Princes Highway Upgrade Program | Jervis Bay Road Intersection Upgrade

SOCIO-ECONOMIC ASSESSMENT

Prepared for Arcadis and Transport for NSW | 9 April 2021

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JERVIS BAY ROAD INTERSECTION UPGRADE | SOCIO-ECONOMIC ASSESSMENT

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PR138

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Transport for NSW proposes to upgrade the intersection of Jervis Bay Road and the Princes Highway in the vicinity of Falls Creek, NSW, located about 12 kilometres south of Nowra within the City of Shoalhaven local government area. The proposal would provide a grade separated through alignment for the Princes Highway with network access to Jervis Bay Road and Old Princes Highway provided via dual at grade roundabouts serviced by on and off ramps.

This socio-economic assessment has been prepared to support the Review of Environmental Factors (REF) for the proposal.

Based on the current proposal design, 19 full and 19 partial property acquisitions would be required as part of the proposal. There is potential for both positive and negative socio-economic impacts associated with property owners. There is the possibility that some property owners would see acquisition of their property as an opportunity to improve their social circumstances, while some property owners may experience adverse socio-economic impacts as a result of acquisition. This may take the form of financial pressure or social disruption as a result of forced relocation.

While changed traffic conditions during the estimated two-year construction period would impact the free movement of road users along the road network, ultimately the upgraded intersection would alleviate the impacts raised by the community. These impacts included traffic congestion, delays, and safety issues.

During construction a temporary revenue increase is expected, where money is injected into the community by suppliers contracted to the proposal.

It is unlikely that social infrastructure would be significantly impacted by the proposal, however, the local road network is an obvious component of infrastructure that would be temporarily impacted by road closures and/or diversions during construction. Specific measures would be developed as part of the proposal's construction traffic management plan to manage these impacts. The above short-term negative impact is balanced by the proposal's predicted ability to:

- Improve safety
- Reduce queuing and delays at the intersection
- Facilitate multimodal trips.

In this scenario, the net impact arising from the proposal would be positive.

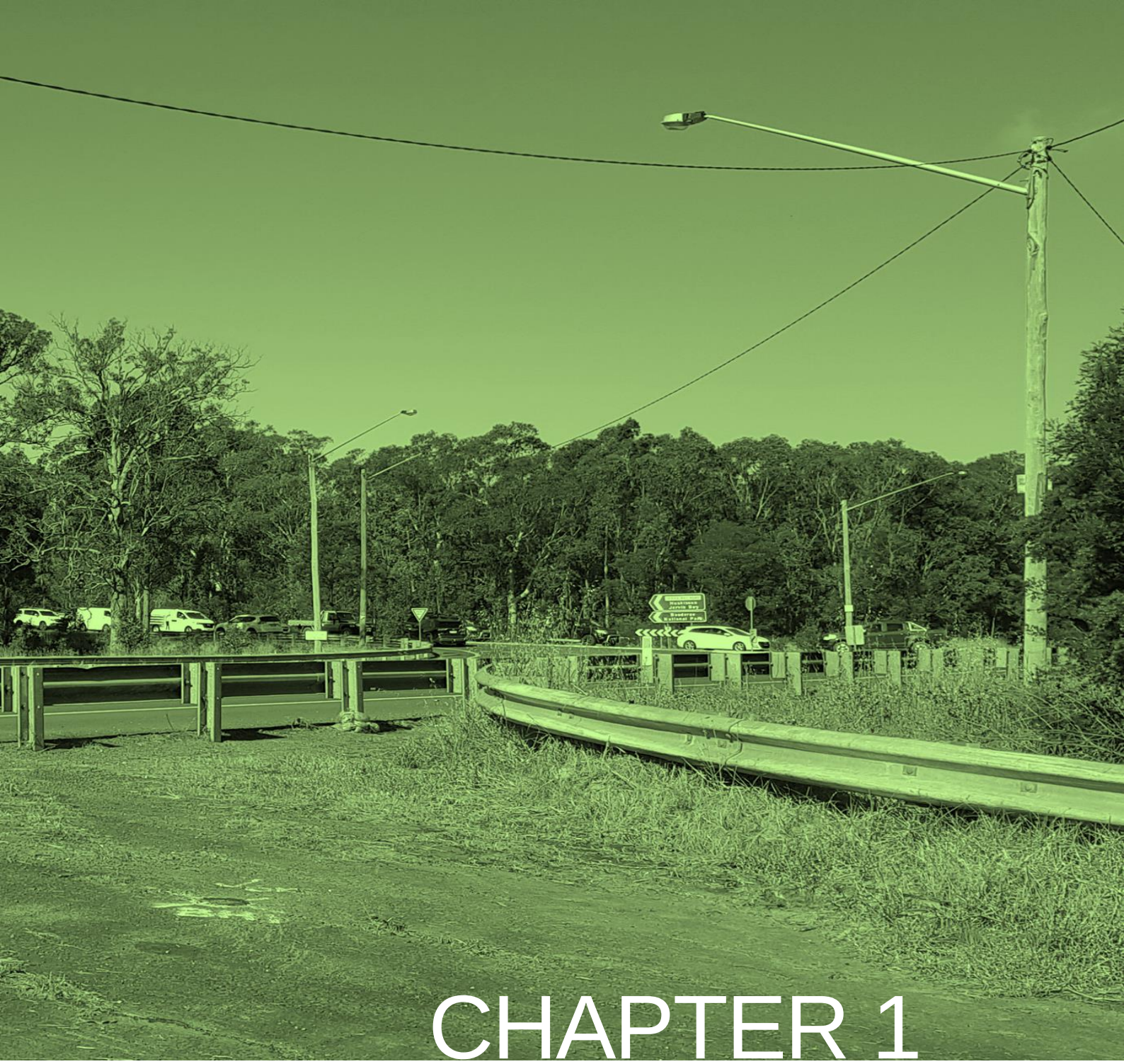
Although the proposal has the potential to result in negative access impacts for residents at some properties along Princes Highway and Jervis Bay Road during construction, these impacts are proposed to be mitigated and the scale of this impact is comparatively minor compared to the predicted overall positive socio-economic impacts once the proposal has been completed. The major positive impacts are predicted to be:

- Safer access to and from the highway and Jervis Bay Road for residents with a frontage to these roads
- The significant alleviation of congestion at the intersection for the population living in Falls Creek or travelling between Ulladulla and Nowra and to the towns located near Jervis Bay.

The implementation of safeguards and management measures would assist in avoiding or mitigating potential impacts on the socio-economic environment of the study area during construction and operation, while maximising or enhancing proposal benefits.

Glossary

Definitions	
ABN	Australian business number
ABS	Australian Bureau of Statistics
Arcadis	Arcadis Pty Ltd
CSEP	Community and Stakeholder Engagement Plan
dB(A)	A weighted sound level
EEC	Endangered ecological communities
Element	Element Pty Ltd
EP&A Act	Environmental Planning and Assessment Act 1979
IRSD	Index of relative socio-economic disadvantage
NML	Noise management level
NO_2	Nitrogen dioxide
NSW	New South Wales
PM_{10}	Particles with a diameter of 10 micrometres or less
Proposal (The proposal)	Upgrade to the intersection of Jervis Bay Road and the Princes Highway
REF	Review of Environmental Factors
SA3	Statistical Areas Level 3 SA3s are designed to provide a regional breakdown of Australia. They generally have a population of between 30,000 and 130,000 people. In regional areas, SA3s represent the area serviced by regional cities that have a population over 20,000 people. They often closely align to large urban Local Government Areas.
SEA	Socio-Economic Assessment
SEIFA	Socio-Economic Indexes for Areas
Statistical area	Geographical area with similar regional characteristics
Transport for NSW	Transport for New South Wales



CHAPTER 1
INTRODUCTION

1 INTRODUCTION

Element Environment Pty Ltd (Element) has been engaged by Arcadis Pty Ltd (Arcadis) to conduct a socio-economic assessment (SEA) for the Transport for NSW Jervis Bay Road intersection upgrade. This report contains the results of the SEA.

1.1 Proposal overview

1.1.1 Background

Transport for NSW proposes to upgrade the intersection of Jervis Bay Road and the Princes Highway (the proposal) in the vicinity of Falls Creek, NSW, located about 12 kilometres south of Nowra within the City of Shoalhaven local government area. The proposal would provide a grade separated through alignment for the Princes Highway with network access to Jervis Bay Road and Old Princes Highway provided via dual at grade roundabouts serviced by on and off ramps.

1.1.2 Features

Key features of the proposal are shown in Figure 1-1 and would include:

- A new intersection between Jervis Bay Road and the Princes Highway, incorporating:
  - Realignment of the existing Princes Highway, including widening from two lanes to a four-lane divided highway (two lanes in each direction), with median separation using flexible safety barriers, providing an uninterrupted through alignment for the Princes Highway
  - An overpass bridge over Jervis Bay Road
  - An unsignalised single-lane at-grade double roundabout interchange providing:
    - Direct access from Jervis Bay Road and Old Princes Highway to the Princes Highway
    - Direct access from the Princes Highway to Jervis Bay Road and Old Princes Highway
  - Direct connection to existing properties and businesses at the Old Princes Highway
  - A connection from Willowgreen Road to Old Princes Highway
  - Tie-ins with the Old Princes Highway and with Jervis Bay Road
- Access road to service Princes Highway properties south east of the intersection
- Shared user paths along Jervis Bay Road, connecting to the new bus bay and Jervis Bay Road and Old Princes Highway road shoulders
- Adjustments of drainage infrastructure and provision of new drainage infrastructure such as pit and pipe networks, culverts, open channels and retention basins
- Permanent water quality measures such as vegetated swales, bioretention swales and bioretention basins
- Adjustment, protection and relocation of existing utilities
- Other roadside furniture including safety barriers, signage, line marking, lighting and fencing
- A bus bay adjacent to the interchange, including kiss and ride facility
- Establishment and use of temporary ancillary facilities during construction
- Property works including acquisition, demolition and adjustments to accesses, and at-property noise treatments
- Rehabilitation of disturbed areas and landscaping.

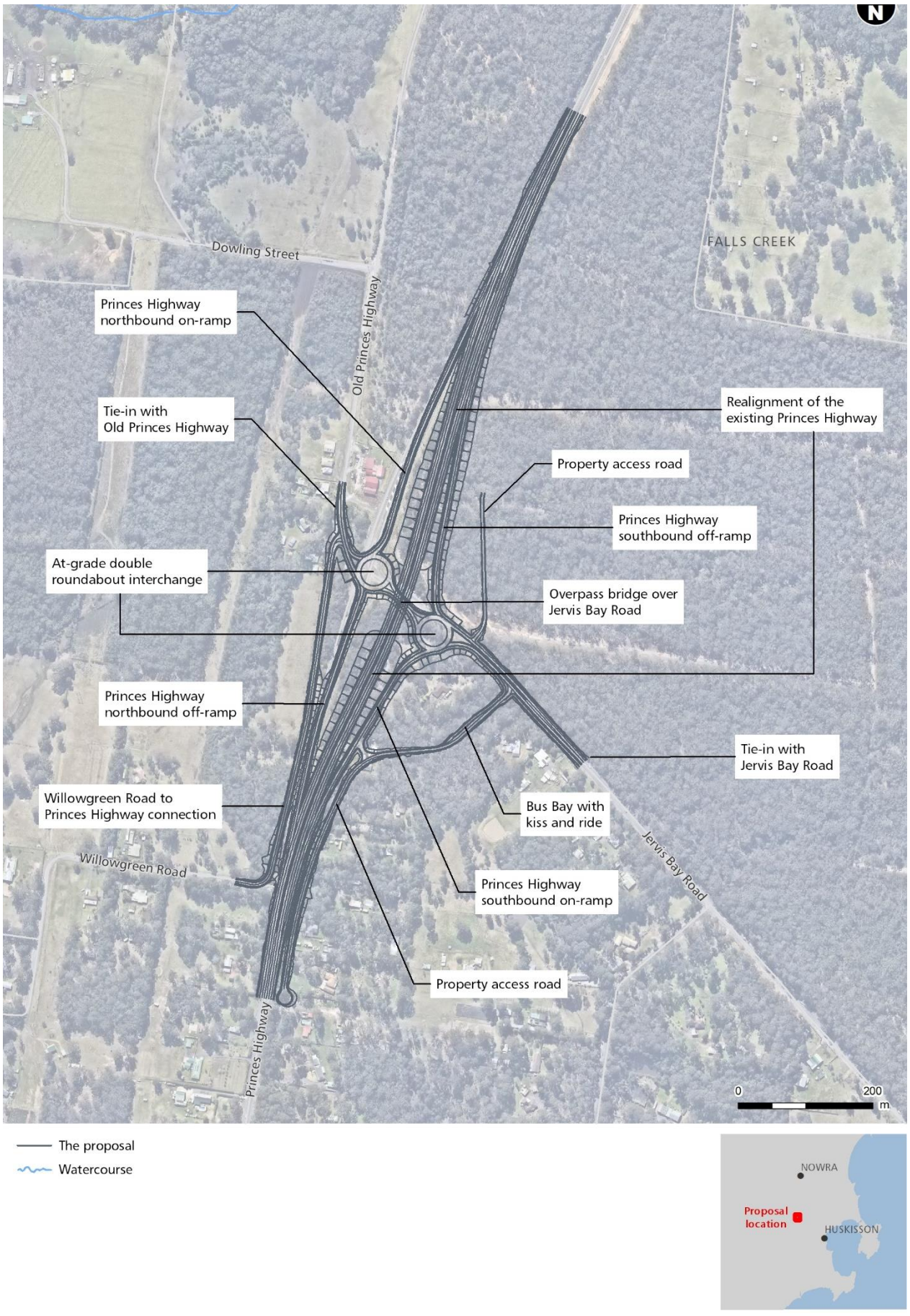


Figure 1-1 The proposal

1.1.3 Key construction activities

Key construction activities would include:

- Pre-construction and early works
  - Demarcation of proposal construction footprint with construction fencing and temporary safety barriers where required
  - Installation of erosion and sediment controls
  - Set up of temporary traffic management arrangements.
- Site establishment
  - Site survey, geotechnical and other investigations
  - Pre-clearing biodiversity surveys
  - Vegetation clearing and grubbing
  - Mobilisation and establishment of ancillary facilities.
- Intersection construction
  - Utilities relocation/protection including overhead power lines
  - Construct temporary Jervis Bay Road alignment
  - Construct access road for south eastern properties
  - Construct Old Princes Highway connection
  - Construct eastern and western ramps and associated fill embankment
  - Construct bridge, bridge abutments and retaining walls
  - Construct roundabouts and connecting roads
  - Tie-in works
  - Construction of new drainage structures and extension or replacements of existing drainage structures
  - Construction of pavement layers including selected material, sub-surface drainage, subbase and base layers and surfacing
  - Construction of vegetated swales, bioretention swales and bioretention basins
  - Installation of lighting, safety barriers, traffic signs and bus shelters
  - Line marking and raised pavement markers
  - Fencing
  - Property accesses adjustments.
- Finishing work
  - Rehabilitation of disturbed areas and landscaping in accordance with the urban design and landscape plan
  - Installation of safety barriers, street lighting, fencing and roadside furniture
  - Decommission and rehabilitation of ancillary facilities.

Subject to the proposal obtaining planning approval, construction is anticipated to commence in 2022 and is expected to take around two years to complete.

1.1.4 Proposal construction footprint and ancillary facilities

The area required to construct the proposal is presented in Figure 1-2.

The ancillary facilities described in Table 1-1 are required to support construction operations.

Table 1-1 Ancillary features

Facility	Location	Purpose
Ancillary Facility 1	▪ 24 Jervis Bay Rd, Lot 7 DP1093336 ▪ 921 Princes Highway, Lot 59 DP15507	▪ Offices ▪ Amenities ▪ Workshops ▪ Stockpile and laydown areas ▪ Car park ▪ Storage areas.
Ancillary Facility 2	▪ 24 Willowgreen Rd, Lot 1 DP871596	▪ Stockpile and laydown area ▪ Car park.
Ancillary Facility 3	▪ 132 Jervis Bay Rd, Lot 4 DP773881	▪ Stockpile and laydown area.

1.2 Report purpose

Arcadis is preparing a Review of Environmental Factors (REF) to assess the environmental impacts of the proposal, to fulfil the requirements of Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A), and to take into account all matters affecting or likely to affect the environment as a result of the proposal. This SEA is a specialist study developed to support the REF.

This report provides an assessment of potential socio-economic benefits and impacts of the proposal and includes:

- A description of the existing socio-economic profile of potentially affected communities, businesses and groups near the proposal
- An assessment of potential changes to socio-economic conditions from the construction and operation of the proposal
- Recommended environmental management measures to enhance the proposal benefits and to avoid, manage or mitigate its potential socio-economic impacts.

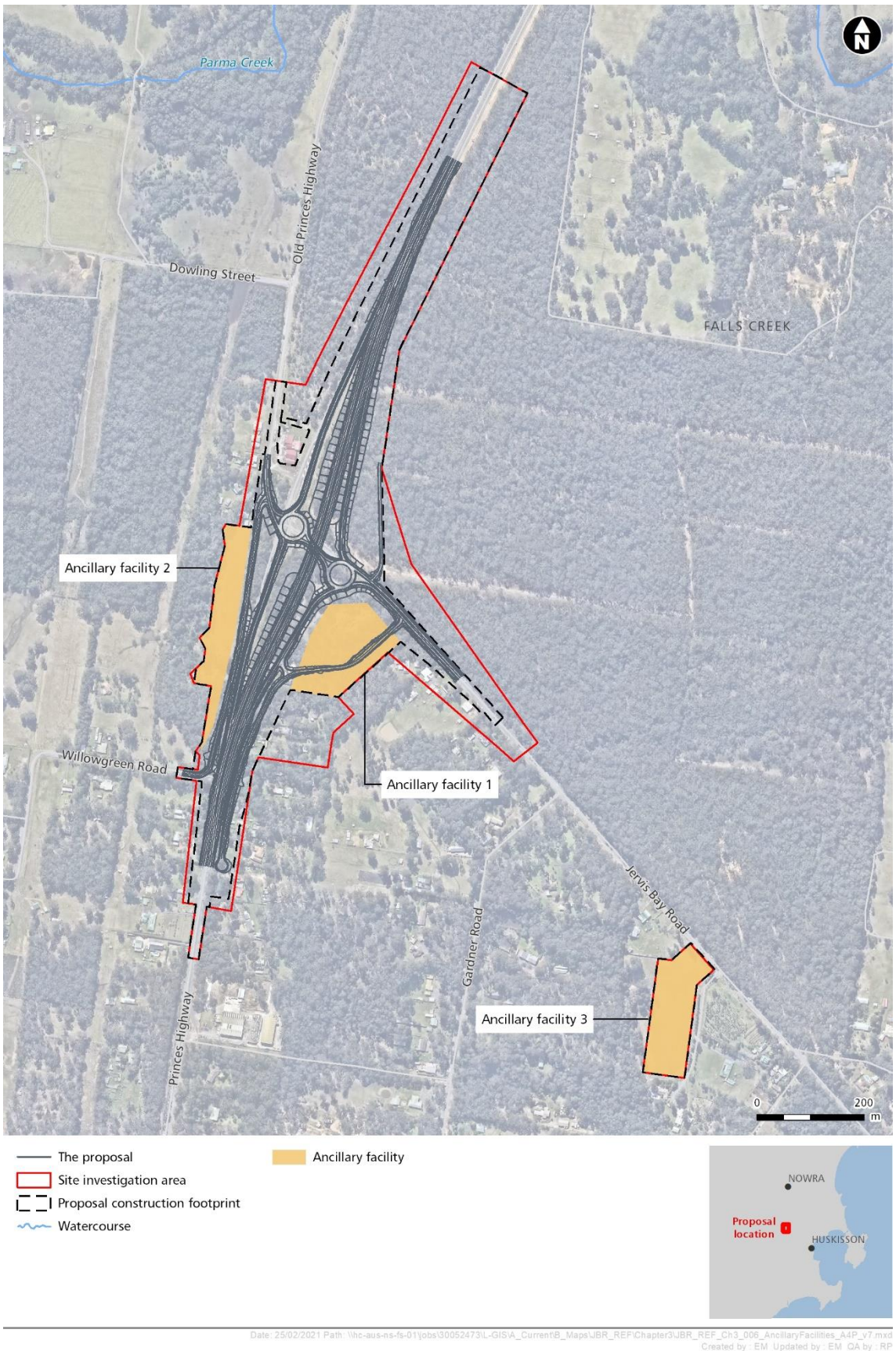
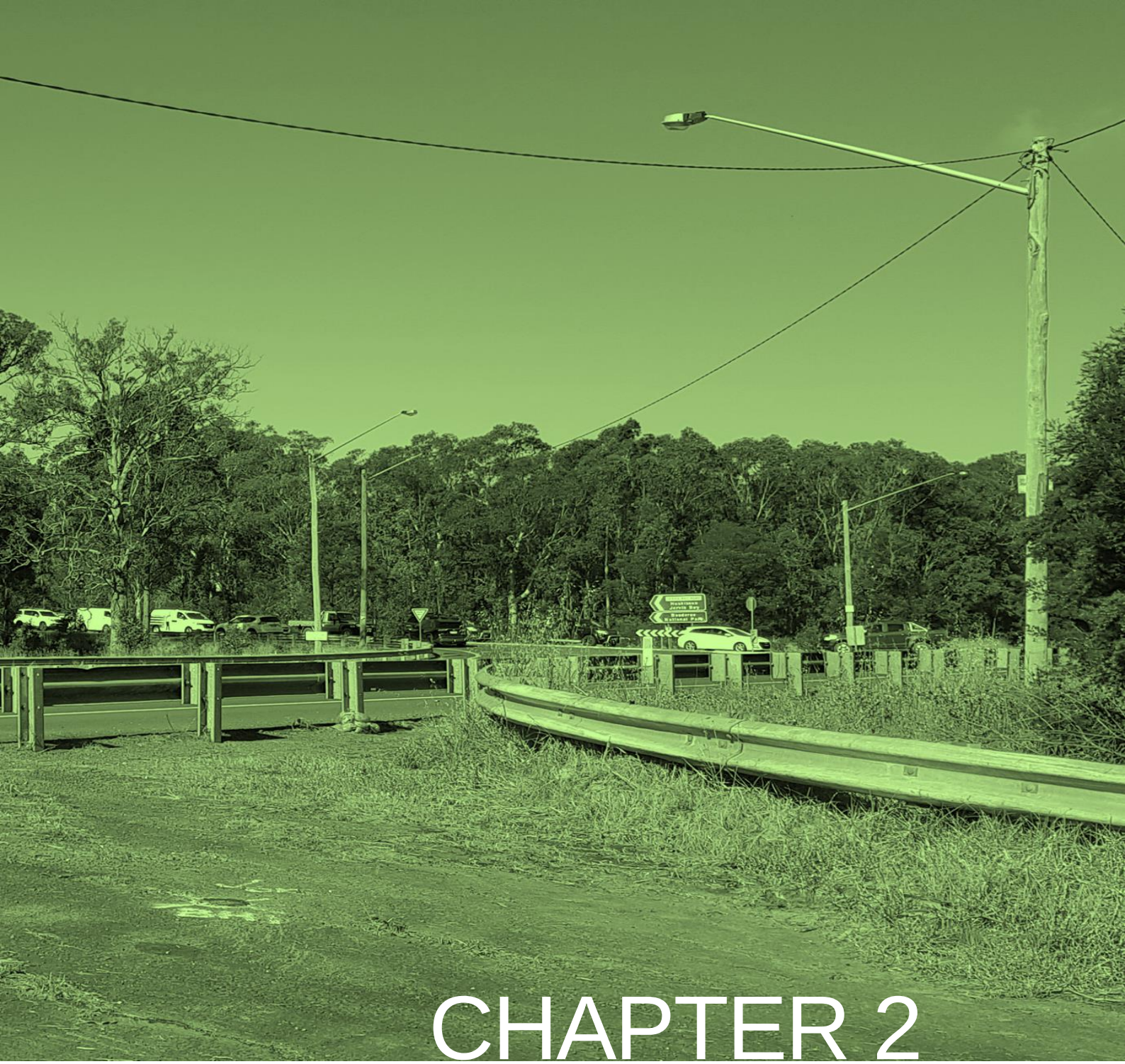


Figure 1-2 Proposal construction footprint and ancillary facilities



CHAPTER 2

SOCIAL POLICY FRAMEWORK

2 SOCIO-ECONOMIC POLICY, STRATEGY AND STUDIES RELEVANT TO THE PROPOSAL

2.1 Draft Illawarra Shoalhaven Regional Plan

The draft *Illawarra Shoalhaven Regional Plan 2041* (NSW Department of Planning, 2020) provides the strategic policy, planning and decision-making framework to guide the region to sustainable growth over a 20-year period. It integrates economic, social and environmental considerations in the interests of achieving ecologically sustainable development.

With specific reference to the proposal, key drivers of the plan are informing councils' land use planning, informing the work of infrastructure agencies to plan for growth and change, and informing the private sector and the wider community of the NSW Government's approach to creating a connected, sustainable, innovative and vibrant Illawarra Shoalhaven. This plan promotes a smart, connected and accessible region integrating land use and transport planning to maximise the benefits of investments in the region. The Princes Highway plays an important role in achieving this goal by connecting regional towns to larger centres like Nowra, Ulladulla and Sydney.

Jervis Bay is a key area for tourism in close proximity to the proposal area, highlighting the importance of ensuring that the road network servicing this sector can cater for increased vehicular movement. Upgrading the Jervis Bay Road and Princes Highway intersection to improve safety, reducing queuing and delays, and facilitating multimodal trips is an important step in achieving the goals of the regional plan.

2.2 Future Transport 2056 Strategy

The *Future Transport 2056 Strategy* (New South Wales Government, 2018a) outlines a 40-year vision to create and maintain a world class, safe, efficient and reliable transport network across NSW.

There are a series of infrastructure and services plans that underpin the delivery of the strategic directions and customer outcomes.

The proposal contributes to achieving several of the key objectives including:

- Supporting the hub and spoke transport network that connects regional cities (Wollongong) to outlying towns and centres (including Nowra, Vincentia, Ulladulla and Batemans Bay)
- Adopting a Safe System approach to the delivery of road safety improvements to contribute to achieving the 'Towards Zero' target. The project traffic and transport assessment (Arcadis, 2020) established that between April 2009 and March 2019, 26 crashes were recorded at the intersection of Jervis Bay Road and Princes Highway. These accidents have been categorised as follows:
    - 73% of crashes involved at least one person being injured
    - 27% of crashes were non-casualty crashes that involved towaways
    - Seven crashes causing serious injury were recorded
    - A total of 38 people were injured within the study area, and
    - No fatal crashes were reported.

2.3 Connecting to the future – Our 10 Year Blueprint

Connecting to the future – Our 10 Year Blueprint (Transport for New South Wales, 2018) lays out Transport for NSW's desired outcomes, ambitions and strategic priorities over a 10-year period. It sets out where Transport for NSW needs to focus its efforts in the near term to move towards the long term vision outlined in *Future Transport 2056*. It is structured around four primary outcomes that focus on connecting customers and communities and contributing to a strong economy and quality of life.

The proposal contributes to achieving several of the key outcomes including:

- Safe, seamless journeys for people and goods
- Transport Investments and solutions that service the people of NSW
- Quality assets and efficient networks managed at the right price.

2.4 Regional NSW Services and Infrastructure Plan

For regional NSW, the *Future Transport Strategy 2056* is supplemented by the *Regional NSW Services and Infrastructure Plan* (NSW Government, 2018b) which identifies initiatives required in the short, medium and long term to meet customer needs now and into the future. It outlines the vision and customer outcomes that the Government will use to go about detailed transport planning in each region and support future decision making.

The proposal contributes to the commitment to investigate duplication of the Princes Highway between Jervis Bay Road and Moruya.

2.5 Tourism and Transport Plan

The *NSW Tourism and Transport Plan* (NSW Government, 2018c) is a key supporting plan to the *Future Transport Strategy 2056*. The plan provides a framework of customer outcomes and initiatives that are designed to harness emerging technology and service models as well as visitor trends.

The proposal supports the following customer outcomes and initiatives:

- Enhancing the visitor experience
  - Improved travel experiences to and from destinations
- Greater access to more of NSW
  - Connecting visitors to the regions
  - Improved services
- A seamless experience
  - Servicing events, festivals and peak holiday times
  - Integrating tourism into transport planning.

2.6 NSW Road Safety Strategy 2021

The *NSW Road Safety Strategy 2021* (NSW Government, 2018d) outlines how Transport for NSW will work towards the State Priority Target of reducing fatalities by 30 per cent by 2021[1]. The

[1] compared to average annual fatalities over 2008–2010

strategy also aligns the Towards Zero vision within the Future *Transport Strategy 2056*, which aims to have a NSW transport network with zero trauma by 2056.

The proposal contributes to the commitment to reduce fatal and serious injury crashes on rural roads by applying a Safe System approach to intersection design.

2.7 NSW Freight and Ports Plan 2018 – 2023

The *NSW Freight and Ports Plan 2018 – 2023* (NSW Government, 2018e) details how the NSW Government will provide an efficient freight network for the public and private sectors to sustain the local economies across NSW. It supports the *Future Transport Strategy 2056* and provides direction to business and industry for managing and investing in freight. It is a call to action for industry and government to collaborate on clear initiatives and targets to make the NSW freight task more efficient and safe so NSW can continue to move and grow. The plan includes an implementation plan of over 70 initiatives, with emphasis on regional corridors.

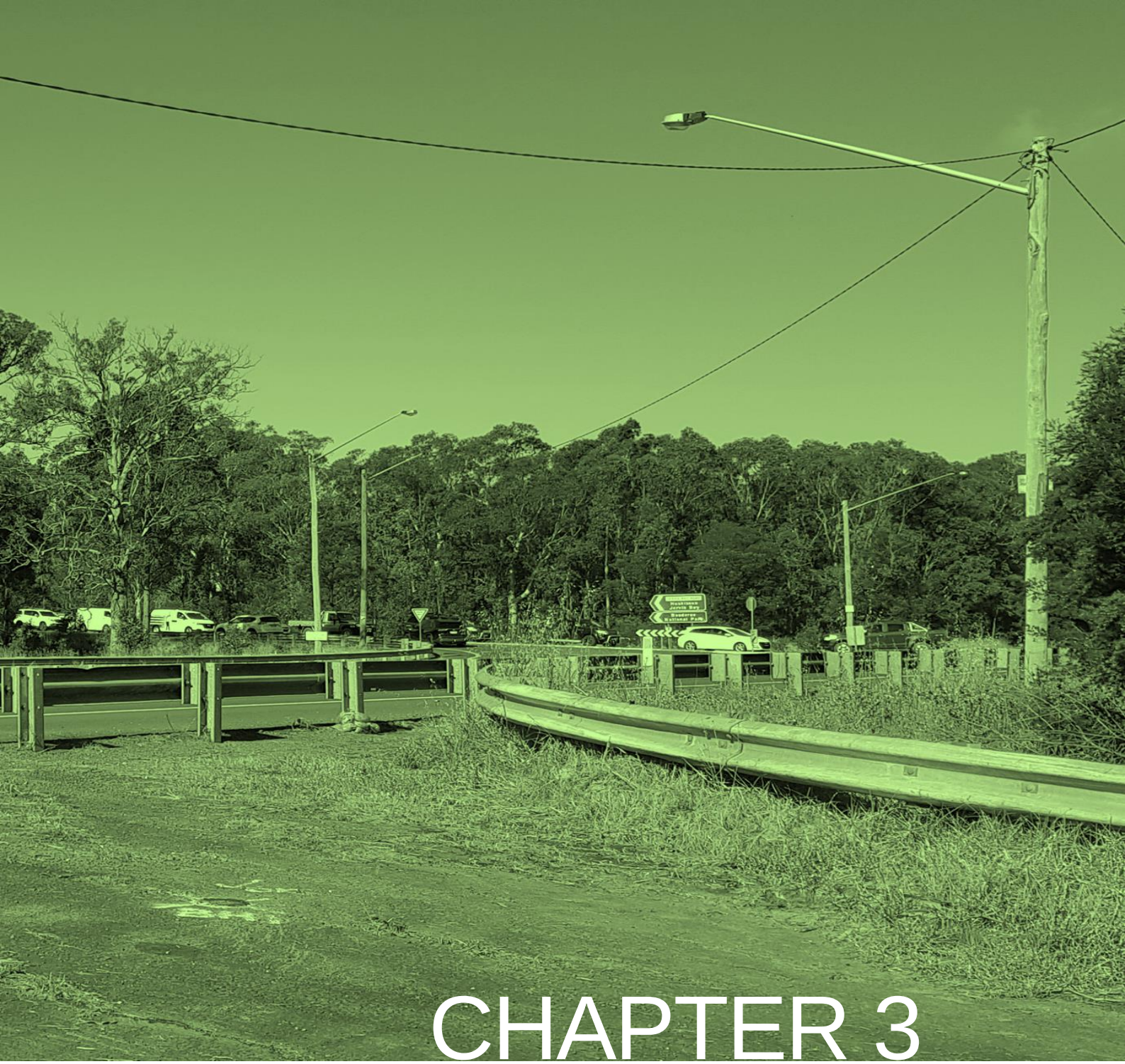
The proposal supports the plan by:

- Enhancing productivity
- Enabling regional growth
- Reducing fatalities and serious injuries from crashes involving heavy vehicles or light trucks.

2.8 NSW South Coast Marine Tourism Strategy 2019

The *NSW South Coast Marine Tourism Strategy 2019* (NSW Government, 2018f) provides guidance for local, regional, State and Commonwealth governments to fulfil the potential of the region's marine environment over a 20-year period. It provides a framework to improve connectivity between marine tourism assets, visitor experiences and infrastructure to facilitate sustainable tourism growth.

The proposal aligns with Strategic Direction 4: Tourism Activation of the Marine Environment by improving accessibility to the South Coast from Sydney.



CHAPTER 3
ASSESSMENT METHODOLOGY

3 ASSESSMENT METHODOLOGY

3.1 The study area

The City of Shoalhaven, a local government area in the south-eastern coastal region of New South Wales, is the SEA study area, with a particular focus on the suburb of Falls Creek where the proposal is located, as illustrated in Figure 3-1.

Falls Creek is a small rural town, approximately 12 kilometres south of Nowra and is situated at the Princes Highway and Jervis Bay Road intersection. The town is comprised of large residential blocks to the east and west of Princes Highway (Figure 3-1). Large areas of State Forest are located on both sides of the highway. Falls Creek contains businesses, predominately operating from private properties, along the Princes Highway and the roads adjoining it.

The Princes Highway passes through the local government area and supports communities, businesses and tourism, and connects towns and regional centres throughout the south coast of NSW. The highway helps drive the state's third largest regional economy, facilitating the movement of the local population and tourists.

3.2 Social infrastructure

The *Spatial Services NSW Point of Interest* web service (NSW Department of Finance, Services and Innovation, 2018) was searched to determine the existing social infrastructure associated with the proposal. The web service allows users to search for and identify the location of features that people may want to see on a map, know about or visit. Point of interest features are maintained within the Spatial Services Digital Topographic Database. The features are listed under the following categories:

- Community
- Education
- Medical
- Recreation
- Transportation
- Watercourses.

Social infrastructure in Falls Creek is described in Table 3-1 and shown in Figure 3-1.

Table 3-1 Social infrastructure in Falls Creek

	Social infrastructure	Type	Approximate distance from the proposal
1	Bengalala	Homestead	2.6 kilometres
2	Boonja Farm	Homestead	3.4 kilometres
3	Church of Christ	Place of worship	800 metres
4	Falls creek rural fire brigade	Volunteer-based firefighting agency	1.4 kilometres
5	Falls Creek picnic area	Public facility	1.8 kilometres
6	Falls creek public school	School	2 kilometres
7	Glenreagh	Homestead	900 metres
8	Inasmuch community	Residential aged care	2 kilometres
9	Split seven	Homestead	3.5 kilometres
10	Tannock Farm	Homestead	2 kilometres
11	The spinney	Homestead	4.2 kilometres

	Social infrastructure	Type	Approximate distance from the proposal
12	Willowgreen	Homestead	300 metres
13	Woncor	Homestead	3.7 kilometres

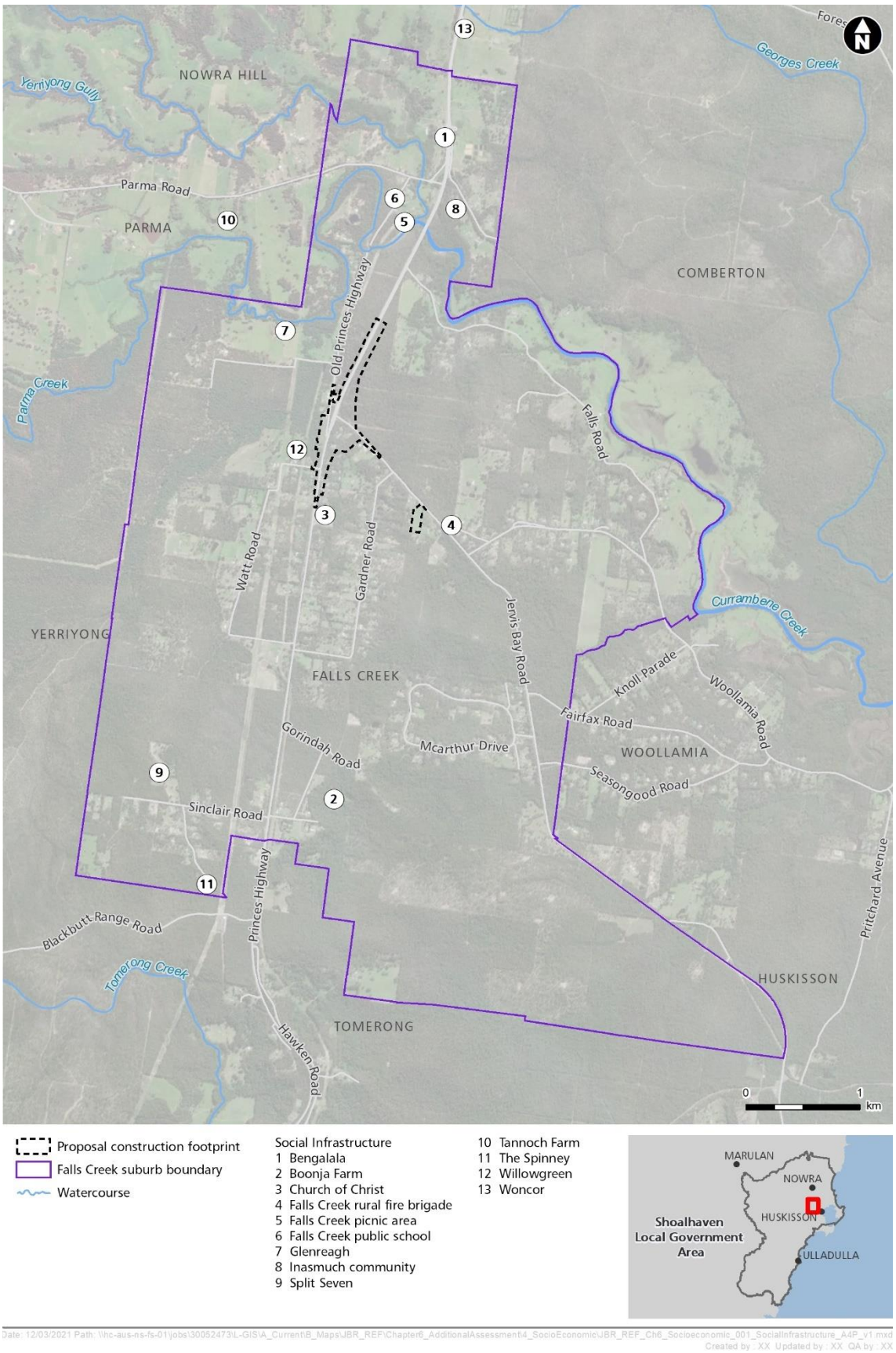


Figure 3-1 The study area and existing social infrastructure

3.3 Proposal inception meeting

A proposal inception meeting with Arcadis staff was held via teleconference to commence the SEA. The meeting was valuable to determine the:

- Key contacts in the proposal team
- Level of stakeholder consultation undertaken to date and the availability of consultation records beyond those contained in the proposal community consultation report (Roads and Maritime Services, 2020)
- Availability of previous socio-economic studies conducted by Transport for NSW
- REF investigations available to complement the SEA.

3.4 Literature review

Existing socio-economic literature and other SEA inputs relevant to the proposal were collected and reviewed. This material is cited throughout the report.

The review provided two benefits to the SEA. First, it enabled the development of knowledge about the proposal and its local and regional context. Second, it enabled the identification and collection of data pertinent to the socio-economic profile.

The Transport for NSW socio-economic assessment practice note (the practice note) (TfNSW, 2020) was included in the literature review. A moderate level assessment was nominated for the SEA on the prediction that the proposal would align with the moderate level assessment definition in the practice note (i.e. it would have several impacts, two or more medium or high impacts, or moderate impacts on groups of people).

3.5 Data sources used to inform the study

Data sources relied upon for the SEA included the range of primary and secondary sources shown in Table 3-2.

Table 3-2 SEA data sources

	Data source	Description
Proposal construction footprint	Jervis Bay Road upgrade GIS portal	The proposal construction footprint is the area required to construct the proposal
Regional profile	Social policy and community strategies	Secondary data from state or local government policies, or Council's community strategies (as cited)
Existing socio-economic profile (associated with the study area)	Australian Census of Population and Housing (Australian Bureau of Statistics, 2018) Semi-structured interview results Illawarra Shoalhaven Regional Development Plan 2036 Future Transport 2056 Strategy Regional NSW Service and Infrastructure Plan	Secondary demographic data and descriptive information about the local community

SEA component	Data source	Description
Socio-economic assessment	REF specialist studies including but not limited to the: ▪ Noise and Vibration Assessment (Resonate, 2021); ▪ Urban Design Report and Landscape Character and Visual Impact Assessment (Spackman, Mossop, Michaels, 2021); and ▪ Traffic and Transport Assessment (Arcadis, 2021).	Secondary data from specialist studies conducted specifically for the REF
	Semi-structured interview results	Primary data derived from the semi-structured interview with Council
	Business impact survey	Primary data derived from telephone surveys with business owners in the area surrounding the proposal
	Socio-economic literature	Secondary data from existing socio-economic studies conducted by government or private organisations (as cited)
	Transport for NSW community engagement carried out for the proposal strategic and preferred options	Secondary data in the form of Transport for NSW correspondence or community engagement records
Social infrastructure	Spatial Services Digital Topographic Database (NSW Department of Finance, Services and Innovation, 2018)	Secondary data from the database identified the location of features that people may want to see on a map, know about or visit (e.g. point of interest features)

3.6 Socio-economic profile development and desktop research

An archive of socio-economic indicators relevant to the profile was collected and analysed. Consistent with the moderate level of assessment defined in the practice note, secondary data was obtained, predominantly via desktop research. All relevant data sources are cited in this report.

3.7 Semi-structured interview with Council representative

A semi-structured interview was conducted on 6 October 2020 with a representative from the City of Shoalhaven (Council) to explore potential socio-economic impacts (both positive and negative) of the proposal and explore the community values (see Section 4.2.8) in the area surrounding it.

The work of Bradshaw and Stratford (Bradshaw & Stratford, 2010) with regard to qualitative research design and rigour, was helpful in designing the semi-structured interview methodology. The authors provide guidance in relation to participant selection and sampling. Their work explains that in qualitative research, the number of people we interview, communities we observe, or texts we read, is less important than the quality of who or what we involve in our research, and how we conduct that research. Their work emphasises that ‘purposive’ sampling is typical in this type of research, and that the sample is not intended to be representative given the emphasis is usually on the analysis of meanings.

These principles were applied to the SEA semi-structured interview and the participant (i.e. Council representative) was invited to participate. A list of predetermined questions was developed in advance of the interview to guide the conversation. The questions were not fixed but instead provided a flexible structure which allowed the interviewer to create and ask questions about situations as they emerged, and the interviewee to digress and express views freely (Vilela, 2018).

The implementation of the method involved:

1. Developing the pre-determined interview questions, designed to explore the socio-economic conditions and community values in the study area, and the proposal's potential influence on those matters
2. Inviting the key informant to participate in the recorded interview
3. Obtaining participant consent
4. Arranging an interview date
5. Conducting and recording the interview
6. Drafting and conducting a qualitative analysis of the interview transcript
7. Extracting transcript content for use in the SEA report.

3.8 Business impact surveys

In accordance with the moderate level assessment defined in the practice note (TfNSW, 2020), limited primary research was conducted via a business impact survey. The survey was designed to gain an understanding of how the proposal could influence business operations and revenue in the SEA study area. Five (5) business owners from Falls Creek were invited to participate via telephone, but only three (3) volunteered their time.

The SEA also considered impacts to larger businesses within the study area and supplemented the business impact survey results via:

- An interview with a Shoalhaven City Council representative (Section 3.7)
- Letters of support submitted to the Transport for NSW from regional businesses (Section 4.2.7), and
- Other secondary data.

The business impact survey participants (Table 3-3) described characteristics of their businesses, the influence of the existing intersection on their business operations, and the predicted impacts the proposal would have on future business operations.

Table 3-3 Business impact surveys participants

No.	Business type	Interview date
1	Electrician	3 December 2020
2	Excavation company	15 December 2020
3	Tourism business	17 December 2020

Participants were afforded the opportunity to voice their opinions about the proposal through the telephone survey, attending to the questions in Appendix A.

3.9 Analyse data and develop SEA report

Descriptive qualitative and quantitative analyses were applied to the data archive compiled for the proposal. As part of the assessment, focus was placed on the following aspects for both the construction and operational phases of the proposal:

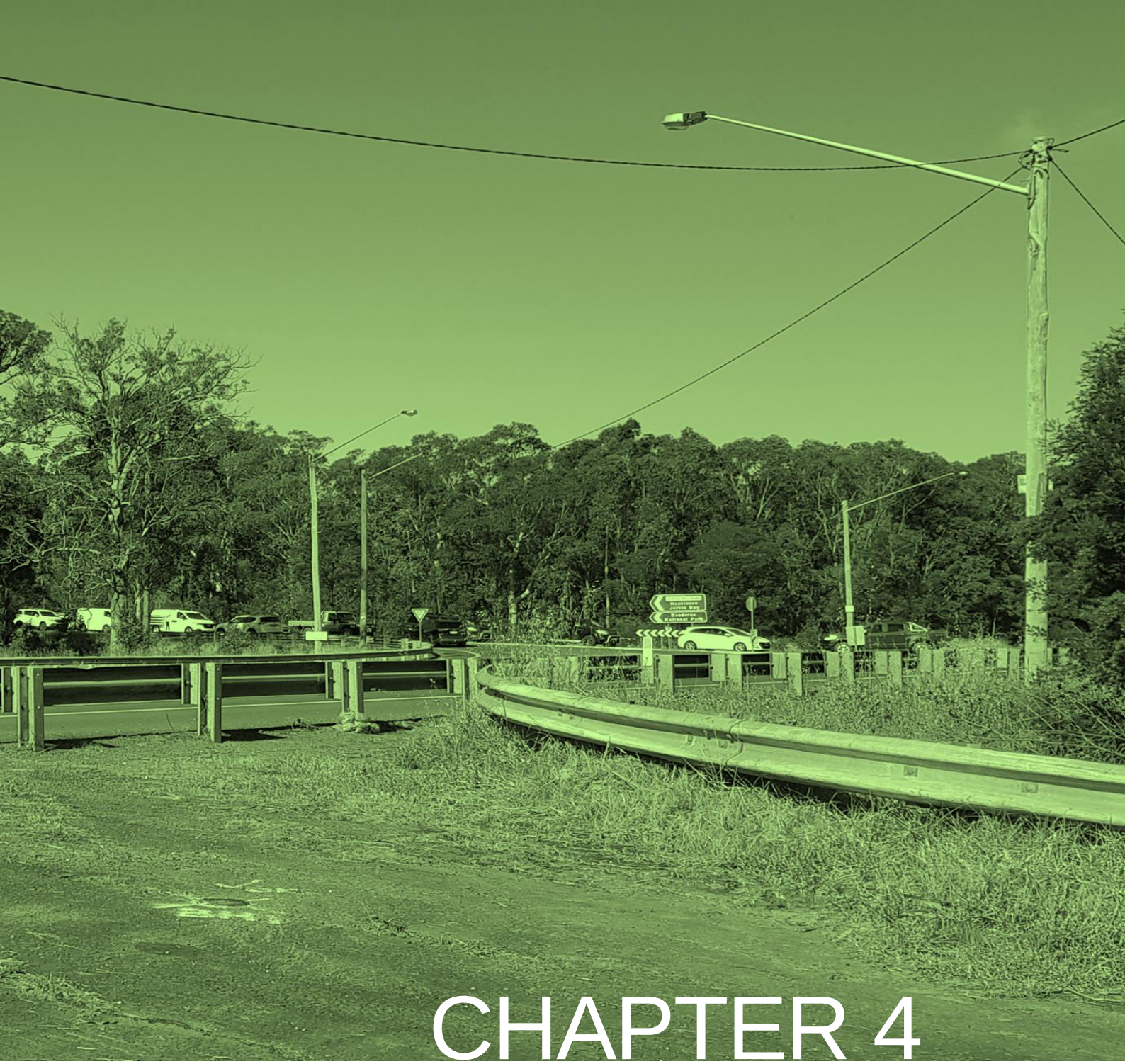
- Property impacts

- Impacts to property amenity
- Population changes and demography
- Economic impacts
- Impacts to business and industry
- Social infrastructure
- Community values
- Local amenity
- Access and connectivity.

The potential for cumulative socio-economic impacts were considered for the SEA in two ways:

1. Literature review
2. Primary research methods (i.e. the semi-structured interview and business impact survey).

The identification and evaluation of impacts is presented in Chapter 5, and the suggested management and mitigation measures are in Chapter 6.



CHAPTER 4

EXISTING SOCIO-ECONOMIC PROFILE

4 EXISTING SOCIO-ECONOMIC ENVIRONMENT

An analysis of the existing socio-economic profile was undertaken to develop an understanding of the social and economic context of the proposal. Secondary data was obtained from the most reliable sources available, primarily being the *2016 Australian Census of Population and Housing* (Australian Bureau of Statistics, 2018). The census data was supplemented with other information cited in this chapter.

Unless otherwise cited, the census geography adopted for the profile is the Shoalhaven Statistical Area Level 3 (SA3). This census geography was selected as the basis of the analysis because it represents a community that interacts together socially and economically, and it allows a more detailed analysis than the alternative census statistical area or suburb datasets (Australian Bureau of Statistics, 2016). The socio-economic variables discussed below align with the community profile measures adopted by the Australian Bureau of Statistics (ABS).

4.1 Regional socio-economic overview

The proposal is in the Shoalhaven local government area, extending south from Kangaroo Valley to North Durras, within the suburb of Falls Creek. The region is serviced by the Princes Highway and South Coast railway line.

4.1.1 Regional population

The Shoalhaven local government area had a total population of 104,371 in 2018, with approximately 56 per cent within the working age of 15 – 64 years. There are 7,303 businesses in this local government area, with healthcare and social assistance forming the main employing industry at 14.7 per cent (2016).

Approximately 80 per cent of the population was born in Australia with people born in England, New Zealand, Germany, Scotland and the Netherlands also forming part of the population. Given the population demographics, approximately 89 per cent of the population speak English at home, while Italian, Greek, German, Spanish and Mandarin are languages spoken other than English.

4.1.2 Regional economy

The Shoalhaven region comprises 49 towns and villages to the south of Sydney, each having lifestyle differences that give the area its unique character.

Shoalhaven has a mature but growing economic base, which is supported by domestic and international trade in sectors such as aircraft maintenance and overhaul, general manufacturing, and logistics. Many localities within the City of Shoalhaven are oriented to tourism and retail, with the largest sub-sector comprising accommodation and food services.

4.1.3 Environment

Approximately 40 per cent of the region is considered to be of high environmental value and includes defining features such as escarpments, the coastline, waterways, lakes, and rural hinterland contributing to biological diversity. Important conservation areas include the Jervis Bay Marine Park, and Morton, Budawang and Conjola National Parks. There are 153 threatened species, of which 107 are animals, and 16 endangered ecological communities (EEC) in the Shoalhaven region (Council, 2020).

4.1.4 Public and active transport

The public transport network across Shoalhaven City is largely serviced by buses, with most services originating or ending within the Nowra activity centre. The frequency of services across the network are low, with one hour or greater between the most regular services. School bus services also operate across the region servicing primary and secondary schools in the area.

The Bomaderry Rail Station provides the main rail service to Kiama, which then connects on to the South Coastline services towards Sydney. Services operate every two hours, with supporting bus services between Bomaderry and Kiama operating between train services.

4.2 Local community profile and socio-economic characteristics

The local community profile of Falls Creek is defined below, as per the State suburb data from the 2016 census (Australian Bureau of Statistics, 2016). This profile should be considered alongside the sensitive receivers identified in Figure 4-1, the study area (Section 3.1) and social infrastructure identified in Section 3.2.

The profile adopts the range socio-economic characteristics for the moderate-level SEA specified in the practice note (Transport for NSW, 2020) (refer Section 3.4 for rationale). All data used in the profile is sourced from the 2016 Australian Census of Population and Housing (Australian Bureau of Statistics, 2016).

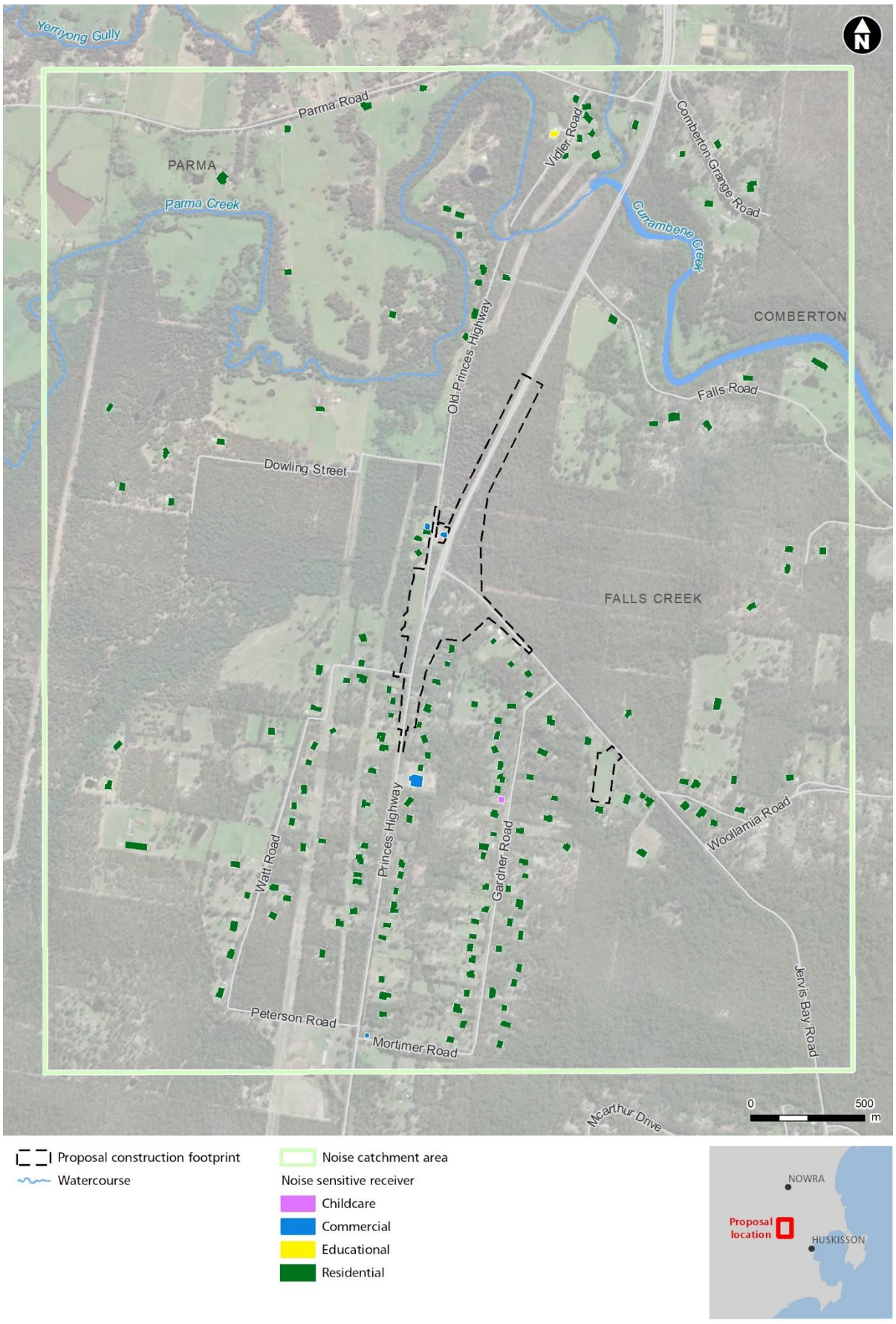


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Figure 4-1 Location of sensitive receivers

4.2.1 Population and demography

Estimated resident population

The Falls Creek population in 2016 was 935 people (less one per cent of the Shoalhaven local government area population), with 53.3 per cent men and 46.7 per cent women. This is considered to be a stable community, because there has been little change in the population number, with the 2011 census identifying a population of 951 people.

Age

The median age is 47, children aged 0 - 14 years made up 14.6 per cent of the population and people aged 65 years and over made up 20.7 per cent of the population. A more detailed population age structure is in Table 4-1.

Table 4-1 Age group categories in Falls Creek

Age group	Percentage of population (per cent)
0-4	5.5
5-9	4.4
10-14	4.6
15-19	6.5
20-24	5.9
25-29	4.5
30-34	3.2
35-39	5.0
40-44	6.0
45-49	7.7
50-54	8.2
55-59	9.3
60-64	8.3
65-69	8.4
70-74	6.3
75-79	3.1
80-84	2.1
85+	0.7

Aboriginal and Torres Strait Islander population

Aboriginal and Torres Strait Islander people comprise 4.7 per cent of the population, which is higher than the population percentage of NSW (3.4 per cent).

Overseas born

Ancestry defines the cultural association and ethnic background of an individual across three generations. Ancestry is a good measure of the total size of cultural groups in Falls Creek regardless of where they were born or what language they speak.

The most common ancestries in Falls Creek are in Figure 4-2 and comprise Australian (34.4 per cent), English (32.7 per cent), Irish (6.1 per cent), Scottish (5.8 per cent) and German (4.3 per cent).

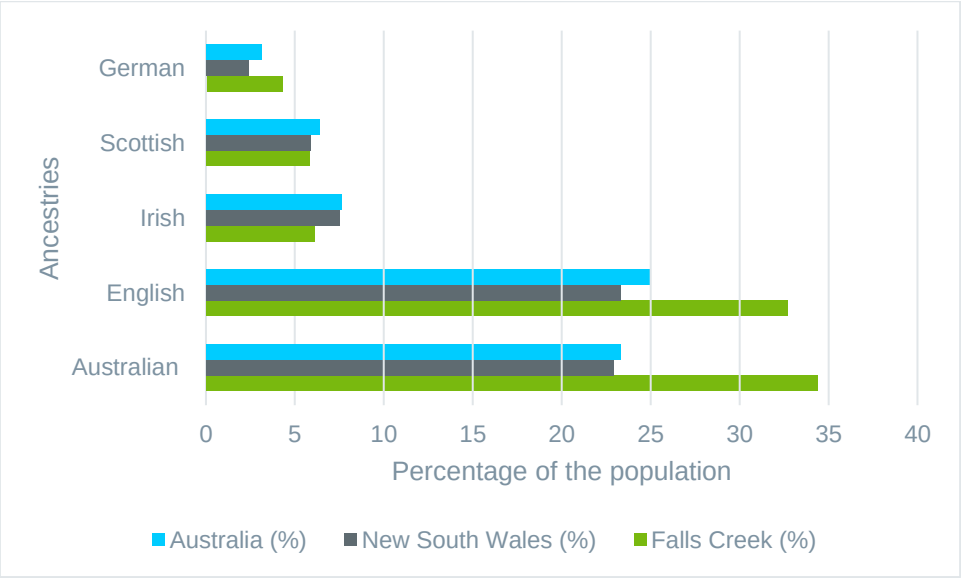


Figure 4-2 Most common ancestries in Falls Creek (2016)

The most common ancestries in Falls Creek generally correlates to those of NSW and Australia. However, there is a larger representation of the population of Falls Creek with English and Australian ancestries in comparison to NSW and Australia.

Language other than English

In Falls Creek, 89.7 per cent of the population speak English at home. Comparatively, English, is spoken more at home in Falls Creek than in both NSW (68.5 per cent) and Australia (72.7 per cent). Other languages include Italian (1.0 per cent), Mandarin (0.5 per cent), Croatian (0.4 per cent), German (0.3 per cent), and Spanish (0.3 per cent).

4.2.2 Families and housing

Total dwellings and dwelling type

Analysis of the types of dwellings in Falls Creek shows that all dwellings were separate houses. Falls Creek contrasts with greater NSW and Australia which are comprised of a mix of separate houses, semi-detached, row or terrace houses, flats, or apartments.

This dwelling composition is indicative of the low density and rural nature of the town with individual homes situated on large parcels of land.

Household size

Analysis of the number of bedrooms in dwellings in Falls Creek shows that the majority of the households are three bedroom (30.4 per cent) and four-or-more bedroom houses (58.5 per cent).

4.2.3 Socio-economic Indexes for areas (SEIFA)

SEIFA measure the relative level of socio-economic disadvantage and/or advantage based on a range of census characteristics. One of the two SEIFA indexes is the Index of Relative Socio-Economic Disadvantage (IRSD) which contains disadvantage indicators (e.g. unemployment, low incomes or education levels, lack of internet access). IRSD is useful to distinguish between disadvantaged areas. A higher score on the index means a lower level of disadvantage.

Falls Creek has an IRSD score of 1037 (Quintile 3), which is a moderate score and infers that the study area is rural, but not a regional area, and located close enough to large cities to service an individual's needs and lifestyle.

4.2.4 Need for assistance

People with a disability

Falls Creek disability statistics relate directly to the need for assistance due to a severe or profound disability.

In Falls Creek, there is a slightly lower proportion (10.9 per cent) of people who provided assistance to a person with a disability compared to the NSW population (11.6 per cent).

This result suggests that the population of Falls Creek exhibits the same level of independent living and comparative well-being as the rest of the State.

4.2.5 Travel behaviour

Vehicle ownership

In Falls Creek, 16.1 per cent of occupied private dwellings had one registered motor vehicle garaged or parked on the premises. 41.3 per cent of this population had two registered vehicles and 39.4 per cent had three or more registered vehicles. Figure 4-3 illustrates that Falls Creek has markedly more vehicles than the rest of NSW and Australia, particularly in the category of households having three or more vehicles. This is likely to be attributed to the fact that Falls Creek is a small village, situated on Princes Highway and is not well serviced by public transport infrastructure. Private vehicles are required for travel to and from neighbouring towns and cities.

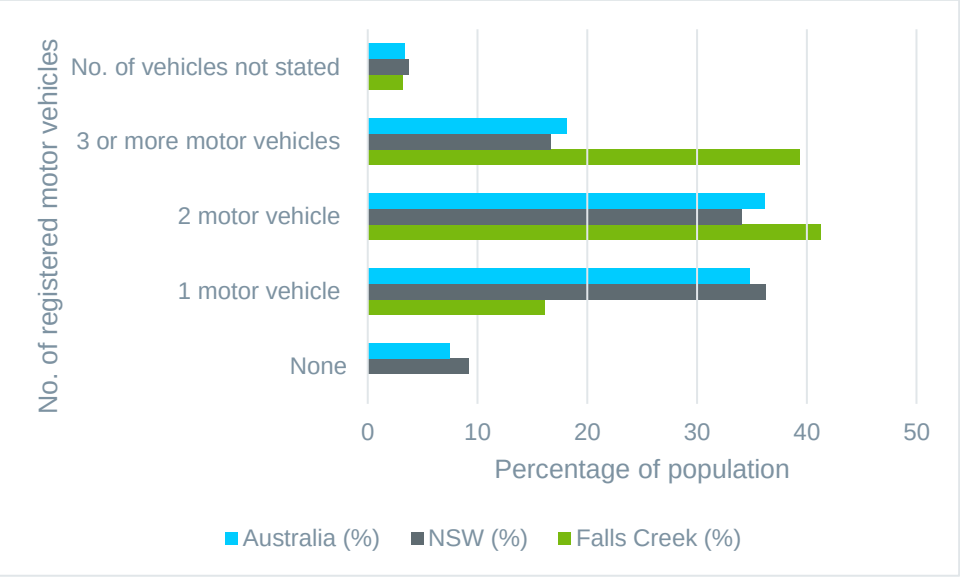


Figure 4-3 Number of registered motor vehicles per household

Travel to work

In 2016, 307 people (75.4 per cent) of the population used a vehicle, as the driver or passenger, to travel to work. Only 2.8 per cent of the population indicated that they worked from home and 2 per cent walked to work. No one indicated use of public transport as their method of travel to work. This data contrasts to both NSW (57.8 per cent) and Australia (61.5 per cent) with respect to the use of a private vehicle for travel to and from employment.

Public transport

The public transport network across Shoalhaven City is largely serviced by buses, with most services originating or ending within Nowra. The Princes Highway is the main transport corridor for services south of Nowra, with three bus services access the Huskisson, Vincentia and Sanctuary Point area with one service travelling via Jervis Bay Road. The frequency of services across the network are low, with one hour or greater between the most regular services.

There are three existing bus stops located at the Jervis Bay Road and Princes Highway intersection that are serviced by local bus services and school buses. These bus stops are not formally signposted, are not accessible via footpaths and have no bus bay areas. Further, there are no provisions such as benches or bus shelters. There is an additional bus stop on Willowgreen Road that is used by school buses.

The Bomaderry Rail Station, about 16 kilometres north of the intersection, provides the main rail service to Kiama, which then connects on to the South Coastline services towards Sydney. Services operate every two hours, with supporting bus services between Bomaderry and Kiama operating between train services.

Active transport

There are currently no formal shared paths for pedestrians or cyclists along either the Princes Highway or Jervis Bay Road in the vicinity of Falls Creek. Informal unsealed paths and narrow road shoulders are currently used. A review of Strava data (2020) suggests that pedestrian and cycling activity is generally confined to the main residential and commercial areas and within the neighbouring national parks.

4.2.6 Labour force, income and employment

Median household income

The average personal weekly income for Falls Creek is $552. This equated to $1,411 for the family and $1,478 at the household level. These figures contrast with the equivalent figures at both the NSW and Australia scales, which exhibit personal weekly income levels of $664 and $662 respectively.

Median household income measurements correlate with SEIFA data that suggests the population does not have significant advantage or disadvantage.

Unemployment

At the time of the census in 2016, 431 people reported being in the labour force. Of these 54.8 per cent were employed full time, 34.3 per cent were employed part-time and 3.9 per cent were unemployed. The statistics for people with full or part-time work are generally compatible with both NSW and the rest of Australia. However, the percentage of the population away from work (7 per cent) is higher than NSW (4.8 per cent) and Australia (5 per cent), but the level of unemployment (3.9 per cent) is lower than NSW (6.3 per cent) and the rest of Australia (6.9 per cent).

Industry of employment

The most common occupations in Falls Creek included technicians and trades workers (21.5 per cent), professionals (13.7 per cent), clerical and administrative workers (13.2 per cent), community and personal service workers (12.7 per cent), and labourers (12.7 per cent).

Of the employed people, 6.6 per cent worked in hospitals (except psychiatric hospitals). Other major industries of employment included aged care residential services (4.8 per cent), building and other industrial cleaning services (4.5 per cent), primary education (3.9 per cent) and local government administration (3.6 per cent).

In the semi-structured interview, the Council representative confirmed that to the east of the Princes Highway, the area bound by Jervis Bay Road (north) and the St. George Basin (south) has approximately 4,700 active Australian Business Numbers (ABNs). In Falls Creek the majority of the businesses are characterised by construction (25 per cent), administration and defence (11 per cent) and professionals (9 per cent).

4.2.7 Business and industry

Tourism

Approximately 450,000 tourists visit the Jervis Bay area each year (Department of Infrastructure, Transport, Regional Development and Communications, 2020). Consequently, tourism has been identified in the Illawarra Shoalhaven regional development plan as an existing economic strength and an important future growth sector.

Industry

The NSW Government has approved three aquaculture leases in Jervis Bay (Callala and Vincentia beaches), which will add to the need for strong freight and logistic services to transport products to distribution hubs like port facilities.

Local business and access

Local businesses in the area near the proposal are dominated by individual trades (for example plumbers) and community members who travel to Nowra for work. The commuting workforce has contributed to congestion on the road network and prompted Council to encourage the setup of businesses and commercial activities closer to the proposal.

Within the broader study area, supermarket chains have opened in the Jervis Bay territory alongside a developing industrial node immediately west of Huskisson, a suburb in the Shoalhaven local government area. These operations require heavy vehicles for deliveries and product transport and contribute to traffic congestion. For example, Aldi (supermarket) is part of the business community that provided comment on the proposal. It stated that its transport and operations teams experience excessive delays at the intersection which introduces a direct freight cost to the business. This submission to Transport for NSW is useful in highlighting traffic congestion that the proposal would alleviate.

The Council representative added that long delays are experienced at the intersection of Princes Highway and Jervis Bay Road, with traffic known to backup past Woolamia Road (approximately 1.5 kilometres away). Congestion along the roads have encouraged businesses to dispatch or receive materials outside of peak traffic periods.

Finally, access was also identified as an important issue by the tourism business owner who participated in the business impact survey. Customers of the tourism venture have cancelled bookings in the past due to congestion at the intersection (which in some instances caused an hour-long delay) and the subsequent access impediment. Such cancellations translated into direct revenue losses for the business and prompted the business owner to voice his support for the proposal.

4.2.8 Community values

The Shoalhaven City Council developed a vision for the region based on fostering a safe and attractive community pursuing sustainable development and environmental protection. To evaluate council's provision of services, a community survey was undertaken in 2018 (Research, 2018), engaging approximately 400 Shoalhaven residents.

With specific focus on the proposal, while the majority of the survey respondents held a positive view of Council's services, the following key vulnerabilities were raised:

- Maintenance of unsealed and sealed roads
- Provision of cycle ways
- Provision of footpaths.

Specifically, the survey established that 55% of respondents were dissatisfied with the maintenance of sealed local roads. While the intersection does not require maintenance, it will be upgraded to accommodate increasing vehicular movements and cater for shared cycle ways and footpaths.

Following on from the 2018 community survey, an opportunity to explore community values was realised in the semi-structured interview involving the Council representative. The interview (refer Section 3.7) identified the following community values:

- Improved vehicular accessibility to townships
- Reduced congestion on highway and local road network
- Enjoying 'lifestyle' properties in the vicinity of the proposal, and the amenity of those properties.

Community values also emerged from the business survey results (addressed in Section 3.8 above) and included reduced traffic congestion, and improved travel times and road safety, specifically when entering or crossing the intersection.

From the business surveys conducted, the electrician confirmed the business is owned and operated by his family who reside at the private property. Increasing traffic volumes along Princes Highway has created congestion at the intersection, which is made worse by heavy vehicles that do not have the capacity to cross the intersection quickly.

The earthworks business owner echoed this sentiment by stating that equipment is delivered to his property from across greater Sydney and the current intersection configuration means it is unsafe to exit or enter the highway. The respondent confirmed that employees of the business avoid the intersection during peak traffic periods in order to minimise negative business impacts associated with traffic delays.

The traffic impact assessment (TIA) compiled by Arcadis (2021) gives weight to these stakeholder concerns and the value the community places on road safety. Arcadis (2021) report that exiting the intersection scores 2/5 stars against the Australian Road Assessment program, recording a total of 26 crashes in the 10-year period up the end of 2019. Additionally, this intersection has the highest volume of vehicle movements on the Princes Highway between Nowra and the Victorian border (Arcadis, 2021).

4.2.9 Social infrastructure

The categories (and the associated features) most relevant to the SEA in Falls Creek are identified in Section 3.2. were selected for display in the study area and existing social infrastructure figure (refer Figure 3-1).

4.3 Stakeholder analysis

Transport for NSW facilitated community consultation in March 2020 to gain feedback on three intersection treatment options:

- Flyovers (grade separation)
- Roundabouts
- Traffic signals.

The aim was to inform local communities of the proposed upgrade and understand their values associated with the proposal. In response to Covid-19 restrictions, Transport for NSW engaged with the community through the following methods:

- Facebook Live questions and answers session
- Meetings with community groups via teleconference (Zoom)
- Expanding digital and social media presence
- Providing printed documentation to community members who were unable to engage digitally
- Accepting feedback via phone call.

Consultation was undertaken from 16 March 2020 to 13 April 2020, with respondents prioritising the following values:

- Improving safety for transport users
- Ensuring the safety of workers
- Quick construction phase
- Minimising environmental impact
- Reducing noise impacts
- Reducing impacts to road users during construction
- Flexibility in design
- Ease of building
- Flexibility to manage local road, property and emergency access.

Respondents were requested to attribute values to the success of the road upgrade proposal and placed significant value in improving road safety and easing congestion at the intersection (Figure 4-4).

The results of the initial public consultation, facilitated by Transport for NSW, correlates directly with the community values (Section 4.2.8) expressed by Council. Congestion and road safety are considered to be key themes illustrating community support for the intersection upgrade.

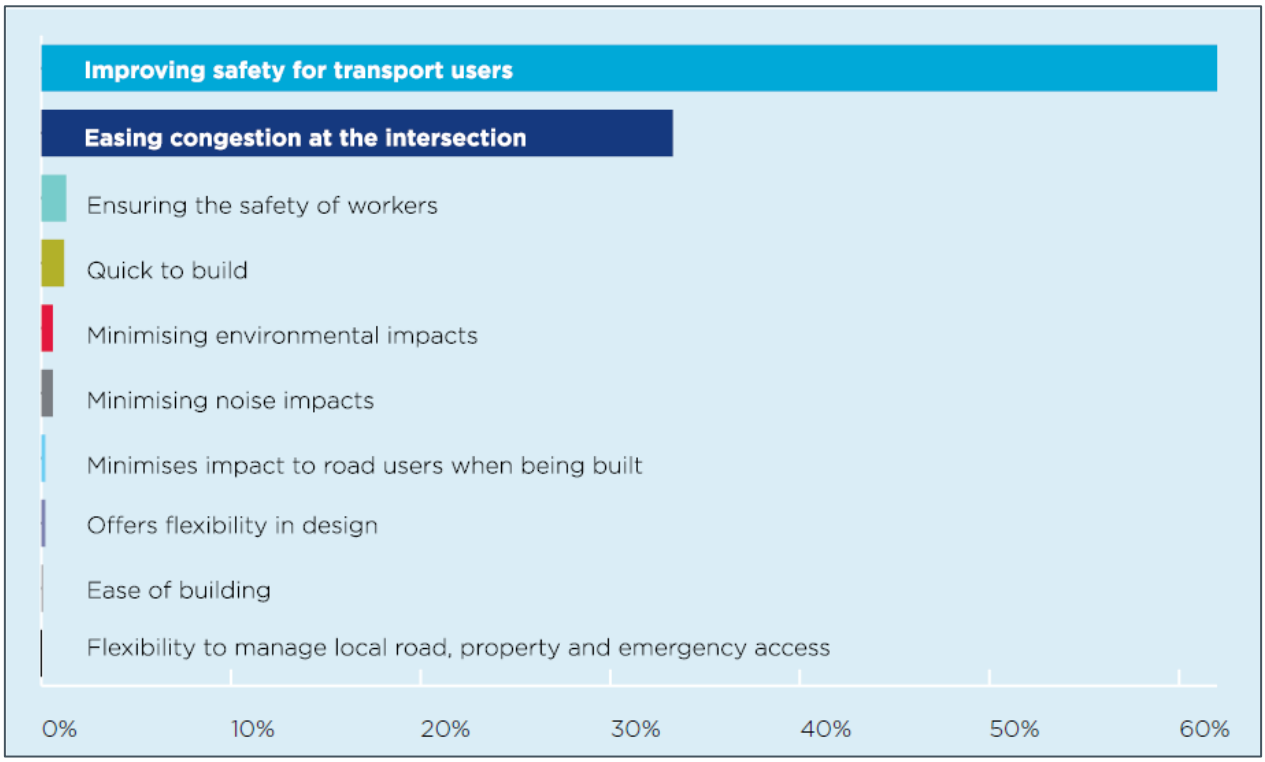
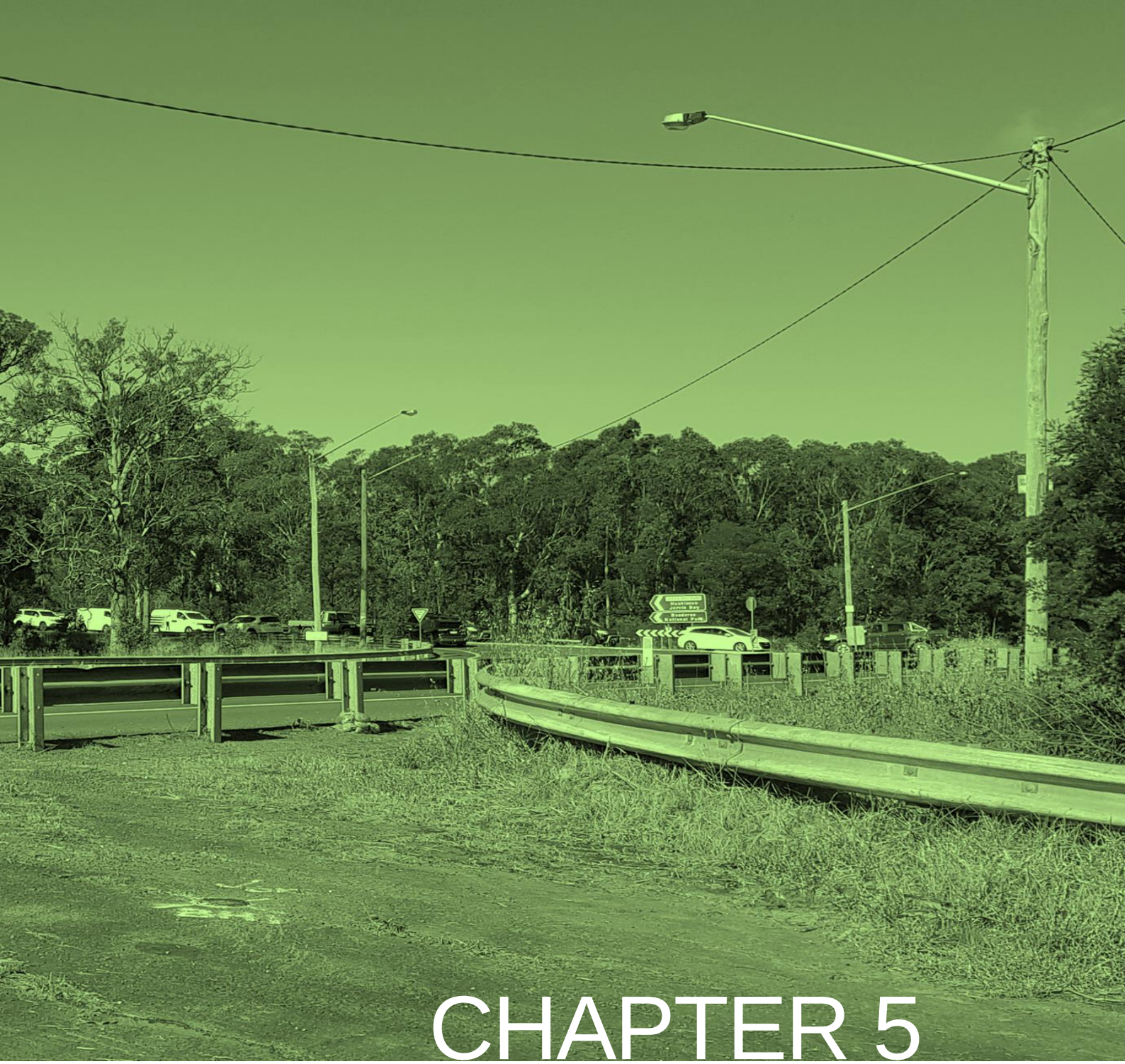


Figure 4-4 Prioritised proposal values during Transport for NSW consultation



CHAPTER 5

SOCIO-ECONOMIC IMPACT ASSESSMENT

5 SOCIO-ECONOMIC IMPACT ASSESSMENT

In this section, an assessment of the predicted positive and negative socio-economic impacts associated with the proposal, without inclusion of proposed management measures, has been completed.

The proposal aspects identified for further assessment are addressed in the sections that follow.

5.1 Property impacts

There are a number of lots that fall within the proposal footprint and are likely to be directly impacted by both the construction and operational phases. These sites are broken down into the following categories:

- Council owned (six)
- Crown Land (two)
- Privately owned land (35)
- Landed owned by Transport for NSW (six).

5.1.1 Construction

Impacts of property acquisition

Details of direct property acquisition as a result of the proposal are provided in Table 5-1. Of the 32 properties impacted, seven would be directly impacted in their entirety and would require full acquisition. Twenty-four of the impacted properties are privately owned, three are owned by Shoalhaven City Council and two are Crown land.

Table 5-1 also shows three properties that are currently owned by Transport for NSW. These properties have been identified but have not been included in the property acquisition calculations required for the proposal.

About 18.08 hectares of land that is outside of the existing road corridor would be directly impacted by the proposal. This includes 12.37 hectares to be permanently acquired and 5.71 hectares to be temporarily leased.

There is potential for both positive and negative socio-economic impacts associated with property owners.

There is the possibility that some property owners would see acquisition of their property as an opportunity to improve their social circumstances. This might apply to residents with no strong social connections to the local area, or to those residents who may be intending to relocate in the near-future (e.g. retirees or ‘downsizers’). Some may accept financial compensation as a positive impact to their financial circumstances.

On the other hand, some property owners may experience adverse socio-economic impacts as a result of acquisition. This may take the form of financial pressure or social disruption as a result of forced relocation.

There is insufficient secondary data available to determine the circumstances and potential impacts for each affected property owner. In addition, interviews with each affected property owner were beyond the scope of this SEA. All acquisitions would be undertaken in consultation with landowners and in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991* and the Transport for NSW (formerly Roads and Maritime Services) *Land Acquisition Information Guide* (Roads and Maritime Services, 2014).

5.1.2 Operation

Where partial acquisitions are required, landowner's residences may become closer to the Princes Highway than before the upgrade. There is, therefore, the potential for increased noise impacts at these residences during operation (described in Section 5.2).

Table 5-1 Summary of lots within the study area (including acquisition)

ID	Lot and DP	Ownership	Predominant land use	Acquisition required (Yes/No)	Total property area (hectares)	Area of land to be acquired (hectares) (percentage of total property in brackets)	Area of land subject to temporary lease (hectares) (percentage of total property in brackets)
1	Lot 179 DP1055671	Private	Bushland	No	19.86	-	0.48 (2.4)
2	Lot 7014 DP1064563	Crown Land	Bushland	Yes	9.83	0.25 (2.5)	1.11 (11.3)
3	Lot 127 DP755965	Crown Land	Bushland	Yes	14.52	0.53 (3.7)	0.15 (1)
4	Lot 1 DP244495	Private	Bushland / cleared grassland	No	0.68	-	0.15 (22.1)
5	Lot 2 DP244495	Private	Bushland	Yes	18.24	1.29 (7.1)	-
	Lot 3 DP244495	Private	Bushland	Yes	19.46	1.51 (7.8)	-
6	Lot 6 DP32247	Private	Rural residential	Yes	0.25	0.01 (4)	-
7	Lot 345 DP836413	Private	Rural residential	Yes	0.65	0.04 (6.2)	-
8	Lot 1 DP15507	Council	Bushland	Yes	0.07	0.07 (100)	-
9	Lot 1 DP32247	Private	Rural residential	Yes	0.08	0.01 (12.5)	-

ID	Lot and DP	Ownership	Predominant land use	Acquisition required (Yes/No)	Total property area (hectares)	Area of land to be acquired (hectares) (percentage of total property in brackets)	Area of land subject to temporary lease (hectares) (percentage of total property in brackets)
	Lot 2 DP32247	Private	Rural residential	Yes	0.08	0.01 (12.5)	-
10	Lot 1 DP871596	Private	Bushland / cleared grassland	Yes	13.93	0.52 (3.7)	1.78 (12.8)
11	Lot 2 DP871596	Transport for NSW	Cleared grassland	No	0.24	-	-
12	Lot 1 DP1093336	Private	Bushland	Yes	0.01	0.01 (100)	-
	Lot 2 DP1093336	Private	Bushland	Yes	0.01	0.01 (100)	-
	Lot 3 DP1093336	Private	Bushland	Yes	0.02	0.02 (100)	-
	Lot 4 DP1093336	Private	Bushland	Yes	0.02	0.02 (100)	-
	Lot 5 DP1093336	Private	Bushland	Yes	0.03	0.03 (100)	-
	Lot 6 DP1093336	Private	Bushland	Yes	0.03	0.03 (100)	-
	Lot 7 DP1093336	Private	Rural residential	Yes	2.14	2.14 (100)	-
	Lot 8 DP1093336	Private	Bushland	Yes	0.04	0.04 (100)	-

ID	Lot and DP	Ownership	Predominant land use	Acquisition required (Yes/No)	Total property area (hectares)	Area of land to be acquired (hectares) (percentage of total property in brackets)	Area of land subject to temporary lease (hectares) (percentage of total property in brackets)
	Lot 9 DP1093336	Private	Bushland	Yes	0.04	0.04 (100)	-
	Lot 10 DP1093336	Private	Bushland	Yes	0.04	0.04 (100)	-
13	Lot 35 DP1088614	Council	Bushland	Yes	0.04	0.04 (100)	-
	Lot 36 DP1088614	Council	Bushland	Yes	0.04	0.04 (100)	-
	Lot 37 DP1088614	Council	Bushland	Yes	0.04	0.04 (100)	-
	Lot 38 DP24409	Council	Bushland	Yes	0.94	0.94 (100)	-
14	Lot 5 DP15507	Private	Rural residential	Yes	1.22	0.15 (12.3)	-
15	Lot 6 DP15507	Private	Rural residential	Yes	1.22	0.09 (7.4)	-
16	Lot 7 DP15507	Private	Rural residential	Yes	1.22	0.04 (3.3)	-
17	Lot 59 DP15507	Private	Rural residential	Yes	1.01	1.01 (100)	-
18	Lot 60 DP15507	Private	Rural residential	Yes	1.11	0.33 (29.7)	-

ID	Lot and DP	Ownership	Predominant land use	Acquisition required (Yes/No)	Total property area (hectares)	Area of land to be acquired (hectares) (percentage of total property in brackets)	Area of land subject to temporary lease (hectares) (percentage of total property in brackets)
19	Lot C DP397510	Private	Rural residential	Yes	0.3	0.11 (36.7)	-
20	Lot D DP397510	Transport for NSW	Rural residential	No	0.3	-	-
21	Lot B DP392033	Private	Rural residential	Yes	0.61	0.61 (100)	-
22	Lot 62 DP15507	Private	Rural residential	Yes	1.22	0.31 (25.4)	-
23	Lot 12 DP1042235	Private	Rural residential	Yes	1.25	0.15 (12)	-
24	Lot 63 DP15507	Private	Rural residential	Yes	1.22	1.22 (100)	-
25	Lot 571 DP748653	Private	Rural residential (area impacted by the proposal is an electrical easement)	Yes	2.16	0.01 (0.5)	-
26	Lot 11 DP1042235	Transport for NSW	Rural residential	No	1.28	-	-
	Lot 13 DP1042235	Transport for NSW	Cleared grassland	No	0.02	-	-
	Lot 14 DP1042235	Transport for NSW	Bushland	No	0.02	-	-

ID	Lot and DP	Ownership	Predominant land use	Acquisition required (Yes/No)	Total property area (hectares)	Area of land to be acquired (hectares) (percentage of total property in brackets)	Area of land subject to temporary lease (hectares) (percentage of total property in brackets)
	Lot 15 DP1042235	Transport for NSW	Bushland	No	0.03	-	-
27	Lot 64 DP15507	Private	Rural residential	Yes	1.22	0.25 (20.5)	-
28	Lot 1 DP578303	Council	Electrical easement	Yes	0.01	0.01 (100)	-
29	Lot 2 DP578303	Private	Rural residential	Yes	1.21	0.24 (19.8)	-
30	Lot 10 DP1042235	Private	Rural residential	Yes	1.29	0.11 (8.5)	-
31	Lot 66 DP15507	Private	Rural residential	Yes	1.22	-	0.01 (0.8)
32	Lot 4 DP773881	Private	Cleared grassland	No	28.56	-	1.87 (6.5)
					TOTAL	**12.33**	**5.7**

5.2 Impact on local amenity

5.2.1 Construction

Heavy vehicles, plant and machinery would be required for construction and their use could lead to impacts such as noise, odour and dust emissions as well as cosmetic defects from vibration (caused by excavation or demolition for example).

Noise and vibration

Predicted noise levels at residences range between not exceeding the noise management level (that is, noise levels exceeding 75 dB(A)) and being considered as highly-noise affected (noise levels greater than 75 dB(A)) during standard construction hours. When out of work hours is carried out, noise management level exceedances would range from zero dB to greater than 45 dB. Noise levels experienced by residences would vary depending on the distance between the residence and the proposal construction footprint and on whether the work carried out at the time required the use of highly noise plant and equipment.

During the noisiest stages of construction, standard construction hours NML exceedances (noise levels exceeding 60 dB(A)) are predicted at receivers up to 370m from the proposal construction footprint. The potential for construction noise to impact community members at work during business hours is low, but it is likely that a portion of the population will be at home during construction operations. These noise impacts will be exacerbated in the morning and afternoon when the majority of the community is still at home (for example, before leaving for or arriving home from work).

The operation of large vehicles, and vibration intensive plant and machinery within the minimum working distances, especially at the ancillary sites, has the potential to exceed the human response and structure cosmetic damage screening criteria.

It is noted environmental management measures have been proposed in the REF to manage the construction noise and vibration impacts.

Air quality impacts

Air quality impacts to residential receivers during construction have been identified in the REF as:

- Annoyance due to dust deposition (e.g. settlement of surfaces at residences) and visible dust plumes
- Elevated PM_{10} concentrations due to on-site dust-generating activities
- Increased concentrations of airborne particulate matter and NO_2 due to exhaust emissions from on-site diesel-powered vehicles and construction equipment.

If unmanaged, the settlement of dust may impact upon human health and amenity at sensitive receivers located near the proposal, particularly from earthworks, intersection construction and track out activities.

Provided the implementation of standard safeguards and management measures typical of road infrastructure projects, the risk of dust and emissions impacts is expected to be low and would be limited to the construction phase only.

5.2.2 Operation

Noise and vibration

Some residential receivers near the southern end of the proposal construction footprint would be considered for operational road traffic noise mitigation as a result of increased noise levels of greater than 2 dB(A) or having existing noise levels that are predicted to exceed the cumulative limit. Following an assessment of these mitigation options (as described in Resonate (2021)), at-property treatments were determined to be the only reasonable and feasible option for noise mitigation for the proposal. At-property treatment would be considered at the impacted receivers during detailed design.

Following the commencement of the operation of the proposal, actual operational noise performance would be compared to predicted operational noise performance (as reviewed during detailed design) to analyse the effectiveness of the operational road traffic noise mitigation measures. Additional feasible and reasonable mitigation would also be considered where any additional receivers are identified as qualifying for consideration of noise mitigation under the *Noise Mitigation Guideline* (Roads and Maritime, 2015).

As the proposal would relocate traffic to be in closer proximity to nearby receivers, it is anticipated that the maximum noise level exceedance would increase. Additionally, the deceleration and acceleration of vehicles into and out of the proposed roundabouts is a contributing factor to increases in magnitude of maximum noise level events.

The proposal would bring Princes Highway traffic closer to receivers on the Old Princes Highway. It would also increase the noise exposure of receivers along the Old Princes Highway due to proximity to traffic travelling along the on and off ramps. The receivers located along Jervis Bay Road are also predicted to experience increased maximum noise levels due to the relocation of the road alignment and the inclusion of roundabouts.

Air quality impacts

During operation, air pollution would be primarily from vehicle emissions, which does not differ from the existing conditions. The proposal would move some vehicle emission sources above the existing road height due to the grade separated Princes Highway mainline, however the overall changes in air quality would be negligible.

Whilst overall traffic growth would result in an increase of emissions, this would already occur without the proposal. The increase in efficiency at the intersection and reduced congestion as a result of the proposal would result in a reduction in emissions associated with wait times along Jervis Bay Road during peak periods. The estimate of future emissions does not include changes in fuel efficiency or type of vehicle fuel used. Anticipated future improvements in fuel efficiency and vehicle type may further reduce emissions throughout the transport system in NSW in the longer term.

5.3 Changes to population and demography

5.3.1 Construction

The indicative workforce required for each stage of construction is in Table 5-2.

Table 5-2 Construction workforce

Construction phase	Indicative maximum workforce required (number of full time equivalents)
Pre-construction and early works	10
Site establishment	20
Intersection construction	60
Finishing work	20

It is possible that a portion of these workers would temporarily relocate to Falls Creek or Nowra for the duration of the construction phase they are involved in. The workforce is not expected to permanently change or influence the population structure or demography of the area. The construction phase is predicted to have a negligible impact on local or regional demography.

5.3.2 Operation

The potential increase in population associated with construction is temporary, after which the population of Falls Creek and larger centres like Nowra would return to the levels presented in the socio-economic profile (Section 4.2).

5.4 Economy

5.4.1 Construction

The expected number of construction jobs generated by the proposal is presented in Table 5-2. During the construction phase, it is likely that the proposal would contribute to the local economies of Falls Creek and nearby towns such as Nowra, by using local services such as truck and dog operators, waste removal companies in conjunction with the injection of money when employees use their salary to purchase groceries and other necessary day to day items.

5.4.2 Operation

With the completion of construction, these jobs would no longer be required, with many of the workers relocating to their next project. The local economy would, however, benefit from an improved and safer road network that promotes the efficient transport of goods and services in the region.

5.5 Business and industry

5.5.1 Construction

The potential negative impact to local business is considered to be low because no local businesses would be acquired. Falls Creek contains businesses, predominately operating from private properties, along the Princes Highway and roads adjoining the highway. It is likely that access to and from these businesses would be temporarily impacted during construction. Additionally, residents may experience delays travelling to and from larger centres like Nowra, Ulladulla and to the east (Jervis Bay and Huskisson) for employment or activities like shopping. These impacts would be confined to the construction phase only.

The survey respondents all noted that their businesses are impacted negatively by the current status of the road network but realise that construction would cause a continuance (and potential exacerbation) of these impacts until the upgrade is completed and becomes operational.

5.5.2 Operation

Positive business impacts are anticipated by interview and survey respondents who note that reduced congestion would encourage business further, especially in relation to tourism activities and the transport of staff and materials for construction related businesses. For example, where the earthworks business experienced added costs by delays at the congested intersection (as discussed in Section 4.2.7), a fully functioning road network would reduce these costs to the business and allow it to operate efficiently during on-peak and off-peak periods.

The owner of the tourism business described their plan to expand the business by offering additional services such as corporate team building. An improved intersection that can accommodate road traffic volumes efficiently would assist this and like-minded local businesses in operating and growing their enterprises.

5.6 Social infrastructure

5.6.1 Construction

Direct impacts on community services, facilities and networks

Residents and commuters in the vicinity of the proposal site would be impacted by changed traffic conditions (delays) for the duration of the two-year construction period.

Traffic delays, safety and road capacity impacts are experienced by road users at the intersection of Jervis Bay Road and Princes Highway. This impact extends to the industry and commercial operations located in the towns at Jervis Bay. The impacts associated with the current status of the intersection, and those experienced during construction would be mitigated through the implementation of a traffic management plan and alleviated when the proposal is complete.

Direct impacts to property ownership

Some property owners impacted by land acquisition as a result of the proposal may experience anxiety or uncertainty with the property acquisition process, and this could take the form of adverse socio-economic concerns such as financial pressure or social disruption from forced relocation. Apart from the matters raised in Section 5.1. the owner of the tourism business involved with the business impact survey raised concerns about how a potential property acquisition of his or neighbouring property might impact utilities (supply of water) to his property. These property concerns raised by property owners impacted by acquisition would need to be addressed by Transport for NSW during property acquisition negotiations.

Indirect impacts

There is a separation of services and facilities in the proposal area, with Falls Creek relying on the neighbouring towns of Nowra and those located at Jervis Bay for commercial activities such as grocery shopping. However, during construction local residents may experience delays on the local road network and property access modifications which would typically create an annoyance for residents.

5.6.2 Operation

During operation, reduced congestion and improved safety for motorists commuting between the towns located around Jervis Bay, Falls Creek and Nowra would be a positive outcome for social infrastructure.

5.7 Community values

5.7.1 Construction

The interview undertaken for the SEA assisted the identification of relevant community values attributed to the study area (Section 4.2.8). During construction these values (e.g. improved vehicular accessibility to townships, reduced congestion on highway and local road network) may be temporarily compromised.

5.7.2 Operation

An improved and safer intersection was expressed by the SEA key informants, particularly business owners, as being valuable for the region. ‘Short-term pain for long-term gain’ was a commonly expressed sentiment in relation to the operation of the proposal.

5.8 Access and connectivity

5.8.1 Construction

Regional access during the construction phase will be maintained along Jervis Bay Road and the Princes Highway. Public transport, active transport and property access impacts are discussed in the sections that follow.

Public transport impacts

During construction, bus routes would continue running without significant disruptions from temporary intersection configurations. However, it is likely that the bus stops located at the intersection would not be useable during the construction phase and would need to be relocated. Alternate bus stop locations would be determined as the proposal progresses, with advanced notification provided to affected bus customers of these changes. Disruption to bus customers would be minimised by relocating the bus stops to the closest practical alternative. Therefore, it is expected that the services would be able to adapt to the temporary relocation of the bus stops without adversely affecting a high number of public transport users.

Active transport impacts

There are currently no formal pedestrian and cycling facilities in the study area of the proposal. Traffic survey data further show very low volumes of pedestrian and cyclist activity at the intersection during a typical weekday, likely attributable to the high-speed vehicle environment, lack of formal active transport facilities and distance from active transport generators. It is therefore unlikely that there would be a significant impact on active transport users during construction of the proposal.

Property access impacts

Access to properties and businesses would be maintained for the full duration of construction. Alternative access arrangements would be provided where the proposal would impact access.

Emergency evacuation route

The Princes Highway and Jervis Bay Road would remain operational throughout construction of the proposal. The proposal construction is unlikely to result in unacceptable delays to emergency services response. Consultation would be undertaken with local emergency services during the

development of the Traffic Management Plan to provide procedures to maintain an unrestricted and safe environment for emergency service vehicles to pass through the proposal construction footprint.

5.8.2 Operation

Public transport impacts

The proposal would result in minor relocation of the bus stops servicing routes 102, 103 and 135. Bus stops would still be present at the intersection.

Bus routes that travel through the intersection would benefit from the improved traffic performance, including lower delays and shorter queues, particularly regular and school bus services operating during the weekday morning and afternoon peak hours.

Active transport impacts

A shared user path would be provided along both sides of the road at all approaches to the at-grade double roundabout intersection and will connect directly to the road shoulder on the Princes Highway where cyclists would be expected to ride.

Active transport users intending to cross the at-grade double roundabout would utilise the refuge islands separating opposing vehicle movements in the roundabout, and a storage width of two metres will be provided at each island. Ramps connecting to the road level from the kerb will be provided near the refuges to indicate crossing locations.

The proposal separates the high volumes of through vehicles on the Princes Highway from the movements between Jervis Bay Road and the Old Princes Highway, which are more likely to service pedestrian and cyclist movements than the mainline. The separation of movements on the minor roads from the highway provides for safer active transport links between Jervis Bay Road and the Old Princes Highway. Compared to the existing condition where there are no formal provisions for pedestrians or cyclists, the proposed shared user paths and refuge islands would significantly improve the road safety environment for active transport users.

Traffic congestion and safety

Support for the proposal was illustrated by Shoalhaven Community Transport Service volunteer drivers and staff who have noticed vehicle incidents and near misses at the intersection. Specifically, the volunteers have noticed drivers that took risky decisions to access the busy highway at unsafe times, out of frustration for time delays resulting from traffic congestion.

The potential for the proposal to alleviate risk at the intersection was noted by the electrician who participated in the business impact survey. The participant stated that the Princes Highway can get so busy during peak periods that entering the highway and turning south to Ulladulla is difficult, with heavy vehicles that cannot accelerate fast enough to cross the northbound lane towards Nowra safely.

The potential to mitigate personal safety in the community would extend from private vehicle motorists to operations of emergency services. Travel time reduction for emergency service vehicles would logically improve emergency response times, and therefore enable a safer environment for patients.

Property access impacts

Permanent alteration of external property access would be required during operation of the proposal.

Princes Highway

The Princes Highway would be upgraded to a dual carriageway with median barrier and continuous barriers along the verge, therefore a proposed access road along the eastern side of the Princes Highway would connect the adjacent properties to the Princes Highway via Jervis Bay Road. There is potential for residents to experience either a positive or negative impact from these changes. It is considered for the purposes of the SEA to be a minor negative impact owing to the comparatively longer journey that would be required (as a result of the proposal) for those residents to reach the highway.

Jervis Bay Road

Access arrangements to properties along Jervis Bay Road would generally be maintained, with minor works required to re-connect the existing driveways. The access to privately owned bushland properties north of Jervis Bay Road would also be reinstated.

Old Princes Highway

Most properties along the Old Princes Highway would retain their driveway connection with minor adjustments to tie-ins. Properties 10 and 11 would be connected to the Old Princes Highway via the proposed Willowgreen Road connection.

Willowgreen Road

The current direct connection between Willowgreen Road and the Princes Highway would be removed and replaced with a connection to the Old Princes Highway near the proposed western roundabout. This would impact properties with driveway access to Willowgreen Road and properties on the Old Princes Highway south of the proposed western roundabout.

Emergency evacuation route

The proposal would result in improvements to safety and transport network efficiency, allowing for uninterrupted through movements for northbound and southbound Princes Highway traffic and significantly improve intersection performance for both Princes Highway and Jervis Bay Road traffic. This would enhance the efficiency and reliability of the Princes Highway and Jervis Bay Road as emergency evacuation route for both emergency services and general public traffic.

5.9 Cumulative impacts

Section 3.9 described the methodology applied to the consideration of potential cumulative impacts associated with the proposal.

Individual proposals associated with the Princes Highway upgrade program of works may produce overall positive cumulative impact to regional connectivity and road safety over the long-term.

Apart from the upgrade program, no prominent social change processes (existing or in the foreseeable future in the vicinity of the proposal) were identified during the literature review. No projects that could influence or be impacted by the intersection upgrade were identified. Furthermore, cumulative impacts were not cited by the research participants as being a concern associated with the proposal. Subsequently, the capacity of the proposal to generate cumulative impacts other than the cited regional road improvements is deemed to be negligible.

5.10 Summary of impact significance

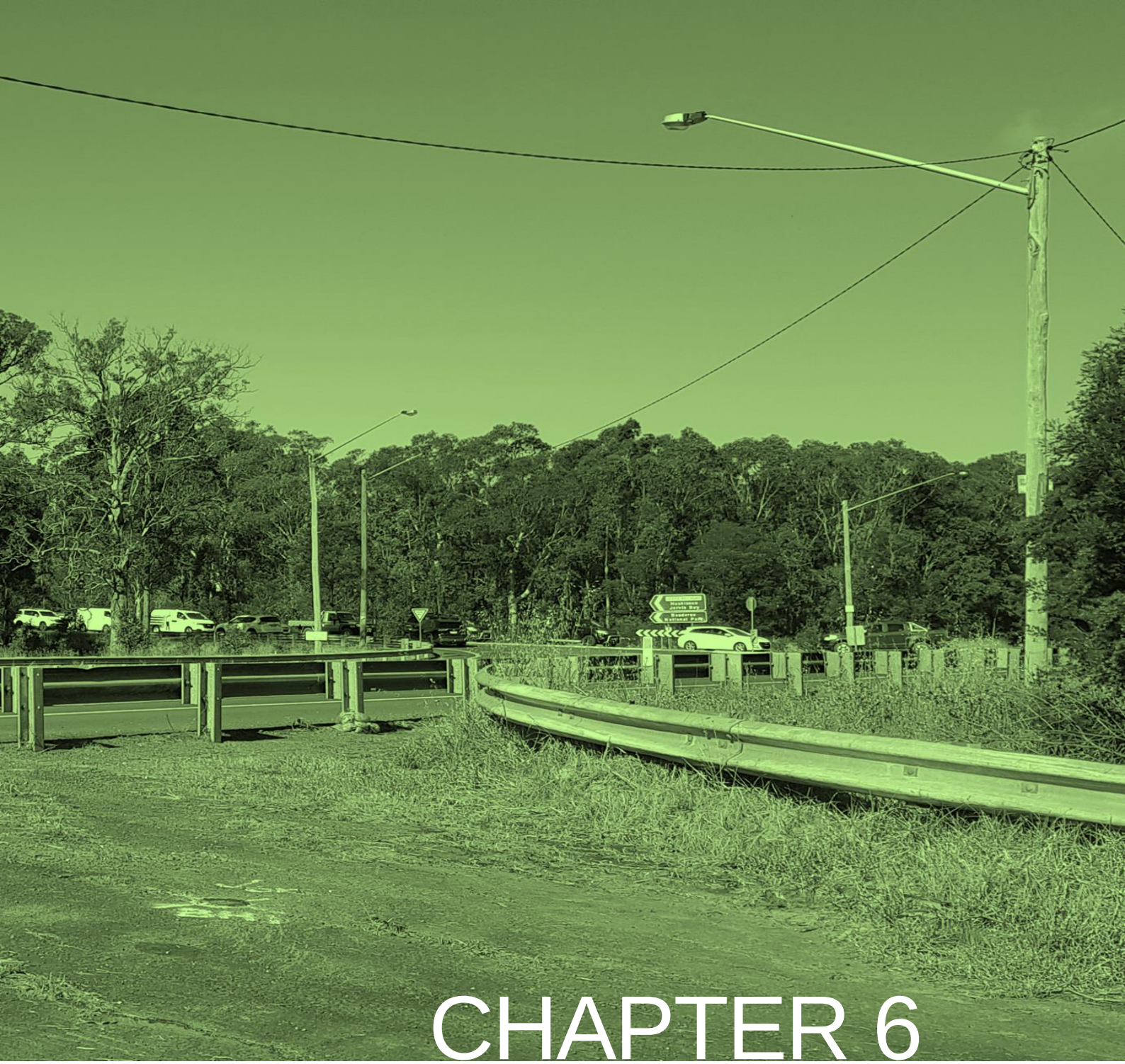
Table 5-3 provides a summary of predicted proposal impacts and their significance (note that predicted positive impacts are not assigned a sensitivity, magnitude or significance value, in accordance with the practice note).

Table 5-3 Summary of impact significance

Issue	Sub category	Impact (with magnitude / comment)	Sensitivity / distributive socio economic equity	Magnitude	Level of significance
Key impacts					
Business and industry (positive or neutral impact)	Impacts on local businesses Impact of bypassing businesses	It is not expected that the control and/or diversion of traffic at the intersection would result in a revenue decrease for businesses that use this junction. Traffic conditions are currently considered to be poor, delays will be experienced during construction, but the road network will be drastically improved when the proposal is complete. Congestion at the intersection for vehicles travelling to and from the Jervis Bay area and between Nowra and Ulladulla would be removed by the proposal, therefore becoming more appealing to general traffic	N/A	N/A	N/A

Issue	Sub category	Impact (with magnitude / comment)	Sensitivity / distributive socio economic equity	Magnitude	Level of significance
		and businesses operating in the region. Temporary positive revenue impact expected during construction.			
Property impacts	Impacts of property acquisition	Nineteen full and 20 partial property acquisitions would be required to accommodate the construction of the proposal. This change would be permanent for property owners subject to full acquisition, requiring them to relocate and find new accommodation. There is insufficient secondary data available to determine the circumstances and potential impacts for each affected property owner. Interviews with each affected property owner was beyond the scope of this SEA. All acquisitions would be undertaken in consultation with landowners and in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991* and the Transport for NSW (formerly Roads and Maritime Services) *Land Acquisition Information Guide* (Roads and Maritime Services, 2014).	High	High	High
Other impacts					
Social infrastructure (positive impact)	Direct impacts on community services, facilities, networks Indirect impacts (i.e. access)	It is unlikely that social infrastructure would be significantly impacted by the proposal, however, the local road network is an obvious component of infrastructure that would be temporary impacted by road closures and/or diversions during construction. The above negative impact is balanced by the proposal's ability to: ▪ Improving safety ▪ Reducing queuing and delays at the intersection ▪ Facilitating multimodal trips. The net impact arising from the proposal would be positive.	N/A	N/A	N/A
Access and connectivity (positive impact)	Walking and cycling networks, public transport facilities, roads, parking, changes to adjacent road conditions (i.e.	Although the proposal would potentially impact property access for residents and businesses located within the proposal construction footprint on the Princes Highway, the scale of this impact is comparatively minor compared to the overall positive proposal impact	N/A	N/A	N/A

Issue	Sub category	Impact (with magnitude / comment)	Sensitivity / distributive socio economic equity	Magnitude	Level of significance
	clearways, heavy vehicle routes)	of alleviated congestion, improved traffic conditions and road safety for motorists and community members using cycling and pedestrian facilities (active transport). This positive benefit would be significant for the population.			
Economy (positive impacts)	Employment and income Value add	During construction, the influx of construction staff to the area would result in positive economic impacts (for example the purchase of groceries or accommodation). The economic benefits would be temporary and reduce significantly when the proposal is operational.	N/A	N/A	N/A
Property impacts	Impacts on property Impacts on property amenity	32 properties are likely to be impacted by the proposal, with potentially detrimental outcomes for resident well-being. This impact is exacerbated by the requirement for seven full and 19 partial property acquisitions.	Moderate	Moderate	Moderate



CHAPTER 6

IMPACT MITIGATION AND MANAGEMENT

6 IMPACT MANAGEMENT AND MITIGATION

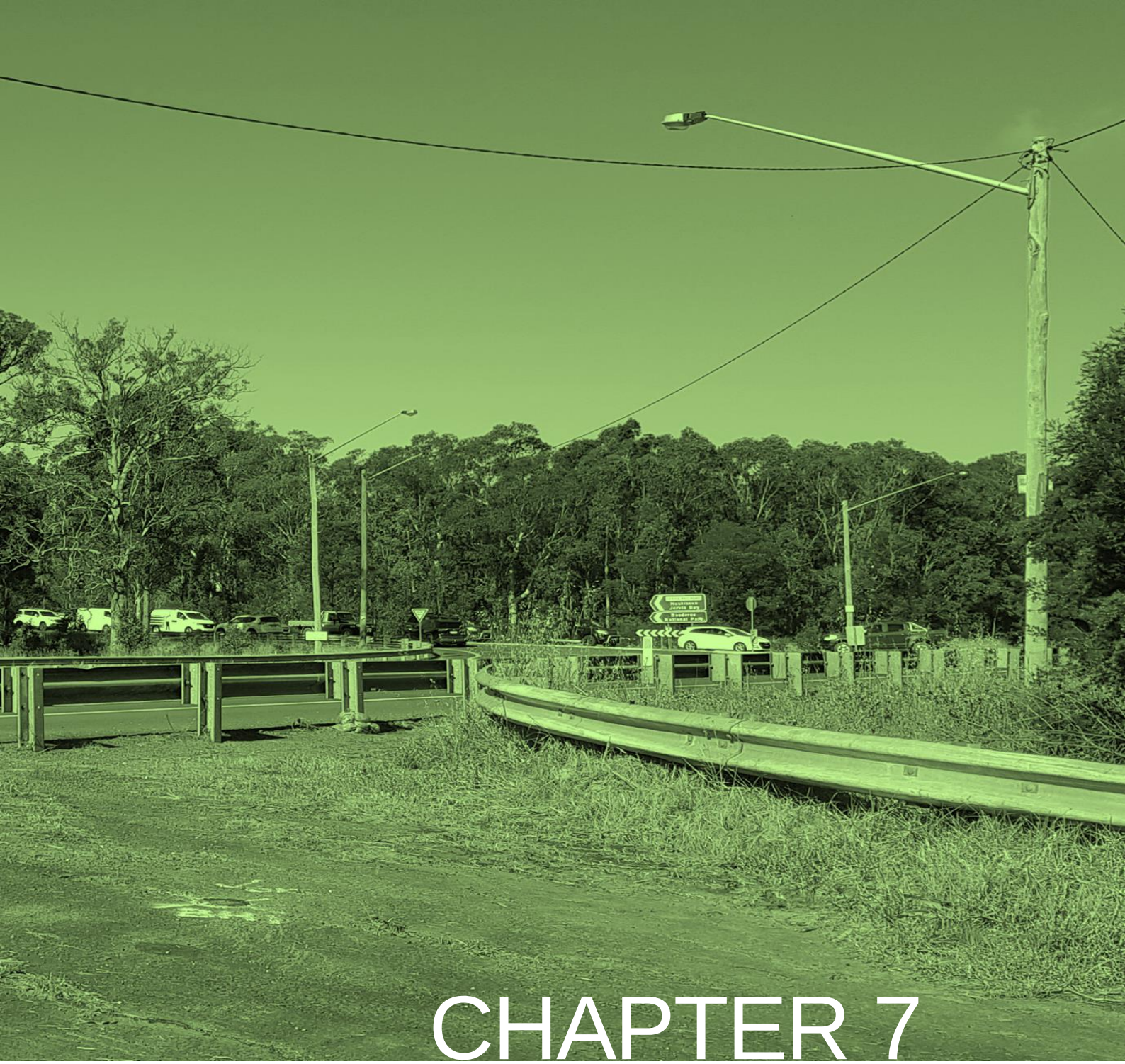
The proposed measures to manage and mitigate the potential negative socio-economic impacts identified as part of this assessment are in Table 6-1.

Broadly, the expected environmental outcomes of the management and mitigation measures are to avoid or minimise impacts on the local community, local businesses and social infrastructure from the construction and operation of the proposal. These would be achieved through:

- Implementation of environmental management measures, for example noise, vibration and dust mitigation, traffic management strategies and property impacts
- Early and ongoing consultation and communication to ensure local and regional communities, businesses, transport users and managers of social infrastructure are informed about the proposal's construction and operation.

Table 6-1 Management and mitigation measures

Property acquisition	Land acquisition for the proposal will be carried out in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*, the *Roads and Maritime Services Land Acquisition Information Guide* (Roads and Maritime Services, 2014) and in accordance with the land acquisition reforms announced by the NSW Government in 2016.	Pre-construction, Construction
Community and stakeholder engagement	A Community and Stakeholder Engagement Plan (CSEP) will be prepared and implemented. The CSEP will include: ▪ Procedures and mechanisms that will be implemented in response to the key social impacts identified for the proposal ▪ Procedures and mechanisms that will be used to engage with affected landowners, business owners, and the wider community to identify potential access, parking, business visibility, and other impacts and develop appropriate management measures ▪ Procedures to keep the community informed about construction and any associated changes to conditions (e.g. detours or lane closures) such as through advertisements in local media and advisory notices or variable message signs ▪ Procedures and mechanisms that will be used to engage with all sensitive receivers likely to be affected by construction noise and vibration prior to commencement of activities associated with noise and vibration impacts ▪ Procedures to consult with affected landowners regarding property acquisition Procedure for the management of complaints and enquiries, including a contact name and number for complaints.	Detailed design, Pre-construction
Community values	While unsafe and congested traffic conditions prevail at the intersection of Princes Highway and Jervis bay Road, respondents have confirmed support for a proposal that alleviates congestion and improves road safety. However, management measures will be adopted in the traffic management plan and noise and vibration management plan to mitigate disturbance to properties located within the study area.	Pre-construction



CHAPTER 7

CONCLUSION

7 CONCLUSION

This report provides a socio-economic impact assessment of the Transport for NSW proposal to upgrade the Jervis Bay Road and Princes Highway intersection. The assessment involved analysing, monitoring and suggesting management measures for the predicted social and economic consequences of the proposal. This report is a specialist study developed to support the REF. The following key impacts were identified by the SEA.

7.1 Business impacts

The road network at the intersection of Princes Highway and Jervis Bay Road is congested, traffic delays are experienced, and road safety is considered to be a significant issue (traffic accidents or near misses). These concerns have been raised by business impact survey participants and during the interview with the Council representative.

While changed traffic conditions during the estimated two-year construction period would impact the free movement of road users along the road network, ultimately the upgraded intersection would alleviate the impacts raised by the community.

Additionally, during construction a temporary revenue increase is expected, where money is injected into the community by suppliers contracted to the proposal.

7.2 Property acquisitions

Socio-economic impacts derived from property acquisitions required for the proposal may be positive or negative. There is insufficient secondary data available to determine the circumstances and potential impacts for each affected property owner.

The impact of full or partial property acquisition can be managed or mitigated by adopting land acquisition processes in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*, the Roads and Maritime Services Land Acquisition Information Guide (Roads and Maritime Services, 2014) and the land acquisition reforms announced by the NSW Government in 2016.

7.3 Social infrastructure

It is unlikely that social infrastructure would be significantly impacted by the construction of the proposal, however, the local road network is an obvious component of infrastructure that would be temporarily impacted by road closures and/or diversions during construction.

The above short-term negative impact is balanced by the proposal's predicted ability to:

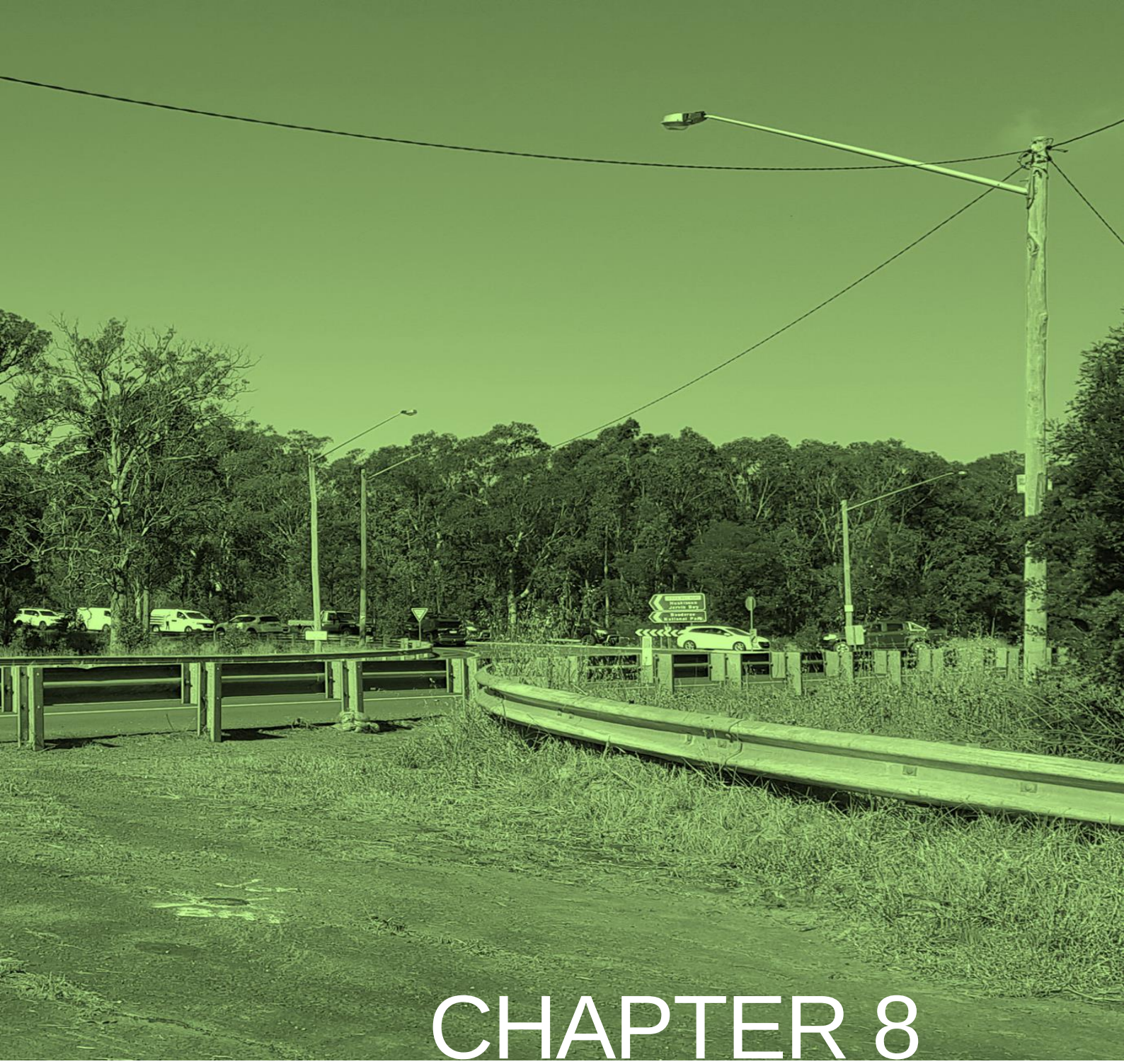
- Improve safety
- Reducing queuing and delays at the intersection
- Facilitate multimodal trips.

In this scenario, the net impact arising from the proposal would be positive.

7.4 Access and connectivity

Although the proposal has the potential to result in negative access impacts for residents at some properties along Princes Highway and Jervis Bay Road during construction, these impacts are proposed to be mitigated and the scale of this impact is comparatively minor compared to the predicted overall positive socio-economic impacts once the proposal has been completed. The major positive impacts are predicted to be:

- Safer access to and from the highway and Jervis Bay Road for residents with a frontage to these roads
- The significant alleviation of congestion at the intersection for the population living in Falls Creek or travelling between Ulladulla and Nowra and to the towns located near Jervis Bay.



CHAPTER 8

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APPENDIX A

TELEPHONE SURVEY QUESTIONS

Telephone Survey Questions

- Business operations
  - What are the daily and ongoing activities performed in the business?
  - Is the business your primary occupation?
  - Does the business depend on any outside products or services? If so, describe the supply chain for your products or services
  - Is the supply chain time sensitive or seasonal?
  - Do you own, lease or sub-lease the property?
  - How many employees are full time?
  - Do your employees work part time or full time, and what work do they perform?
  - What are the typical working times, or start and end time for work shifts?
- The intersection upgrade and your business
  - Does traffic flow at the current intersection and local road network influence your business?
  - During construction, do you anticipate any impacts on your business operations (e.g. access by staff or customers, supply chain, revenue or cost, other). Think about higher traffic volumes, potential delays, noise/dust around the intersection, detours etc.
  - If there are impacts, how can these impacts be addressed or managed?
  - What about post construction? Think about faster travel times, ease of access, better road pavement, and improved public transport options.
  - Do you have any other relevant comments or concerns?

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