings in 2016 (being 89.4 per cent, 86.4 per cent and 90.1 per cent respectively). Most dwellings in Tucabia and the Clarence Valley LGA are separate detached houses (100 per cent and 85.6 per cent). The proportion of separate houses recorded in NSW was notably lower at 66.4 per cent.

In 2016, 48.0 per cent of homes were owned outright in Tucabia, with 43.9 per cent being mortgaged and 4.1 per cent being rented. Outright ownership in Clarence Valley LGA was lower at 44.0 per cent, as was the proportion of mortgages at 26.8 per cent. Renting in Clarence Valley LGA was higher at 25.6 per cent. Compared to Tucabia and Clarence Valley LGA, across NSW outright house ownership presented at 32.2 per cent and mortgages at 32.3 per cent with renting being more prevalent at 31.8 per cent.

3.5.8 Need for assistance and unpaid care

This population group is defined as people who provided care for children and assisted family members or others due to a disability, long term illness or problems related to old age.

Across the Clarence Valley LGA in 2016, 23.3 per cent provided care for children and 14.0 per cent assisted family members or others due to a disability, long term illness or problems related to old age. Across NSW, 27.2 per cent provided care for children and 11.6 per cent assisted family members or others due to a disability, long term illness or problems related to old age. Tucabia presented 19.9 per cent provided care for children and 13.8 per cent assisted family members or others due to a disability, long term illness or problems related to old age.

3.5.9 Socio-Economic Indexes for Areas (SEIFA)

The ABS has developed indexes, known as Socio Economic Indexes for Areas (SEIFA), which provide an indication of the socio-economic conditions of people living in an area, relative to other areas. For each index, every geographic area in Australia is given a SEIFA number, which shows how disadvantaged that area is compared with other areas in Australia. Each index summarises a different aspect of the socio-economic conditions of people living in an area.

The Index of Relative Socio-Economic Disadvantage is a general socio-economic index created using measures of relative disadvantage. It has been constructed so that relatively disadvantaged areas have low index values. It accounts for disadvantage within an area as it relates to income levels, degree of educational/training attainment, unemployment, proportion of unskilled workers and variables that reflect disadvantage rather than measuring specific aspects of disadvantage (eg Indigenous and separated/divorced). All areas are ordered from lowest to highest score, the lowest 10 per cent of areas are given a decile number of one and so on, up to the highest 10 per cent of areas, which are given a decile number of 10. A low score on this index indicates a higher proportion of relatively disadvantaged people in an area. For Statistical Areas Level 1 (SA1s) across Australia, the average (population weighted) SEIFA score on the index of disadvantage is 1000. Therefore, areas with an index above 1000 are above the Australian average and so relatively less disadvantaged; while index figures below 1000 indicate areas of relatively greater disadvantage when compared to the nation.

In 2011, NSW had a SEIFA score of 995.8, with regional NSW recording 968.6. The Clarence Valley LGA had a score of 926, meaning it had higher disadvantage than regional NSW on average.

The Index of Relative Socio-economic Disadvantage (IRSD) ranks areas in terms of their relative socio-economic disadvantage under the SEIFA system. Tucabia is identified as having a IRSD score of 1; representing the highest level of disadvantage available under the scoring system.

3.5.10 Internet access and digital communication

In terms of internet access, quantifying broadband access assists in gauging the extent to which people have access to communication technology and the ability for communities to gain access to service and information delivery via electronic means. In 2016, 80.1 per cent of households in Tucabia had access to the internet from the dwelling, with 15.1 per cent recording that internet was not accessed from the dwelling. This compares to 73.8 per cent in the Clarence Valley LGA where households accessed the internet, and 82.5 per cent in NSW.

3.5.11 Transport

In Tucabia in 2016 (Census), no households responded as having no registered motor vehicles compared to 5.8 per cent within the Clarence Valley LGA and 9.2 per cent for NSW. Tucabia recorded as having at least one registered motor vehicle. It is noted that within Tucabia 42.7 per cent of private occupied dwellings had two registered motor vehicles, which was higher than the Clarence Valley LGA (36.7 per cent) and NSW (34.1 per cent).

In Tucabia in 2016, 66.6 per cent of Clarence Valley Shire's employed population travelled to work by car, compared to 71.2 per cent in regional NSW. In Tucabia (2016) 69.4 per cent travelled to work by car.

3.5.12 Population and projections

The Clarence Valley LGA is expected to maintain its population level at a relatively static rate over the long-term, with minor growth to 2026 and then a minor decline to 2036 as highlighted in Table 3-3. Furthermore, a modest decline in the average household size from 2.36 in 2011 to 2.19 in 2036 is expected.

Table 3-3 Population projections Clarence Valley LGA 2011-2036

Year	Population	% Growth p.a.	Extra persons p.a
2011	51,300	-	-
2016	52,800	0.6%	300
2021	54,450	0.6%	330
2026	55,800	0.5%	270
2031	56,800	0.4%	200
2036	57,450	0.2%	130

Source: NSW Dept. Planning and Environment 2016

3.6. Business and industry

Of the employed people in Tucabia based on the 2016 Census, the most common occupations in Tucabia included Sales Workers (16.9 per cent), Technicians and Trades Workers (14.3 per cent), and Machinery Operators and Drivers (13.6 per cent).

In the 2016 Census there were 16,345 jobs with the Clarence Valley LGA.

Local businesses operating in the Tucabia area include:

- Cattle farms

- General store/service station (Tucabia)
- Wedding hire (Tucabia)
- Computer repairs (Tucabia)
- Australia Post (Tucabia)
- Bed and breakfast (Tucabia).

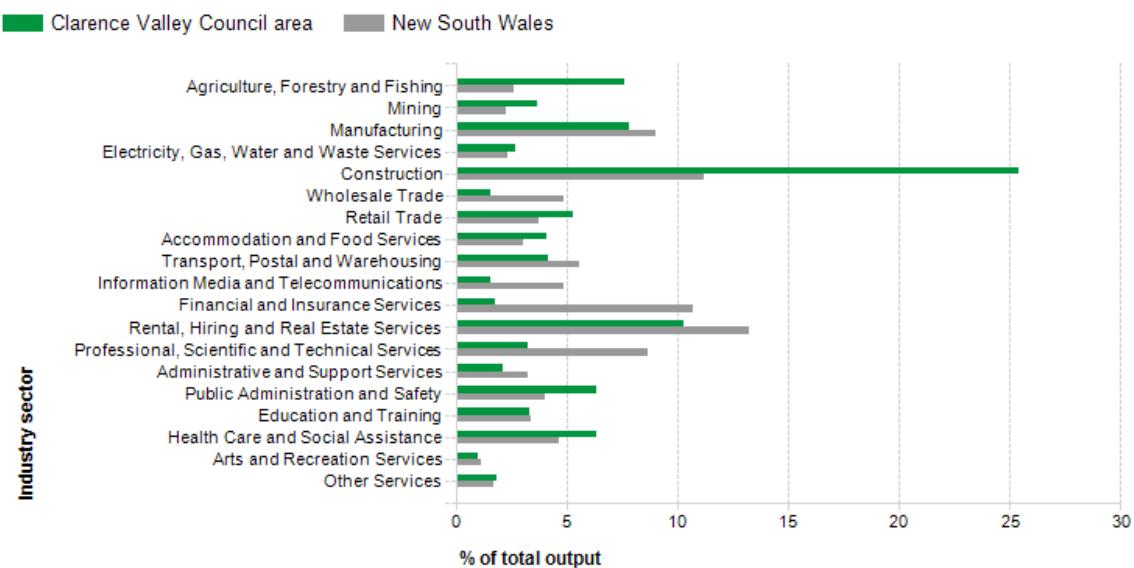
3.6.1 Gross regional product

The gross regional product (GRP) for Clarence Valley LGA was \$2.16 billion in the year ending June 2017, growing 3.7 per cent since the previous year (id 2018).

In Clarence Valley Council area, Construction had the largest output by industry, generating \$1,046 million in 2016/17 (id 2018). This was followed by Rental, Hiring and Real Estate Services with \$423 million and then Manufacturing with \$322 million. In combination these three industries accounted for \$1,791 million in total or 43 per cent of the total output by total industry in Clarence Valley Shire.

The fastest growing sector in terms of output was Rental, Hiring and Real Estate Services, followed by Construction and then Finance and Insurance Services (id 2018). Output by industry sector in 2016/17 is shown in Figure 3.2 and change in output by industry is shown in Figure 3-3.

Output by industry sector 2016/17

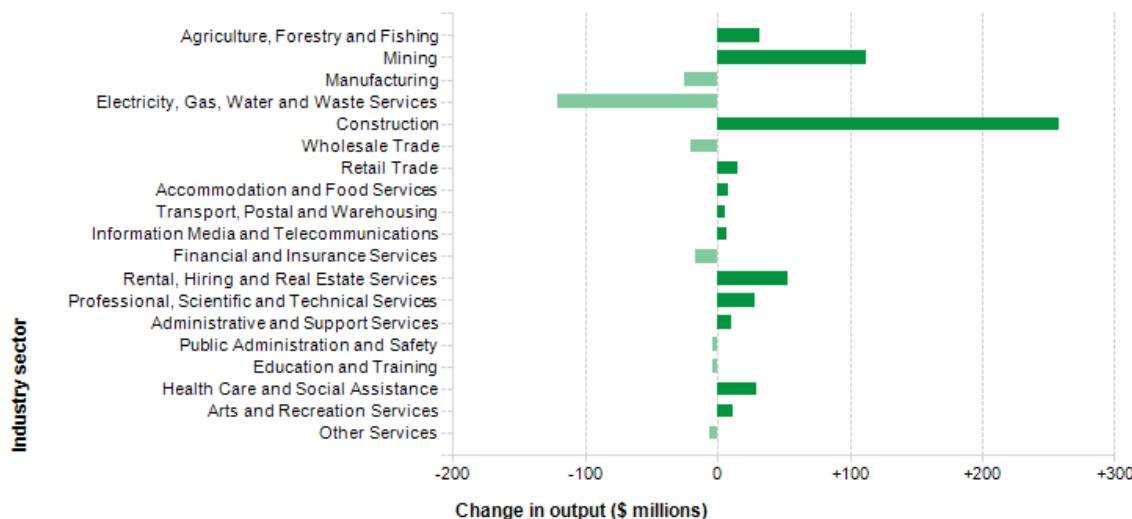


Source: National Institute of Economic and Industry Research (NIEIR) ©2016
Compiled and presented in economy.id by .id the population experts

Figure 3-2 Output by Industry, 2016/17 (per cent of total output)

Change in output by industry sector, 2011/12 to 2016/17

Clarence Valley Council area



Source: National Institute of Economic and Industry Research (NIEIR) ©2016
Compiled and presented in economy.id by .id the population experts

Figure 3-3 Change in output by sector from 2011/12 to 2016/17

3.6.2 Agriculture and primary industries

Clarence Valley LGA supports mapped Strategic Agricultural Land Biophysical, particularly around the flood plains of the Clarence River. This includes a substantial area of Tucabia.

In 2016/17, the total value of agricultural output in Clarence Valley Council area was \$106m (id 2018). The largest commodity produced was Livestock slaughterings, which accounted for 42.7 per cent of Clarence Valley Council area's total agricultural output in value terms. Specifically, in the context of Tucabia, a key industry visible in the local context is cattle farming (comprising 4.9 per cent of employment in Tucabia).

3.6.3 Tourism

In 2016/17, the total tourism and hospitality sales in Clarence Valley Council area was \$222.1 m, the total value added was \$111.2 m (id 2018). Based on 2016/17 figures, the tourism and hospitality workforce, make up 4.5 per cent of direct employment within the LGA (id 2018).

According to the 2016 Census, tourism and hospitality do not form part of the most common occupations or industry within both the Clarence Valley LGA or Tucabia. One bed and breakfast business (Squatters Rest) is located in the east of Tucabia.

3.7. Existing land uses

The proposal is located on land that is covered by the Clarence Valley Local Environmental Plan (LEP) 2011. The site of the proposal, and nearby surrounds, comprises the following land use zones:

- RU1 – Primary Production
- W2 – Recreational Waterways.

The objectives for each of these zones are:

RU1 – Primary Production

- *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base*
- *To encourage diversity in primary industry enterprises and systems appropriate for the area*
- *To minimise the fragmentation and alienation of resource lands*
- *To minimise conflict between land uses within this zone and land uses within adjoining zones.*

W2 – Recreational Waterways

- *To protect the ecological, scenic and recreation values of recreational waterways*
- *To allow for water-based recreation and related uses*
- *To provide for sustainable fishing industries and recreational fishing.*

The Clarence Valley LGA comprises rural areas, coastal areas, national parks, residential and rural residential areas, and commercial and industrial land use. The main urban areas are concentrated around the Grafton, Maclean and Yamba townships. Rural land is used largely for agriculture, particularly beef farming, sugar cane and forestry.

The area of Tucabia is a rural setting, with a small dispersal of residential land and associated development, including some businesses. The area otherwise supports agriculture, which provides not only a way of life but is a notable contributor to the local and regional economy.

The Coldstream River is a distinct feature of the local landscape and environmental quality. It supports aesthetic, environmental and recreational value and activity.

Land uses around the proposal include:

- The waterbodies of the Coldstream River and riparian areas (immediately adjacent)
- Some local businesses within Tucabia (approximately 1.5 kilometres southeast of the site)
- Low density residential development within Tucabia (approximately 1.5 kilometres southeast of the site)
- Rural land holdings and agriculture (nearest receiver located approximately 75 metres southwest of the site)
- Limited urban infrastructure.

3.8. Social infrastructure

Social infrastructure generally includes:

- Education facilities
- Health, emergency and aged care services
- Sport, recreation, and cultural and civic facilities
- Transport facilities, including roads and school bus routes.

Social infrastructure is generally concentrated around the main urban centres of Grafton, Maclean and Yamba, with limited presence in the immediate locality; however, that which exists in the study area includes:

- Tucabia public/primary school, approximately 2.0 kilometres south-east of the site
- Coldstream Community Pre-School, approximately 1.6 kilometres south-east of the site.

3.9. Access and connectivity

Briner Bridge was built in circa 1908 and was original a key link in the road infrastructure of the area, representing and expansion and improvement of the NSW road network. The river crossing of this type enabled safe bulk freight movement and reduced transporting costs for businesses within the region.

The route over Briner Bridge is used by various modes of traffic, including car, trucks, buses, tractors and implements. The bridge provides a valuable link enabling Tucabia residents to access nearby businesses and services located at Ulmarra. The bridge also provides the shortest transport route for residents accessing Grafton's commercial and services centres with alternate routes via Tyndale and Glenugie adding 18 kilometres and 10 kilometres to travel distances (respectively).

Common use of the bridge is by private car travel, school buses, and agricultural/primary industry activity. Motor vehicle ownership in the locality and broader region is very high and, as outlined previously, most people travel to work by private vehicle. The rural context reinforces the heavy reliance on private vehicle use.

Coldstream River is known to support formal and informal boating and navigation mostly recreational purposes. A boat ramp is located approximately 1.9 kilometres south of the site. The proposed works would have a temporary impact to navigation under the bridge during construction, however some short term full restrictions may be required.

3.10. Recreational facilities

There are no formal recreational facilities or open space within the site. There are also no parks or informal areas of open space likely to be used for recreational purposes. A boat ramp is located approximately 1.9 kilometres south of the site. The Coldstream River is known to support recreational activities (including kayaking/canoeing/boating/fishing).

3.11. Community values

It can be derived from desktop analysis, including the Clarence Valley Settlement Strategy (CVSS 1999) and the Upper Coldstream Biodiversity Project 2013-2017, as well as knowledge of the Clarence Valley Shire that community values and aspirations likely to be held within the study area and broader region would include (but not necessarily be limited to):

- Access and connectivity to nearby villages and Grafton's facilities and services. This includes that residents of regional areas often nominate the quality of roads as one of their biggest transport concerns/values
- The landscape qualities of the locality/region, particularly rural areas and waterways including Coldstream River
- Environmental and cultural values associated with the Coldstream River and adjoining environments and habitats.

Based on the CVSS (1999), the community is aiming to enhance community facilities (within the existing scale of the village) to increase self-reliance and reduce the need to constantly travel to other larger communities. People living in these small communities tend to do so for a number of reasons. These reasons include:

- Links to families in the region

- Reduced stress and a more relaxed lifestyle
- A greater sense of community
- More space
- Cheaper real estate options
- Rural living
- A safer environment
- Less competition for services.

4. Socio-economic impact assessment

4.1. Introduction

A preliminary scoping assessment of the proposal has concluded there would be social and economic impacts to the local community from the proposal. This socio-economic impact assessment has been prepared to assess and address all likely impacts, including:

- Access and connectivity
- Local business, industry and economy
- Tourism
- Local amenity
- Population and employment
- Property and land use
- Utilities and services
- Social and recreational infrastructure
- Distribution of social impact and housing
- Community health and safety
- Community values
- Cultural values (heritage)
- Cumulative impacts.

This section examines the social and economic impacts of the proposal during the construction phase. The operational phase would not result in any adverse impacts. While positive and negative impacts are discussed in the sections below, the level of significance of impacts has been specified for only negative impacts.

4.2. Impacts on access and connectivity

The proposal would temporarily impact local access and connectivity for road users, including light and heavy vehicles, agricultural equipment, emergency services and cyclists. The proposal would also impact local access and connectivity for some businesses and residents during the weekend. A temporary single lane bridge would be constructed on the upstream side of the bridge with approach roadworks tying in to Coldstream Terrace. The temporary bridge would be available for the entire project duration (except for occasional weekend closures and around flood events) and would be controlled by temporary traffic lights. The temporary bridge would otherwise provide access over Coldstream River while Briner Bridge is closed for the upgrade works.

Coldstream River is known to support formal and informal boating and navigation, mostly recreational purposes. A boat ramp is located approximately 1.9 kilometres south of the site. The proposed works would alter access within this section of the waterway (under the bridge).

As part of the communication/consultation process to the local community and affected stakeholders, Roads and Maritime would provide information regarding the detour routes, with approximate additional travel distances and times to assist in planning their journey.

Emergency services are generally regarded with high community value and play a critical role in the community. The closure of the temporary bridge could also affect the route emergency services take when responding to an incident, depending on their origin and destination. This may also affect emergency response times if they are unable to use what would normally be the most direct route. Nonetheless, the detours available would maintain access via the Pacific Highway north and south of Tucabia (via Tyndale and Glenugie), ensuring access to the local surrounding communities.

Emergency services would be consulted to ensure any impacts and use of the detours is appropriately planned for and managed.

The proposed detours during the short term temporary bridge closure would result in some additional traffic utilising local roads (Tucabia Road and Wooli Road) to access the Pacific Highway and other areas. While there would be an increase, the volume of additional traffic using the detours is not expected to be significant and would be predominantly local traffic movements. While there may be some impacts and inconvenience, the short duration of the temporary bridge closure (some weekends and during floods) and the length of the available detours are not considered to be significant or prohibitive and connectivity remains possible.

Upon completion of the works and reopening of the rehabilitated bridge, connectivity and access conditions would be restored to pre-work conditions. The works would improve the longevity and future use of the bridge and therefore result in a long-term positive outcome for the maintenance of access and connectivity of this important river crossing. Upon completion of the works and bridge reopening, any socio-economic impacts experienced during the construction would be removed.

The sensitivity of the community to access and connectivity is moderate due to the dependence of locals on their vehicles and local roads. The magnitude of impacts is considered to be low due to the provision of a temporary bridge immediately adjacent to the existing bridge and the short-term impacts on access and connectivity. Overall, the level of significance of impacts on access and connectivity during construction is considered to be moderate.

4.3. Impact on local business, industry and economy

Local businesses operating in the Tucabia area, includes:

- Cattle farms
- General store/service station (Tucabia)
- Wedding hire (Tucabia)
- Computer repairs (Tucabia)
- Australia Post (Tucabia)
- Bed and breakfast (Tucabia).

Most of the impacts to business stem from the temporary closure of the temporary bridge as discussed in Section 4.2. This would reduce transport links across the Coldstream River, requiring traffic to use detours via the Pacific Highway north and south of Tucabia. Subsequent effects of this on business and local economic activity relate to reduced efficiency, increased fuel costs and travel time and additional logistics planning and/or resourcing.

Suitable planning and appropriate notice would enable affected businesses to adapt to the short-term change, which would occur only when the temporary bridge is closed on some weekends and during floods. The proposal does not sever access completely. Detours are available via the Pacific Highway (north and south) to support continued farm and business operations.

On this basis, and given the analysis provided in Section 4.2 regarding access and connectivity, while there would be disruption to the normal road network, businesses are expected to continue to service and receive trade within the locality as well as tourists (see Section 4.4). The diversion would cause impacts and require adaptation and advanced planning, yet the scale of impact is not expected to be significant and can be managed.

With a minor increase in workers in the area during the construction phase, there may be an increase in demand for local goods and services.

Upon completion of the works, the local road network would operate as normal and no long-term impact to business or the local economy is predicted.

The sensitivity of local business, industry and economy are considered to be moderate. The magnitude of impacts is considered to be low, due to the short-term impacts during construction, the provision of the temporary bridge to minimise impacts, and the provision of detours during the temporary bridge closures. The level of significance of impacts is moderate- low.

4.4. Tourism

As outlined previously, the proposal would impact access and change local connectivity during any closure of the temporary bridge during the weekend or flood events. While this may alter the route taken to access a tourist site or business (e.g. bed and breakfast), these places would still be accessible via the detours routes of Tyndale and Glenugie. This would ensure that tourism places and businesses remain accessible. Both options also provide a scenic route to Wooli/Diggers Camp or Minnie Water. While some inconvenience could be experienced, it is not expected to be significant. People planning to visit a particular place would continue to be able to readily access it.

The sensitivity of tourist sites in the area is considered to be moderate. The magnitude of the impacts is considered to be low due to the short-term nature of the impacts, the provision of the temporary bridge and continued access to the sites provided by the detours. The level of significance of impacts on tourism is moderate- low.

4.5. Impacts on local amenity

Some amenity impacts to adjoining and surrounding properties are possible during the proposal. These could include, noise and vibration, air quality and visual impacts.

4.5.1. Noise and vibration

Construction noise and vibration impacts have been assessed by a qualified noise consultant as part of the REF (refer to Section 6.8 of the REF). The assessment methodology involved the use of background noise data, analysis of data and modelling of predicted noise and vibration impacts.

The rural landholding located approximately 75 metres southwest of the site would likely be subject to construction noise levels exceeding the acceptable levels; relating to the driven piling activity associated with the bridge works. Construction mitigation measures as part of the REF for the project would be implemented.

Vibration emitted during construction is predicted to be within appropriate criteria for the protection of human comfort and building damage. No significant vibration emitting plant is anticipated to be required and therefore negligible impacts are expected.

The proposal would not result in any increase to road operational noise following completion of the work.

The noise and vibration assessment report and REF outline specific mitigation measures to address and manage potential work-related noise and vibration impacts. These measures would be incorporated into the CEMP.

The sensitivity of the nearby rural landholding to noise associated with the bridge works is considered to be high. The magnitude of the impacts is considered to be low due to the short-term nature of the impacts associated with the piling activity and the limited receivers being impacted. The level of significance of impacts associated with noise is high-moderate.

4.5.2 Visual impacts

The aesthetic qualities or value of the locality are not expected to be adversely impacted by the proposal in the long-term. The character of the area would largely remain the same post-construction and no significant visual impact is expected.

During construction, site compounds, structures and machinery would be located around the site. This would be visible in the local area and present a notable change to the character and visual appearance of the site. However, this would be temporary and limited to the short-term construction phase. At the end of the construction phase, all site compounds, structures and machinery would be removed, and the bridge's visual appearance reinstated.

The sensitivity of the community to visual impacts associated with construction is moderate due to the visual presence of site compounds, structures, machinery and staff located around the site. The magnitude of impacts is considered to moderate due to the clearly visible yet short-term nature of the impact. Overall, the level of significance of visual impacts is considered to be moderate.

4.5.3 Air quality

Some potential air quality impacts may result from the proposal during construction work including disturbance and exposure of soil (dust), and the operation of plant and equipment. Any air quality impacts would be short-term and mitigation measures as part of the REF addressing air quality would be prepared and implemented as part of the CEMP.

Some additional traffic would be experienced on local roads, during the construction. This would consist of work vehicles and machinery, as well as other vehicles using the required detours during the periodic short-term closure of the temporary bridge. This is not expected to be significant and is unlikely to result in any notable change in air quality based on vehicle emissions given the rural context and no significant increase in traffic is expected.

The sensitivity of the community to air quality impacts is negligible during the construction phase as the works are unlikely to impact air quality of any nearby receptors. The magnitude of impacts is also considered to be negligible due to the limited number of receptors located within the rural setting of the bridge works and short-term duration of the works. Overall, the level of significance of impacts on air quality is considered to be negligible.

4.6. Impact on population and employment

The proposed works would take approximately 12 months and over that time the average construction workforce on site would be up to approximately 26 people (depending on the activities). The work would be completed by Roads and Maritime and relevant contractors. This does not amount to a significant influx of workers to the local area; however, it would provide some modest economic short-term stimulus for the locality. Additional indirect jobs could be created as a result of multiplier effects in associated industries supplying goods and services for the works.

Overall, there may be a minor short-term positive effect on employment and economic stimulus for the local area. Given the nature of the works, they would not influence population growth or decline. Population distribution would also not be influenced.

4.7. Property and land use impacts

No property acquisition would be required for the proposal. The site compounds would be primarily located within existing road reserve. There would be some short-term occupation of private property for the fabrication and storage of bridge elements and positioning of cranes. Other land use and property impacts relate to the road closure and detours, as well as construction related amenity impacts, discussed elsewhere in this report.

The sensitivity of property and land use to the proposal is low due to the short-term occupation of private property that ultimately does not diminish the rural activity for the landholders. The magnitude of impacts is also considered to be low due to the limited capacity of the works to affect the rural activity of the landholder. Overall, the level of significance of impacts on property and land use is considered to be low.

4.8. Utilities and services

A CVC water stop valve is located on the Ulmarra side abutment and a CVC submarine watermain pipeline is located along the northern side of the bridge. The submarine watermain pipeline would not be affected by the proposal. Consultation would be undertaken with CVC regarding relocation/ deletion of the stop valve in proximity to the proposed work. Above ground Telstra cables are also located along the northern side of the bridge and would not be affected by the proposal. Subterranean cables located running underneath the approach spans on the Ulmarra side of the bridge would require relocation in order to install the temporary bridge approach road.

The sensitivity of the community to the relocation of utilities and services to the proposal is low due to the ability of the utility works to be accommodated without impacts on local services. The magnitude of impacts is also considered to be low due to the limited capacity of the works to affect services locally. Overall, the level of significance of impacts on utilities and services is considered to be low.

4.9. Impact on social and recreational infrastructure

4.9.1 River access and recreation

Briner Bridge would be a designated construction site during the construction phase. Therefore, access to Coldstream River would be restricted around the bridge during construction. Access under the bridge via watercraft would also be restricted during certain periods of construction. This would need to be communicated to the users of the river as part of the consultation phase of the proposal. The sensitivity of the community requiring river access in the area is considered to be moderate. The magnitude of the impacts is considered to be moderate due to the noticeable yet short-term nature of the impacts. The level of significance of impacts on river access and recreation is moderate.

4.9.2 Tucabia Primary School and Coldstream Community Pre-school

The proposal may impact on students who live west of Briner Bridge and attend Tucabia Primary School and Coldstream Community Pre-school, however this would only occur during flood events. The temporary bridge would be removed during flood events and would take up to one week to reinstate post flood event. The worst-case scenario is for the students closest to Briner Bridge who would have to travel approximately 30 minutes (30 kilometres) extra each way to school while the temporary bridge

in not available. This is considered a moderate inconvenience during construction phase and only while the temporary bridge is closed during flood events. Roads and Maritime would consult with the schools and other stakeholders regarding the potential impacts. The temporary bridge would otherwise provide access across the river during school days (Monday to Friday).

The sensitivity of Tucabia Primary School and Coldstream Community Pre-school are considered to be moderate. The magnitude of impacts is considered to be low, due to the short-term impacts during construction, the provision of the temporary bridge to minimise impacts, and the provision of detours during the temporary bridge closures. The level of significance of impacts is moderate- low.

4.10. Impacts on cultural values

4.10.1 Non-Aboriginal heritage

The bridge is listed as Briner Bridge over Upper Coldstream River under section 170 of the NSW Heritage Act and within the State Heritage Inventory.

A Statement of Heritage Impact (SoHI) has been prepared by Dan Tuck (2018) for the proposal (refer to Section 6.10 of the REF). As part of the assessment, desktop and historical research was completed in addition to a field inspection.

The Briner Bridge upgrade would result in all of the fabric of the bridge renewed. While this would alter the structure physically, it is consistent with the modern approach to timber truss bridge management as espoused in the NSW Heritage Office-endorsed, Timber Truss Bridge Overarching CMP (2018). Importantly, the recognizable heritage form of the bridge (including its iconic Dare trusses) would be retained, and survival and safe operation of the bridge well into the future would be assured. Overall, the changes resultant of the capacity upgrade would not devalue the heritage significance of the bridge, nor impact the application to have the bridge listed on the State Heritage Register.

Due to the heritage significance of the bridge the sensitivity is considered to be moderate. The magnitude of impacts is considered to be low, due to the upgrade design not devaluing the heritage significance of the bridge, nor impacting the application to have the bridge listed on the State Heritage Register. The level of significance of impacts is moderate-low.

4.10.2 Aboriginal heritage

The proposal is near a river and within a landscape where Aboriginal objects may occur as a result of Aboriginal people's use of the water course in their everyday lives and for traditional cultural activities. However, given the highly disturbed nature of the area, it is unlikely that 'in situ' (original location) Aboriginal sites would exist. The Upper Coldstream Biodiversity Project 2013-2017 identifies strong cultural ties for the Yaegl community regarding the Coldstream River and adjoining landscapes. The Roads and Maritime Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI) was previously undertaken in November 2015 by Roads and Maritime's Aboriginal Cultural and Heritage Advisor, Mr Graham Purcell; identifying the proposal was unlikely to have an impact on Aboriginal cultural heritage. A second PACHCI was also undertaken by Mr Barry Williams in 2018 with consistent findings as the previous PACHCI.

Notification is required to any representative Aboriginal/Torres Strait Islander bodies for an area concerned where an act is to take place. The site is located within Crown Land. Review of the National Native Title Tribunal (NNTT) Online Register (September 2018) identifies that the site compound/fabrication area is subject to NCD2015/003 - Yaegl People #2 (Lot 1 DP 1104017). Roads and Maritime Services is therefore required to issue notification to representatives of the Native Title holders for their consideration and comment prior to undertaking the works.

Damage to heritage items could result from the proposal if such items occur undiscovered at the site; however, this is a low risk, particularly given the nature of the works and ground disturbance would be

minimal. Safeguards are provided in the REF to ensure any undiscovered Aboriginal heritage items uncovered during the proposal are not significantly affected. The PACHCI has identified that the potential for Aboriginal impacts is low, therefore the sensitivity is low. The magnitude of impact is low, due to the PACHCI findings that the proposal was unlikely to have an impact on Aboriginal cultural heritage. The level of significance of impacts is low.

4.11. Cumulative socio-economic impacts

The proposal has the potential to have cumulative environmental impacts with other existing or likely future activities in the locality. The most notable project in the locality is the upgrade to the Pacific Highway from Woolgoolga to Ballina (W2B). The proposal is in the vicinity of Glenugie to Tyndale section of this project. The W2B project is a State significant infrastructure project that would see significant changes to traffic conditions, speed limits, increased construction traffic and other impacts to the general locality. All of these impacts were assessed as part of the Project approval and are being addressed by way of various construction environmental management plans for each section of the project. W2B is currently under construction and is due to open to traffic by 2020.

Another significant project in the locality is the new Grafton Correctional Centre. The new Grafton Correctional Centre would be a safe and secure correctional facility servicing the northern part of NSW. It would be located on a 195-hectare site at Lavadia approximately 12.5 kilometres south-east of Grafton and about 10 kilometres south-west of Tucabia. Construction of the new correctional complex is underway and estimated to be completed by 2020. The new Grafton Correctional Centre project is also a State significant infrastructure project that would also see changes to local traffic conditions, speed limits, increased construction traffic during the construction phase.

The Briner Bridge proposal would reduce the choice of routes when the temporary bridge is closed during weekends or flood events. However, as discussed in previous sections, the short-term nature of the bridge closures would create minor inconveniences to residents and road users.

It is considered that other impacts from the bridge works would not significantly contribute to negative cumulative impacts in the locality. Any potential impacts on the environment from the proposal would also be minimised with the implementation of safeguards provided in the REF for the project. When finished the project would result in social economic benefits for the local and broader community (refer Section 4.15).

4.12. Socio-economic benefits of the proposal

Upon completion of the works and reopening of the bridge, conditions would be restored to that prior to the works. Despite some short-term impacts, the works would result in improved longevity and future use of the bridge, including reduced need for future maintenance. Therefore, upon completion of the works and bridge reopening, any potential socio-economic impacts that were experienced during the closure would be removed, and there are no anticipated long-term adverse socio-economic impacts associated with the proposal.

The current Briner Bridge operation enables one lane of traffic to pass over the waterway. The bridge works once complete would enable two-way traffic flow across Briner Bridge enabling safe traffic flow along this section of Coldstream Terrace.

The proposal also represents a socio-heritage benefit of retaining a dare timber truss heritage bridge in the Clarence Valley; especially in context of the removal Sportsmans Creek bridge at Lawrence which is a dare truss bridge.

Most benefits resulting from the proposal accrue for local road users and include:

- Improved road infrastructure

- Improved road safety outcomes
- Maintained serviceability of an important river crossing
- Continued access support for service delivery and emergency services
- Reduced maintenance and improved bridge longevity.

5. Mitigation measures

This section provides a range of measures for avoiding, managing, or mitigating potential socio-economic impact and maximising or enhancing the proposal's benefits.

5.1. Objectives

The objectives of the proposal for managing potential socio-economic impacts during construction and operation include:

- Ensure effective consultation and ongoing communication occurs at all stages of construction
- Prepare and implement a community communication/notification plan
- Minimise and manage impacts on local access and connectivity
- Minimise and manage impacts to business
- Minimise and manage impacts to amenity for nearby properties through measures such as noise, water and air quality controls (developed under the REF and CEMP)
- Manage social and recreational infrastructure impacts relating to the restricted use of land surrounding the site and waterway restrictions, as well as addressing school bus service impacts and other critical daily services/traffic
- Maintain community health and safety.

5.2. Summary of socio-economic safeguards and management measures

Recommended strategies to avoid, minimise and manage socio-economic impacts during the construction phase are provided in Table 5-1.

Table 5-1 Summary of safeguards and management measures

No	Impact/issue	Environmental safeguard/measure	Responsibility	Timing
1	Communication Plan	A Communication Plan (CP) would be prepared and implemented as part of the CEMP to help provide timely and accurate information to the community during construction. The CP would include (as a minimum): <ul style="list-style-type: none">• Mechanisms to provide details and timing of proposed activities to affected residents, including changed traffic and access conditions.• Contact name and number for complaints. The CP would be prepared in accordance with the Community Involvement and Communications Resource Manual (RTA, 2008).	Contractor	Pre-construction

No	Impact/issue	Environmental safeguard/measure	Responsibility	Timing
2	Notification	<p>All businesses, residential properties and other key stakeholders (eg schools, council, bus operators) affected by the activity would be notified at least 10 working days prior to commencement of the activity. Project/community updates would be provided throughout the duration of works as relevant.</p> <p>Notification would utilise both digital and conventional (non-digital) modes of communication (eg media release, letter box drops, newsletters and regular updates to a project website).</p> <p>Notification would include an information package, including contact name and number for enquiries or complaints, the expected timeframe of works and any planned or potential disruptions to utilities/services and changed road and traffic conditions. The package is also to include details on the Briner Bridge/road closure and the available detours.</p> <p>As part of the notification process, advanced warning signage would be established prior to and during the work to ensure road users are aware of the road closure and detours. Directional signage is to be placed along the detour routes.</p> <p>Additional and immediate notification to all affected stakeholders would also be undertaken during anticipated closure of the temporary bridge due to flood events including anticipated timeframes and dates for reinstatement of the temporary bridge post flood event.</p> <p>Roads and Maritime Services shall issue notification to representatives of the Native Title holders (NCD2015/003 - Yaegl People #2) for their consideration and comment prior to undertaking the works within Lot 1 DP 1104017.</p>	Roads and Maritime project manager and communications officer	Pre-construction and during construction

No	Impact/issue	Environmental safeguard/measure	Responsibility	Timing
3	Consultation	Ongoing stakeholder and community consultation would be undertaken in accordance with the <i>Roads & Maritime Communication Toolkit</i> . Consultation would include: <ul style="list-style-type: none"> • Clarence Valley Shire Council. • Residents and businesses within a minimum of 2.7 kilometres of the proposal. • Emergency services. • Tucabia Rural Fire Service. • Bus operators. • Local schools. 	Roads and Maritime project manager and communications officer	Pre-construction and during construction
4	Noise and vibration specific notification and consultation	Implement notification and community consultation measures with regard to airborne noise and ground-borne vibration impacts from the works, including: <ul style="list-style-type: none"> • Periodic notification of all identified receivers (monthly letterbox drop or equivalent) • Website • Project info line • Construction Response Line • Email distribution list • For highly noise emitting activities and activities scheduled outside of standard construction hours, provide phone calls or specific notification for each of the identified receivers (this is an additional measure as per noise assessment). 	Roads and Maritime project manager and communications officer	Pre-construction and during construction
5	Traffic	As per the notification process, advanced warning signage would be established prior to and during the work to ensure road users are made aware of changed traffic conditions and detour directions. Excluding the required detours, where possible, current traffic movements and property accesses would be maintained during the work. Any disturbance would be minimised to prevent unnecessary traffic delays.	Roads and Maritime project engineer and work supervisor	Pre-construction and during construction
6	Waterway	Advanced warning signage and/or beacons (appropriate for any applicable day and night time maritime requirements) would be established prior to and during the work to ensure any users of the Coldstream River are aware of restricted access, changed	Roads and Maritime project engineer and work supervisor	Pre-construction and during construction

No	Impact/issue	Environmental safeguard/measure	Responsibility	Timing
		navigational conditions or hazards within the work area and waterway. Signage would be provided at boat ramp to inform waterway users of changed access conditions at the bridge.		
7	School bus services	Maintain ongoing consultation and cooperation between Roads and Maritime and School Bus Services prior to and for the duration of the project, to ensure no adverse or unmanageable impact to important services. Any anticipated closure of the temporary bridge during flood events would need to be communicated to the affected School Bus Service.	Roads and Maritime project manager, communications officer, project engineer and work supervisor	Pre-construction and during construction
8	Complaints	A complaint handling procedure and register would be included in the CEMP and would include that all complaints would be responded to within 24 hours.	Roads and Maritime project manager and communications officer	During construction
9	Health and safety	Suitable site induction relating to site specific hazards would be undertaken for all contractor and Roads and Maritime staff. The work would be undertaken in accordance with all NSW health and safety legislative requirements and relevant Australian Standards.	Roads and Maritime project engineer and work supervisor	Pre-construction and during construction

6. Conclusion

This report provides an assessment of potential social and economic impacts associated with the upgrade of Briner Bridge. The assessment of social and economic impact included:

- Scoping the potentially affected groups and individuals, including potential issues of concern and the nature of the likely impact
- Profiling the nature of the individuals or groups likely to be affected
- Identifying the social impact associated with the proposal, who is affected and to what extent
- Assessing the likelihood of the impact and its significance
- Identifying and recommending measures to avoid, manage, or mitigate potential impact.

Overall, some short-term works and amenity related impacts would be experienced. Local residents and businesses would need to plan for and adapt to the changed road connectivity in the short-term; during weekend and flood event closures of the temporary bridge. However, the potential impacts associated with the temporary bridge closure are manageable with appropriate advanced planning and notification.

The proposal is expected to provide a net long-term benefit for the community and road users including:

- Improved safety outcomes
- A more reliable road network
- Maintain ongoing serviceability and operational access for road users.

The proposal's potential impacts can be managed by safeguards and management measures presented in this report, the REF and subsequent CEMP. Overall, while the short-term impacts cannot be avoided completely, no significant or long-term adverse impacts are likely. The proposal is necessary to maintain the long-term function of the bridge which is important to the local community.

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Terms and acronyms

Cumulative impact	The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.
Locality	The area of Tucabia, NSW.
Mitigation measure	Action to reduce the severity of an impact.
State Suburb (SSC)	<p>State Suburbs (SSCs) are an ABS approximation of localities gazetted by the Geographical Place Name authority in each State and Territory. SSCs are built from Mesh Blocks (MBs) that form an approximation of Gazetted Localities.</p> <p>SSCs cover most of Australia. Presently there remain areas of rural South Australia and rural Australian Capital Territory that are undefined. Various islands offshore from New South Wales, Victoria and Tasmania and some inshore water areas and islands are also undefined.</p>
Statistical Area Level 1 (SA1)	<p>The Statistical Area Level 1 (SA1) is the second smallest geographic area defined in the ASGS, the smallest being the Mesh Block. SA1s are built from whole Mesh Blocks. Whole SA1s aggregate directly to SA2s in the ASGS Main Structure, as well as Commonwealth and State Electoral divisions in the Non-ABS Structure.</p> <p>For the 2016 Census, SA1s would also be the basis of output for most data, the exception being some Place of Work destination zones and Usual residence one and five years ago. For 2016, SA1s also serve as one of the building blocks in the ASGS and are used for the aggregation of statistics to larger Census geographic areas.</p> <p>SA1s are designed to remain relatively constant over several Censuses. Future change would largely be dealt with by splitting existing SA1s. SA1s cover the whole of Australia with no gaps or overlaps.</p>
Study area	The area directly affected by the proposal and any additional areas potentially affected by the proposal, either directly or indirectly. For this socio-economic assessment, the study area is the proposal footprint and nearby surrounds, within the locality of the Tucabia State Suburb (also based on two Statistical Areas Level 1).
The site (works/proposal footprint)	The area of land that is directly impacted by the proposal. This includes Tucabia Bridge, as well as compound/ stockpile sites and area of road closure (refer to Figure 1-2).



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