APPENDIX I

SOCIAL IMPACT ASSESSMENT

Stockton Sand Quarry Dredging | State Significant Development

SOCIAL IMPACT ASSESSMENT

Prepared for Boral Resources (NSW) Pty Ltd | 26 November 2019

Stockton Sand Quarry Dredging

STATE SIGNIFICANT DEVELOPMENT | SOCIAL IMPACT ASSESSMENT

Prepared for Boral Resources (NSW) Pty Ltd
26 November 2019

PR63

	Prepared by	Reviewed by
Name	Jamie Seaton	Luke Farrell
Company	Element Environment	Element Environment
Position	SIA and Community Engagement Lead	Senior Environmental Consultant
Project Role	Lead SIA Author	Project Manager
Signature		
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Certification Page

Lead author declaration

I, Dr Jamie Seaton, certify that the Social Impact Assessment (SIA) component of the Stockton Sand Dredging Environmental Impact Statement (EIS) contains all information relevant to the SIA for the project, and that the information is not false or misleading. My qualifications and experience are listed below.

Qualifications:

1. Bachelor of Science Hons. (Human Geography)

2. Community Development Diploma

3. Doctorate of Philosophy (Human Geography).

Experience:

I am trained in social science methodologies and I have demonstrated SIA skills in government, private and education settings. I have managed and authored SIAs for extractive industry projects in New South Wales and Queensland.

Date: 26 November 2019

Jamie Seaton - SIA and Community Engagement Lead

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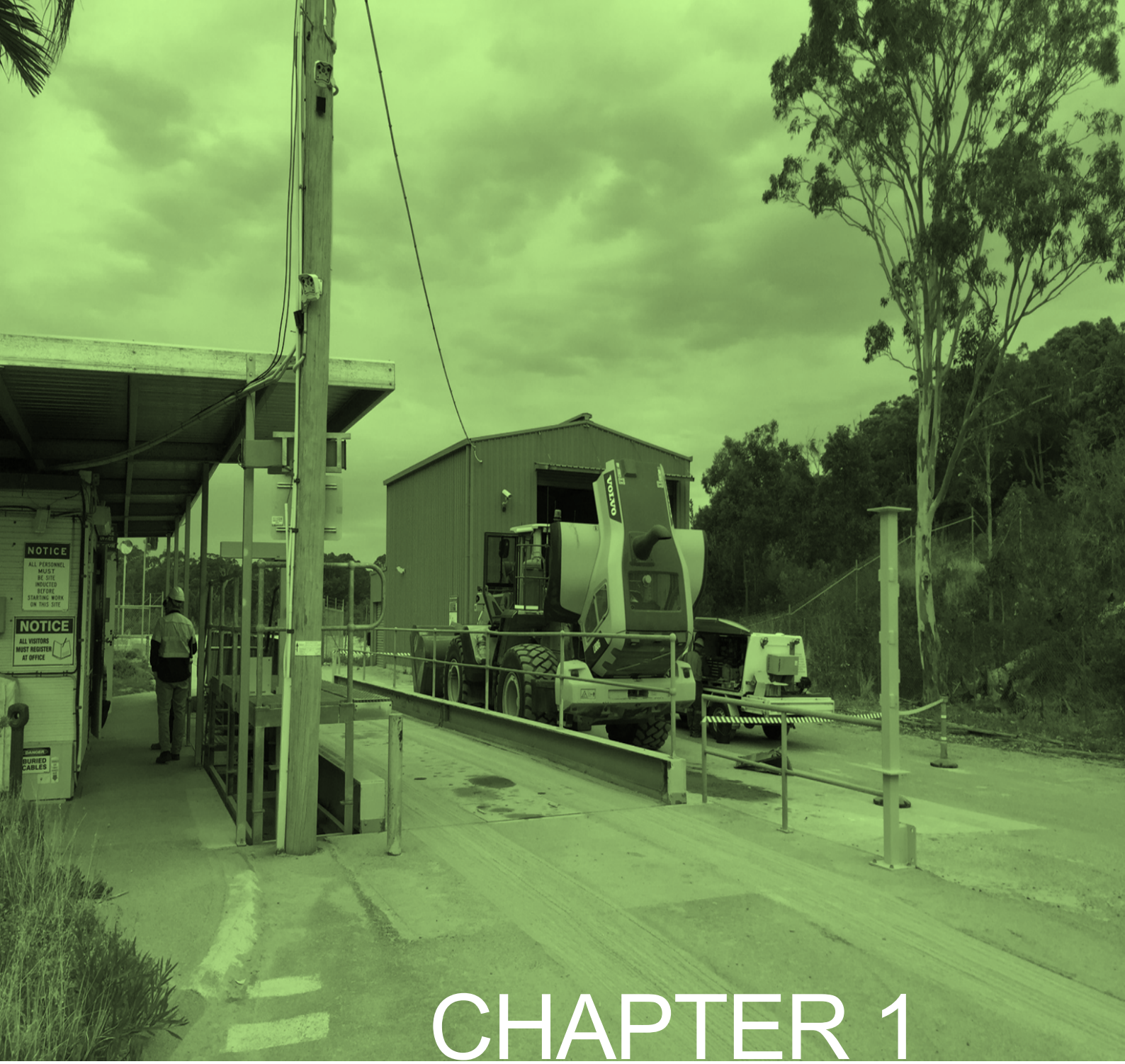


CHAPTER 1

INTRODUCTION

1 INTRODUCTION

This Social Impact Assessment (SIA) has been prepared to support the State Significant Development (SSD) application by Boral Resources (NSW) Pty Ltd (Boral), for the proposed dredging operation of the Stockton Sand Quarry (hereafter referred to as the 'site' or the 'quarry'). The SIA adopts the framework set out in the *Social Impact Assessment Guideline* (the Guideline), published in September 2017 by the NSW Department of Planning, Industry and Environment (DPIE) (NSW Department of Planning, Industry and Environment, 2017).

The first chapter of this report provides a project overview, a description of the site and existing operations, an outline of the proposed project, objectives of the SIA, the Secretary's environmental assessment requirements (SEARs), and a structural outline of this report.

1.1 Overview

Boral owns and operates the quarry, a long standing operation that currently extracts sand from the windblown (transgressive) sand dunes of Stockton Bight and transports up to 500,000 tonnes per annum (tpa) of sand product for use in the building, landscaping and construction markets.

Due to current and future demand for sand in the local Hunter and Sydney regions, Boral is seeking approval for continued and expanded operations at the site through a SSD application. The proposed development (hereafter referred to as the 'project') involves the extraction of sand from the inland vegetated dunes by front-end loader/excavator to a depth of 4 metres (m) Australian Height Datum (AHD) in Stage 1, and subsequent dredging from 4 m AHD to -15 m AHD. The project would seek to permit a site wide increase on the dispatch limit to 750,000 tpa (i.e. the windblown sand extraction area and the project operations combined) up until 2028 after which the site wide limit would reduce to no more than 500,000 tpa. The project would be for a period of up to 25 years.

This environmental impact statement (EIS) has been prepared by Element Environment Pty Ltd (Element), on behalf of Boral for submission to the DPIE to satisfy the provisions of Part 4 of the *Environmental Planning & Assessment Act 1979* (EP&A Act).

1.2 Existing operations

As highlighted in Chapter 3 of the EIS, sand extraction has taken place in various locations on the site since 1976 when G. Hawkins and Sons was initially granted consent.

Boral acquired the site in 1992. Under Boral's ownership there have been two primary development consents granted, including:

- DA 2010/94: The 'inland extraction area' (also known as pits 1 – 6) granted by Port Stephens Council in May 1996; and
- DA 140-6-2005: The 'windblown sand extraction area' (also known as pit 7) located on the transgressive dunes adjoining Stockton Beach granted by the Department of Planning in 2006.

The inland extraction operation on the vegetated dunes occurred above 5 metres AHD and ceased in 2008 and rehabilitation has been ongoing.

The windblown sand extraction area started operations in 2008 and in accordance with condition 5 of the development consent has 20-year life, due to cease in 2028.

The existing operation is located approximately 375 m south east of the project site, referred to as the windblown sand extraction area. This area is approved to operate until 2028 and dispatch

up to 500,000 tpa from the site. The approved scope of works and method for the existing operations generally includes the following:

- extraction of sand annually through regular harvesting of windblown sand and dry excavation of the dune mass, and transport of up to 500,000 tonnes annually;
- processing at the pit face by mobile power screen;
- maintenance of the haul road to transport sand from extraction area;
- haulage of product from existing depot/weighbridge to Nelson Bay Road and the wider road network; and
- progressive rehabilitation of extracted areas.Project area

The project area is wholly within Boral's existing quarry landholding. It is identified as the 'proposed clearance area' in Figure 1. It contains all areas to be disturbed by the project operations and covers an area of approximately 37 hectares (ha).

The project area is generally consistent with the same disturbance footprint associated with the former inland extraction area approved under the 1996 development consent with the exception of areas to east and south east of Lot 3 and along the southern edge to allow for the construction of new haul roads.

The approved scope of works and method for Boral's existing operations generally includes the following:

- extraction of sand annually through regular harvesting of windblown sand and dry excavation of the dune mass, and transport of up to 500,000 tonnes annually;
- processing at the pit face by mobile power screen;
- maintenance of the haul road to transport sand from extraction area;
- haulage of product from existing depot/weighbridge to Nelson Bay Road and the wider road network; and
- progressive rehabilitation of extracted areas.

1.3 The proposed project

Sand from the former inland extraction area was only extracted to 5 m AHD under the original 1996 development consent. The sand resource above 5 m AHD was exhausted in 2008 and in accordance with the conditions of consent the operations have ceased.

The project involves the extraction of sand from within the former inland extraction area (inclusive of pits 1 – 6) from the existing ground level to a depth of 15 m below sea level (-15 m AHD). As extraction will intercept the groundwater table (at approximately 1 m AHD) the primary method of sand extraction will involve dredging.

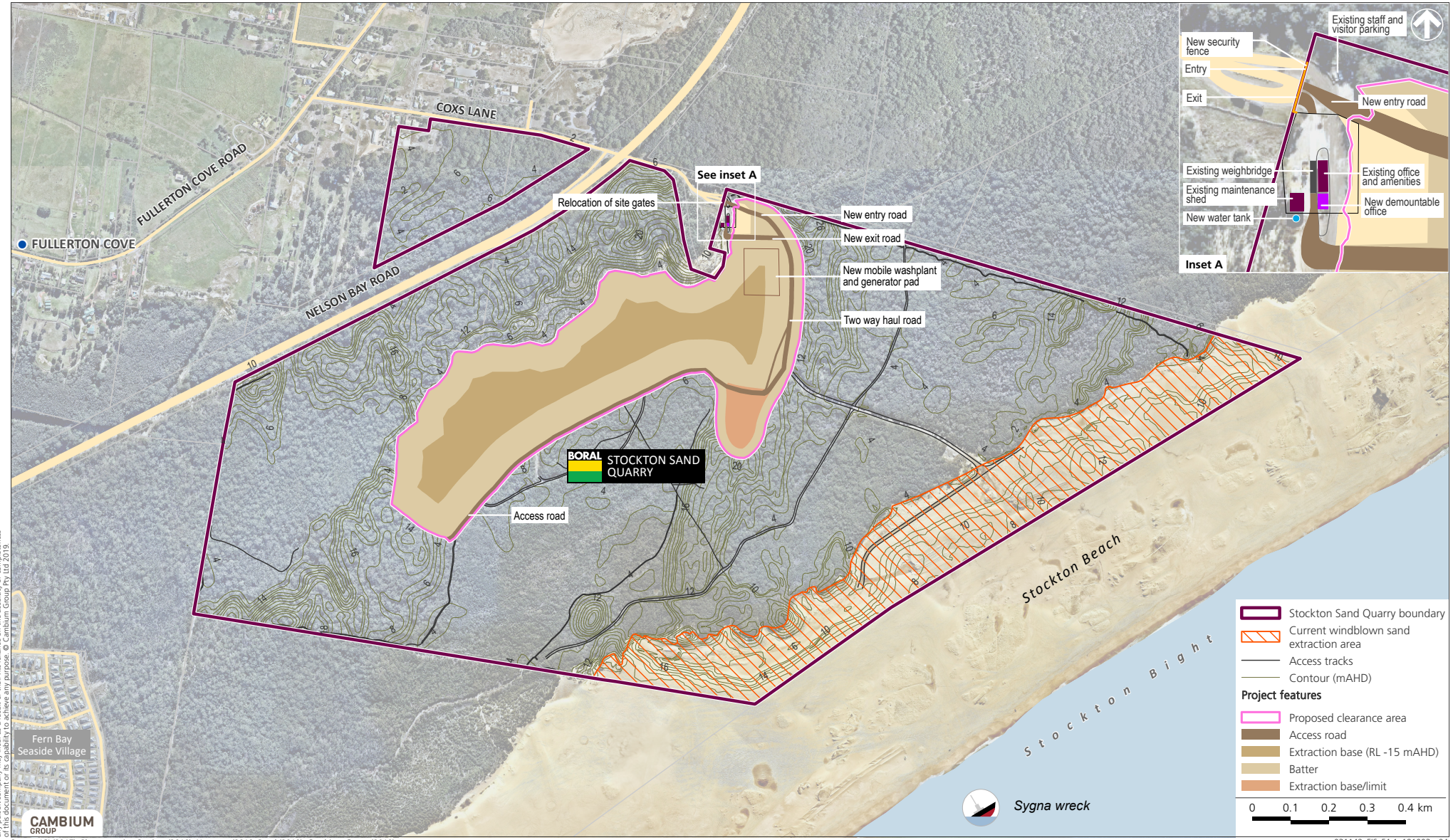
There is an estimated 9 million tonnes of sand resource within the project extraction area. The project would seek to permit a site wide increase on the dispatch limit to 750,000 tpa (ie the windblown sand extraction area and the Project operations combined) up until 2028 after which the site wide limit would reduce to no more than 500,000 tpa. The increase in the site wide dispatch limit is sought to permit maximum flexibility across the two projects areas (located on the same site). A concurrent administrative amendment to DA 140-5-2006 to allow for the site wide dispatch limit increase would be lodged with DPIE.

Mobile plant and equipment utilised at the site would operate across both project areas and a docket system at the weighbridge would monitor outgoing product as a site total.

To account for market fluctuations in demand, Boral are seeking a development consent period of 25 years for the SSD approval.

Figure 1
The Project

STOCKTON SAND QUARRY DREDGING
ENVIRONMENTAL IMPACT STATEMENT



Source: LPI (2017), Photomapping Services (2018), Nearmap (2019, Boral (2019), Cambium Group (2019).

1.4 Objectives of the social impact assessment

The release of the Guideline (NSW Department of Planning, Industry and Environment, 2017) by DPIE has significantly increased the prominence of SIA in the broader NSW EIS process. Upon its release and at the present time, the Guideline applies to all SSD for resource projects, where the SEARs were issued after the publication date.

The Guideline outlines some mandatory requirements to be met by SIA practitioners in NSW. It contains objectives applicable to NSW state significant resource projects (ie state significant mining, petroleum production and extractive industry projects), outlines best practice engagement techniques, and provides a process for assessing, determining and responding to social impacts. The objectives contained in the Guideline have been adopted for this SIA and include:

- providing a clear, consistent and rigorous framework for identifying, predicting, evaluating and responding to the social impacts of state significant resource projects, as part of the overall environmental impact assessment (EIA) process;
- facilitating improved project planning and design through earlier identification of potential social impacts;
- promoting better development outcomes through a focus on minimising negative social impacts and enhancing positive social impacts;
- supporting informed decision-making by strengthening the quality and relevance of information and analysis provided to the consent authority;
- facilitating meaningful, respectful and effective community and stakeholder engagement on social impacts across each EIA phase, from scoping to post-approval; and
- ensuring that the potential social impacts of approved projects are managed in a transparent and accountable way over the project life cycle through conditions of consent and monitoring and reporting requirements.

1.5 Secretary's environmental assessment requirements

SEARs were issued for the project by DPIE in 2018 following the publication of the Guideline. The SEARs state that this report must address key social issues including a detailed assessment of the potential social impacts of the development that builds on the findings of the Social Impact Assessment Scoping Report, in accordance with the Guideline, paying particular consideration to:

- the full range of categories of potential social impacts identified in Section 1.1 of the Guideline;
- how impacts (positive and negative) may be distributed among different groups in the affected communities;
- the principles in Section 1.3 of the Guideline;
- ensuring that the person preparing the SIA has appropriate qualification and experience as outlined in the Box 4 of the Guideline; and
- the review questions in Appendix D of the Guideline.

Table 1 identifies where the SEARs are addressed in this report.

1.6 Structure of this report

The structure of this report is influenced by Guideline requirements. Once the legislative and social policy context of the study is established (Chapter 2), the methodology for scoping and preparing the SIA is described (Chapter 3). Results of the SIA data collection is presented in chapters titled SIA Scoping Phase and Community Engagement Outcomes, and Existing Social Baseline (Chapter 4 and Chapter 5 respectively). An analysis of the results, structured according

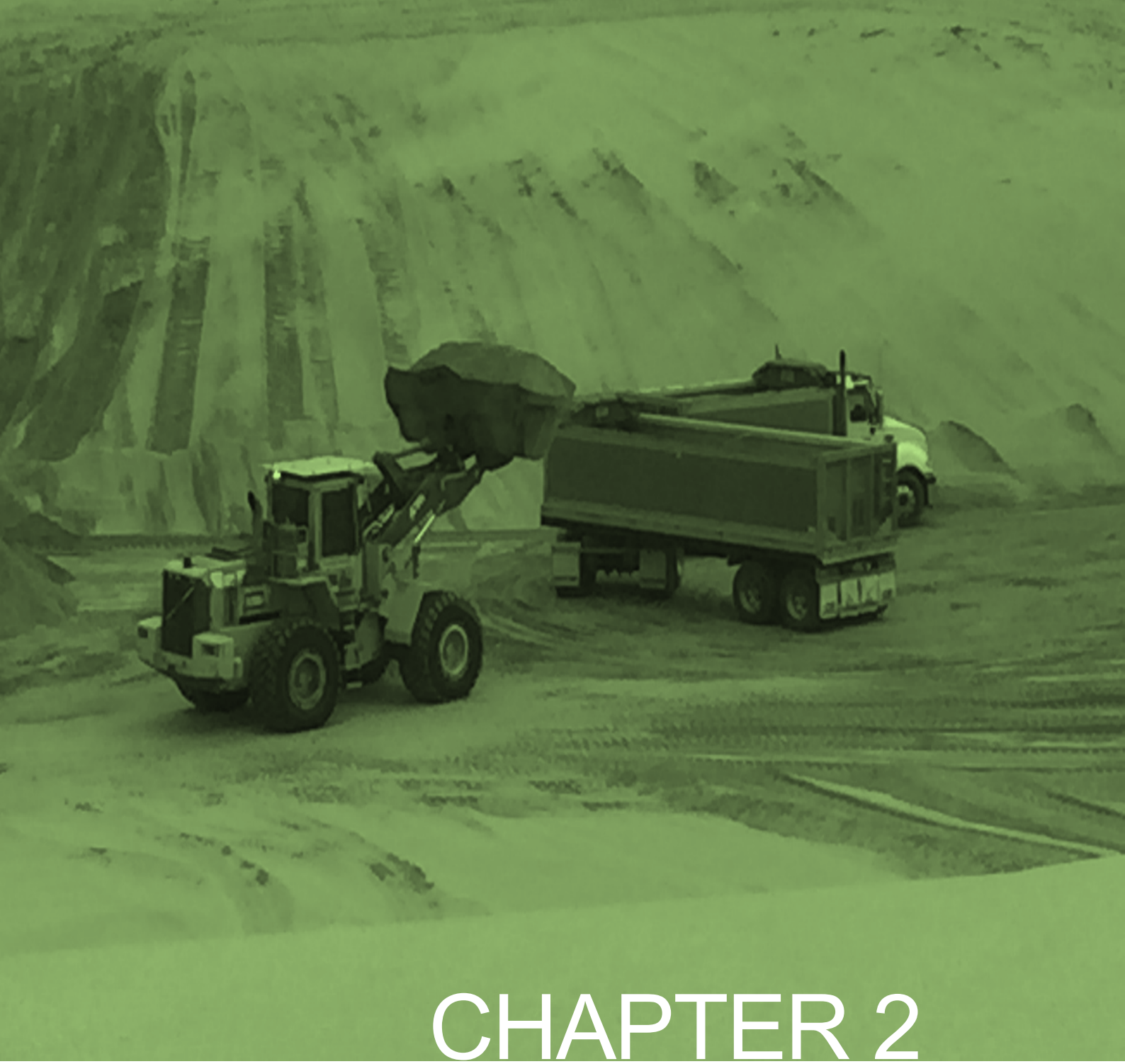
to the social impact categories outlined in section 1.1 of the Guideline (see Appendix A), is provided in Chapter 6, followed by the conclusion of the study (Chapter 7), and SIA recommendations (Chapter 8).

The structure of this report also observes the 'Review Questions' contained in Appendix D of the Guideline. The Review Questions are essentially a checklist for the author to confirm that the SIA Guideline has been complied with, in undertaking the SIA and preparing this report. A compliance matrix is presented in Table 1 to identify where the Review Questions are addressed in this report.

Table 1 – Compliance matrix

Review Question (Appendix D of Guideline)	Location in this report
General	
Has the applicant applied the principles in Section 1.3? How?	Chapter 3, 6 and 7
Does the lead author of the Scoping Report meet the qualification and skill requirements in Box 2?	Certification page
Does the lead author of the SIA component of the EIS meet the qualification and skill requirements in Box 4?	Certification page
Has the lead author of the SIA component of the EIS provided a signed declaration certifying that the assessment does not contain false or misleading information?	Certification page
Community engagement for social impact assessment (Section 2)	
Does the SIA include adequate explanations of how the engagement objectives have been applied? How?	Chapter 3
Does the SIA demonstrate that there has been a genuine attempt to identify and engage with a wide range of people, to inform them about the project, its implications and to invite their input? How?	Chapter 3
Does the SIA demonstrate that an appropriate range of engagement techniques have been used to ensure inclusivity and to ensure the participation of vulnerable or marginalised groups? How?	Chapter 3
Scoping – area of social influence (Section 3.1)	
Does the Scoping Report identify and describe all the different social groups that may be affected by the project?	Section 4.1.3
Does the Scoping Report identify and describe all the built or natural features located on or near the project site or in the surrounding region that have been identified as having social value or importance?	Section 5.2 and 5.3
Does the Scoping Report identify and describe current and expected social trends or social change processes being experienced by communities near the project site and within the surrounding region?	Chapter 4 and 5
Does the Scoping Report impartially describe the history of the proposed project, and how communities near the project site and within the surrounding region have experienced the project to date and others like it?	Chapter 4 and 6
Scoping – identifying social impacts (Section 3.2, Appendix A and Appendix B)	
Does the Scoping Report adequately describe and categorise the social impacts (negative and positive), and explain the supporting rationale, assumptions and evidence for those categories?	Chapter 4 and 6
How has feedback from potentially affected people and other interested parties been considered in determining those categories? Does the Scoping Report outline how they will be engaged to inform the preparation of the SIA component of the EIS?	Chapter 4
Does the Scoping Report identify potential cumulative social impacts?	Chapter 4

Review Question (Appendix D of Guideline)	Location in this report
Social baseline study (Appendix C – Section C1)	
Does the SIA component of the EIS discuss the local and regional context in sufficient detail to demonstrate a reasonable understanding of current social trends, concerns and aspirations?	Chapter 5
Does the SIA component of the EIS include appropriate justification for each element in the social baseline study, and provide evidence that the elements reflect the full diversity of views and potential experiences in the affected community?	Table 3
Does the social baseline study include an appropriate mix of quantitative and qualitative analysis, and explain data gaps and limitations?	Chapter 5 Section 3.2.5
Prediction and analysis of impacts (Appendix C – Section C2)	
Does the SIA component of the EIS include an appropriate description of the potential impacts in terms of the nature and severity of the change and the location, number, sensitivity and vulnerability of the affected stakeholders?	Chapter 6
Does the SIA component of the EIS identify potential impacts at all stages of the project life cycle?	Chapter 6
Does the SIA component of the EIS appropriately identify and justify any assumptions that have been made in relation to its predictions?	Chapter 6
Does the SIA component of the EIS include appropriate sensitivity analysis and multiple scenarios to allow for uncertainty and unforeseen consequences? If relevant, does it include comparisons with studies of similar projects elsewhere?	Chapter 6
Evaluation of significance (Appendix C – Section C3)	
Does the SIA component of the EIS explain how impacts were evaluated and prioritised in terms of significance?	Chapter 6
Does the evaluation of significance consider cumulative aspects where relevant?	Chapter 6
Does the evaluation of significance consider the potentially uneven experience of impacts by different people and groups, especially vulnerable groups?	Chapter 6
Responses and monitoring and management framework (Appendix C – Sections C4 and C5)	
Does the SIA identify appropriate measures to avoid, reduce, or otherwise mitigate any significant negative impacts of the project, and justify these measures?	Chapter 7
Does the SIA explain and justify measures to secure and/or enhance positive social impacts?	Chapter 7
Does the SIA component of the EIS impartially assess the acceptability, likelihood and significance of residual social impacts?	Chapter 7
Does the SIA component of the EIS propose an effective monitoring and management framework?	Chapter 7
Modifications (Introduction – application)	
Are the social impacts associated with the modification expected to be new or different (in terms of scale and/or intensity) to those that were approved under the original consent? If yes, apply the review questions above to the SIA component of the environmental assessment.	Not applicable



CHAPTER 2

LEGISLATION AND POLICY

2 LEGISLATIVE AND SOCIAL POLICY CONTEXT

2.1 Legislation

The EP&A Act sets the legislative context for this study. The objects of the EP&A Act are to:

- promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the state's natural and other resources;
- facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment;
- promote the orderly and economic use and development of land;
- promote the delivery and maintenance of affordable housing;
- protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats;
- promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage);
- promote good design and amenity of the built environment;
- promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants;
- promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the state; and
- provide increased opportunity for community participation in environmental planning and assessment.

The SEARs (and therefore the Guideline) are issued under the provisions of the EP&A Act, and therefore set legislative requirements that this study must accommodate.

2.2 Community plans and strategies

Regional plans which reflect the aspirations of the community have been developed by the state Government and local authority associated with the project. These plans are outlined below.

2.2.1 Hunter Regional Plan 2036

The *Hunter Regional Plan 2036* (NSW Department of Planning and Environment, 2016) was released by the NSW State Government in 2016 and aimed to guide future land use planning priorities and decisions in NSW over a 20-year period. It is not intended to be a step-by-step approach to all land use planning, but instead intends to guide subsequent and more detailed land use plans, development proposals and infrastructure funding decisions. The plan was developed following consultation on a Lower Hunter discussion paper produced in 2014, involving councils and other stakeholders.

The 'vision' of the plan is for the Hunter Region to be the "leading regional economy in Australia with a vibrant new metropolitan city at its heart" (NSW Department of Planning and Environment, 2016, p.8). The plan outlines four goals (and subsequent directions) to achieve its vision. The Hunter Development Corporation will deliver, coordinate and be accountable for achieving the vision and goals of the Plan.

The goals are for the Hunter region to be/have:

1. the leading regional economy in Australia;
2. a biodiversity-rich natural environment;

3. thriving communities; and
4. greater housing choice and jobs.

2.2.2 Port Stephens Council Community Strategic Plan 2018-2028

The *Council Community Strategic Plan 2018-2028* (Port Stephens Council, 2018) developed by Port Stephens Council (PSC) is the primary corporate community strategy of the organisation. It was developed with input from residents, community groups, business and government representatives. The purpose of the plan is to:

- identify community aspirations and priorities over the next ten years;
- outline PSC's role in delivering these priorities;
- work with other governments and agencies to achieve our community's priorities;
- provide for community participation in decision making; and
- provide a basis of accountability and consistency in reporting.

The plan establishes four focus areas for Port Stephens. Each focus area has a sub-set of 'key directions' which outline its priorities. Subsequent to each focus area, there are also a range of objectives and outcomes which guide practitioners in implementing the plan until 2028.

The four focus areas of the plan are:

1. our community - Port Stephens is a thriving and strong community respecting diversity and heritage;
2. our place - Port Stephens is a liveable place supporting local economic growth;
3. our environment - Port Stephens' environment is clean, green, protected and enhanced; and
4. our council – PSC leads, manages and delivers valued community services in a responsible way.

2.2.3 Connecting the Hunter – a regional approach to infrastructure

Connecting the Hunter was developed by the Hunter Branch of Regional Development Australia (RDA) (Regional Development Australia Hunter, 2010) and aims to establish a regional approach to the Hunter Valley's growth strategies. It provides a framework to identify, assess and meet the Hunter's long-term future infrastructure needs. RDA Hunter consulted widely throughout 2010. It encouraged discussion with regional partners and government to identify infrastructure priorities.

The infrastructure priorities outlined in the strategy include:

- capitalising on past successes and the better use of existing infrastructure;
- addressing planning inefficiencies and inconsistencies that hinder investment;
- planning for future infrastructure needs within a long-term, strategic, comprehensive and consistent regional framework;
- maintaining appropriate levels of investment in human capital, knowledge and information infrastructure;
- improving the liveability, sustainability and productivity of Newcastle, the region's capital;
- securing north-south and east-west corridors for future rail capacity expansion;
- acquiring land for road and rail expansion;
- improving sea and air links to Newcastle Port;
- completing the F3 to M2 link road;
- developing the case for High Speed Rail between Newcastle and Sydney;
- establishing a Regional Transport Authority;
- advocating for the Hunter and Central Coast to be priority areas for the rollout of the NBN;
- encouraging further research development and investment in renewable energy technology; and
- securing future water security.

2.2.4 Port Stephens Planning Strategy 2011-2036

The strategy developed by PSC aims to provide high level strategic direction for spatial planning in the Port Stephens Local Government Area (LGA). It intends to guide land use allocation and other provisions of the Port Stephens Local Environmental Plan (LEP) (NSW Parliament, 2013), and a range of other planning documents used to regulate development and ensure conservation in the LGA. It recognises that "all communities in Port Stephens [LGA] are considered to be significant and all play an important role in how Port Stephens functions as an area" (Port Stephens Council, 2011, p. 64).

Council's strategy outlines eight directions for residential, commercial and industrial development in Port Stephens:

- a framework for growth and conservation;
- analysis of commercial and industrial land;
- centres and hierarchy;
- accommodating more housing;
- employment and industries;
- rural production and landscapes;
- conservation areas; and
- transport.

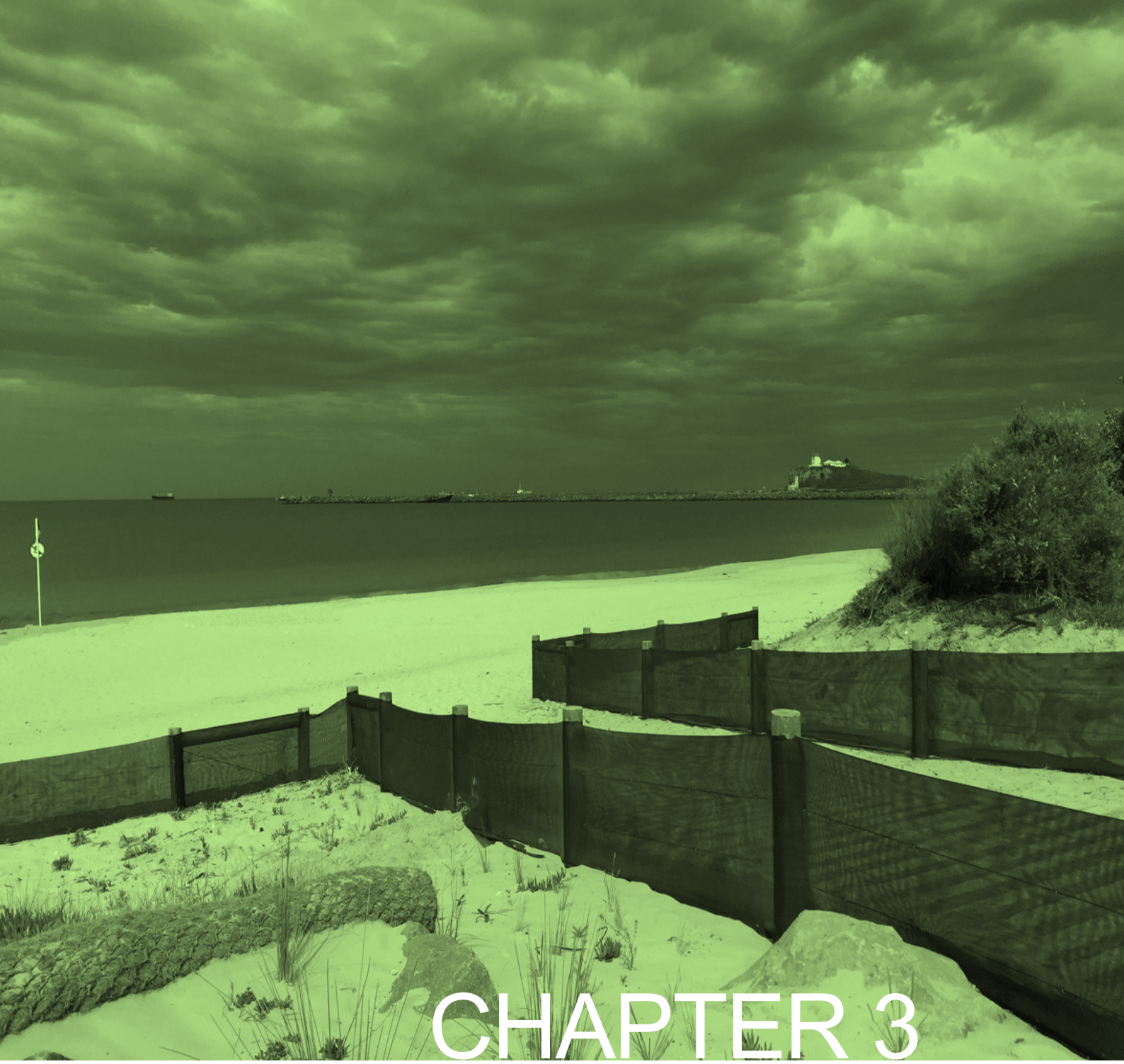
2.2.5 Hunter Economic Infrastructure Plan

The *Hunter Economic Infrastructure Plan* (Regional Development Australia Hunter, 2013) was created by the Hunter branch of RDA. It was developed to enable a whole of supply chain view of mining related activities in the Hunter region. The plan considered and assessed major infrastructure requirements in the Hunter region including:

- ports;
- rail;
- electricity;
- roads; and
- water.

RDA determined that that roads and water warranted further investigation in their assessment. Those issues attracted most attention in the plan, particularly from the perspective of coal mines operating in the Hunter region.

In relation to road infrastructure investment, the plan recommends road infrastructure upgrades, addressing safety needs associated with forecast additional mine traffic flows, improved freight and commuter travel times, and a focus on community and social issues. In relation to water security, the plan recommends that the Government undertakes an analysis of industry water requirements to support growth under various drought scenarios, and provide industry with the necessary up-to-date information to manage risks associated with water supply and drought.



CHAPTER 3

METHODOLOGY

3 METHODOLOGY

The methods described below enabled the collection of data to address the social impact categories defined in the Guideline (refer Appendix A). Whilst this chapter describes the SIA methodology, it does not identify which social impact category each method is designed to address. This link is made clear in Chapter 4 (and summarised in Table 10). Following Chapter 4, the results of the SIA are presented and discussed according to the social impact categories, to ensure compliance with the Guideline.

3.1 Methodology for scoping the SIA

The preliminary SIA for the project was supported by a number of methods outlined in the *Stockton Sand Quarry Dredging Preliminary Environmental Assessment* (Element Environment, 2018). These methods are summarised below.

3.1.1 Scoping tool

The scoping tool contained in the Guideline was a method implemented during the SIA scoping phase. The process of applying the scoping tool involved:

1. using early engagement result as inputs to the scoping tool and considering each 'matter' (ie amenity, access, built environment, heritage, community and economic) and its subcategories, before determining how likely it is that project activities will cause an impact to it;
2. for each matter, considering and assessing the material characteristics of any likely impact;
3. for each matter, considering stakeholder/community opinions and sentiment towards the project activities;
4. for each matter, determining whether or not a social impact will arise from the project activities, and then developing a rationale for the decision; and
5. for each matter, determining the level of assessment (and engagement) required in the EIS preparation phase, and selecting from the following list the most appropriate SIA type:

    - desktop: another specialist study or section of the EIS will provide all the information and analysis needed to predict, evaluate and develop a response to the social impact, including relevant primary and secondary research, qualitative and quantitative data, and appropriate engagement with potentially affected people, to establish a baseline and support predictions. If this is the case, the SIA component of the EIS only needs to review the data and findings from the other sources through a SIA lens and cross-reference and integrate them into the overall social baseline and assessment.
    - standard: most information and analysis needed to predict, evaluate and develop a response to the social impact will be provided by another specialist study or section of the EIS, but it will need to be supplemented with further evidence gathering and analysis to fill any gaps and obtain a complete picture from a SIA perspective.
    - comprehensive: only limited or no information and analysis will be provided by another specialist study or section of the EIS. If so, the author/s of the SIA component of the EIS will need to undertake the evidence gathering and analysis needed to predict, evaluate and develop a response to the social impact.

6. each matter and its associated level of assessment (determined by the scoping tool) was considered in the context of the social impact categories specified in section 1.1 of the Guideline. Refer to Appendix A for a list of these categories.

3.1.2 Stakeholder identification and analysis

A stakeholder is a group, individual or organisation that is interested in, affected by, or has the capacity to influence a project (Brereton, 2005). Figure 2 contains a general list of people and organisations that are likely to be stakeholders in most projects. This list was valuable for providing a starting point for the stakeholder analysis conducted in the SIA scoping phase. There will however, always be locally-specific groups and locally specific circumstances that influence the local cultural context (Vanclay, 2015).

The locally-specific Project stakeholders are known to Boral courtesy of their long-term presence in the Fullerton Cove area. As part of the scoping exercise, a high-level stakeholder analysis was undertaken first by leveraging the knowledge held by Boral staff. Two senior staff members were interviewed to determine the most prominent stakeholders associated with the project. The interviews were held during February 2018 and each had a one-hour duration (approximately). Following the interviews, a further desktop analysis (of files held by the project team related to previous community engagement, and online sources) was completed to identify other stakeholders potentially interested in the project. The project stakeholder list is contained in the stakeholder matrix (see section 4.1.3).

Residents	• Within the affacted area • Immediate neighbours
People in host communities	• Those that relocate as a result of a planned resettlement or through their own migration • People in communities near where construction workers or other in-migrants will be located
Other communities	• More distant residents whose livelihoods may be affected as a result of the project • Communities near associated works such as irrigation channels, quarries, roads, railways, and transmission line corridors
Project employees	• Construction workers and their families
Indigenous people	• Non-resident Indigenous or other land-connected peoples who may have spiritual attachment to the land/river
Non-government organisations (NGOs)	• Local, national and international NGOs (for example, conservationists) interested in ecological or heritage values that may be influenced by a project
Other stakeholders	• Developer and associated contractors, regulatory agencies, local regional and national governments, funding or development agencies

Figure 2 - Stakeholders likely to be involved with a project (Vanclay, 2015)

3.1.3 Written and interactive engagement methods

Early engagement for the project was implemented via a community engagement program, undertaken during 2018. A range of methods were utilised during the program to engage stakeholders and provide an opportunity to interface with Boral about the proposed operations. A

description of each method used is provided in Table 2. Note the intent of Table 2 is not to describe the engagement outcomes or identify the stakeholders targeted by each method. These are identified in section 4.1.3 (refer Table 11).

Table 2 – Written and interactive scoping phase engagement methods

Method	Description
Phone call	The project team contacted the Port Stephens Member of Parliament (MP) to provide a project update and answer any questions raised.
Letter	A letter inviting feedback about Boral's operations, via a link to an online survey. This was distributed to residents (via random sample) living near the project in early March 2018.
Email	The project team distributed emails to provide project updates to stakeholders. Emails included an overview of the project, details about consultation activities including interviews (below), and the project newsletter.
Interviews	Interviews with residents (via the random sample doorknock) living in Fern Bay and Fullerton Cove in early March 2018.
Newsletter	A newsletter inviting feedback about Boral's existing operations, informing the community about the project, and offering individual meetings with residents in Fern Bay and Fullerton Cove. Newsletters were distributed during May 2018, February 2019, and July 2019. The newsletter was made available for download from the project website, and emailed to government agencies and elected representatives.
Meeting and invitations to MPs	Meeting invitations were sent via email to the NSW Member for Port Stephens and the Federal Member for Paterson during April 2018. The email offered to provide a briefing of the project to the MPs.
Meetings with PSC	A meeting with PSC planning staff was held during May 2018. At the meeting Boral staff presented an overview of the project. A second meeting between Boral staff and Councillors from PSC was held during July 2018 and involved a briefing to inform Councillors about the project. Boral staff then invited questions from the Councillors in attendance.
Consultation with Worimi Local Aboriginal Land Council (LALC)	Boral's National Indigenous Affairs Manager consulted the Worimi LALC via a meeting with the Worimi LALC CEO and board members in January 2018.

3.1.4 Area of social influence development

The Area of Social Influence (ASI) for the project and a description of its development were contained in the project scoping report, included in the *Stockton Sand Quarry Dredging Preliminary Environmental Assessment* (Element Environment, 2018). Further engagement activities did not yield any information to warrant a modification of the ASI for the EIS.

The Guideline (NSW Department of Planning, Industry and Environment, 2017) explains that the term 'locality' does not have a prescribed meaning or refer to a fixed, pre-defined geographic boundary. This observation was adopted for the project. Care was taken to determine the ASI comprising the area within the actual project boundary, but also the geographies external to the site where social impacts may arise.

The ASI was developed on the premise that relationships within and between scales will affect what people understand as impacts (Vanclay & Esteves, 2011). This means that people may not perceive social impacts created by a project to be those felt exclusively within or immediately adjacent to the project boundary, or at a time when operations are conducted on site. Instead, it is possible for impacts to be felt at locations outside the project boundary and at any time of day (particularly in the event of long-distance haulage routes or complex supply chains). These time and space relationships between the project site and communities, economies, infrastructure, and resources (both human and natural), were explored using a mixed-methods approach during the ASI development. The specific methods adopted were:

1. semi-structured interviews with key Boral project personnel familiar with the existing operations on site and the local communities near the project site;
2. semi-structured interviews with residents (via random sample "Stakeholder Perception Benchmark" doorknock) living near the project site;
3. feedback from residents obtained during a doorknock of randomly selected residential properties in Fern Bay and Fullerton Cove in early March 2018; and
4. analysis of historical correspondence records.

The development of the ASI considered factors including but not limited to:

- supply chains;
- haulage of resources;
- transport of goods;
- materials and equipment;
- movement of workers (drive-in-drive-out/fly-in-fly-out working arrangements);
- natural features and recreational values (eg coastal sand dunes of Stockton Bight);
- ancillary infrastructure; and
- reputation of other extractive industries in the area.

Data Sources used to develop the ASI

Both primary and secondary data sources were collected and analysed in developing the ASI. Primary data derived from the semi-structured interviews was reliable given the comprehensive knowledge of the project that the key project personnel held (two interviews were conducted with long-term Boral employees). Interviews with residents in the two suburbs closest to the project site similarly provided reliable qualitative data.

Secondary data in the form of historical correspondence records associated with the existing operations was used to further develop an understanding of the ASI. This data provided an insight into the issues that the community have raised with Boral in past years, and the general sentiment towards the project.

Results of the scoping activities which assisted the development of the ASI are shown in Chapter 4.

3.2 Methodology for preparing the SIA

3.2.1 Existing social baseline

An analysis of the existing population was undertaken to establish the social baseline for the project. 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). During the scoping phase it was determined that the Fern Bay and Stockton (Fullerton Cove) populations should be included as distinct entities in the baseline. This is due to the fact that Fern Bay is a relatively new community with a residential estate under development at the time of writing, whereas the Stockton area closest to the project contains an established community with more mature properties. Socio-economic indicators for both populations were therefore collected.

Data collected for Fern Bay has been compared to the Statistical Area Level 2 Stockton – Fullerton Cove. The Fern Bay SSC (or State Suburb) and Stockton-Fullerton Cove SA2 (Statistical Area 2) census geographies were selected as the basis of the census data analysis below. This is because census data was only available for the Fern Bay area as a State Suburb dataset, and therefore it was the most accurate available. The Statistical Area 2 dataset was selected for Stockton-Fullerton Cove because the scale represents a community that interacts together socially and economically, and it allows a more detailed analysis than the inferior statistical area

or suburb datasets (Australian Bureau of Statistics, 2018). The socio-economic variables discussed below align with the community profile measures adopted by the Australian Bureau of Statistics (ABS). Where available and relevant, comparative data at the NSW state level was obtained and forms part of the baseline.

A wide range of social indicators were considered prior to conducting the statistical analysis and developing the baseline. The selection of social indicators was made based on those contained in the PSC *Community Strategic Plan 2018-2028* (Port Stephens Council, 2018). The strategic plan is PSC's primary corporate community strategy, developed with community input. It was therefore logical to use complimentary indicators in the baseline. This selection method provided confidence that the social indicators represented the health and wellbeing values, and interests of the communities (Vanclay, 2015) surrounding the project. Each social indicator and its relevance to the four focus areas[1] contained in Council's plan, is outlined in Table 3.

Table 3 - Relationship between social indicators and PSC Community Strategic Plan 2018-2028 (Port Stephens Council, 2018)

Focus Area listed in the *PSC Community Strategic Plan 2018-2028*	Relevant social indicator contained in the baseline
Community: C1 Community diversity - Our community accesses a range of services that support diverse community needs C2 Recognised - traditions and lifestyles - Our community supports the richness of its heritage and culture C3 Community partnerships - Our community works with Council to foster creative and active communities	Community profile Population projections Family composition Indigenous population Place of birth Multiculturalism Education, employment and training Educational status
Place: P1 Strong economy, vibrant local businesses, active investment - Our community has an adaptable, sustainable and diverse economy P2 Infrastructure and facilities - Our community's infrastructure and facilities are safe, convenient, reliable and environmentally sustainable P3 Thriving and safe place to live - Our community supports a healthy, happy and safe place	Employment by industry Weekly income; individual and household Council satisfaction survey (Q2) Road safety statistics SEIFA
Council: L1 Governance - Our Council's leadership is based on trust and values of Respect, Integrity, Teamwork, Excellence and Safety L2 Financial management - Our Council is financially sustainable to meet community needs L3 Communication and engagement - Our community understands Council's services and can influence outcomes that affect them	Council satisfaction survey (Q15) Election participation rates

[1] The 'Environment' focus area is not addressed in the SIA baseline, as a baseline consisting of environmental indicators is contained in the EIS.

3.2.2 Existing social infrastructure

An online desktop search was the method used to determine the existing social infrastructure associated with the project. Data was sourced from a range of websites including:

- PSC website (Port Stephens Council, 2019);
- PSC Community Directory (Port Stephens Council, 2018);
- NSW Department of Education (NSW Department of Education, 2018);
- NSW Health (NSW Health, 2018); and
- NSW National Parks and Wildlife Service (NSW National Parks and Wildlife Service, 2018).

3.2.3 Further engagement methods

As described above, scoping engagement for the project comprised a comprehensive community engagement program undertaken during 2018. Following the publication of the SEARs applicable to the project, a range of further engagement methods were implemented to emphasise and seek feedback about the project. Each of the methods implemented for further engagement are described in Table 4.

Table 4 - Further engagement methods

Method	Description
Written methods	
Project newsletter (including community drop-in sessions detail)	The newsletter was released during February 2019 and distributed online, via email, and in hard copy to project stakeholders. It explained the value of sand as a building and construction industries commodity, and the importance of sand operations at Stockton. It provided project details and described proposed operational changes. The newsletter also provided details about the community drop-in session and extended an invite to all readers. Another newsletter was released during July 2019. It provided an EIS progress update and advice about lodgement of the SSD. It presented the refined proposal for the quarry, listed the specialist studies underway, and invited ongoing feedback from the community.
Community drop-in sessions notification	On 7 February 2019, the notification was delivered to individual private properties located closest to the project, in the Fullerton Cove and Fern Bay residential areas. The notification invited recipients to the sessions to discuss any proposed operational changes. It emphasised proposed traffic changes, and the interest of the project team in obtaining feedback about that topic. It provided project contact details (including those of the Quarry Manager) for residents that could not attend on the scheduled date and encouraged recipients to provide feedback via the dedicated project communication channels.
Emails	Emails sent from Boral's Stakeholder Relations Manager to project stakeholders (including PSC Mayor and Councillors) during the first quarter of 2019. The emails contained a project update including project contact details, and the project newsletter and community drop-in sessions notification (for emails sent post its release). They invited feedback about the project. Similar emails were again sent to the stakeholders in July 2019, with a copy of the July 2019 newsletter.
In-person interactive methods	
Meeting - Worimi LALC	During February 2019 Boral's Indigenous Affairs Manager met with the CEO Worimi LALC. The purpose of the meeting was to consult the LALC on the aspects of the project and seek its feedback.
Site tour (Newcastle MP)	During February 2019 the Newcastle MP was consulted about the project and invited to a site visit. The invitation was accepted, and

Method	Description
	members of the project team escorted the Newcastle MP during the visit. Boral staff provided details about the project and addressed questions raised by the Newcastle MP.
Community drop-in sessions	Community drop-in sessions were advertised locally and held on 14 February 2019 in a reserved space in the McDonalds Restaurant at Williamtown. This venue was selected as it is a heavily patronised venue and easily accessible by communities nearby to the project. Two separate sessions were held (ie morning and late afternoon) to provide adequate opportunity for individuals to attend. Four members of the project team were present at all times, and available to all attendees. A Boral banner was erected in a prominent position at the restaurant entry, and directional posters were placed nearby to assist individuals to find the drop-in session location (see Figure 3).
Consultation with Office of Port Stephens MP	Following the meeting held at the office of the Port Stephens MP during the scoping phase of the project, a return visit was made on 14 February 2019. The MPs office was advised about the community drop-in session and provided an update about the project and planning process.
Consultation with local neighbours	Consultation via a doorknock with local quarry neighbours was undertaken in August 2019. The doorknock targeted a random selection of properties on Coxs Lane, Fullerton Cove Road, and George Street. Residents were invited to provide feedback about the existing quarry operations and the project, and provided with an update about the SSD.
Media methods	
Website	Information about the Project including the project newsletters and community drop-in sessions notification, details of the community drop-in sessions, and Project contact details was hosted on the Boral Quarries Stockton (Fullerton Cove) website (Boral, 2018). The website was referenced in all material developed for the project and provided a central repository of information associated with the project. A major update of the project information on the website was undertaken during February 2019.
Facebook campaign	On 12 February 2019, the Boral Facebook site hosted a social media post about the project. The post highlighted the demand for sand for building and construction industries and referred to the planning proposal. It encouraged readers to visit the Boral Quarries Stockton (Fullerton Cove) website to obtain more detail. The Facebook post is provided in Appendix B.

Figure 3 – Community drop-in session at McDonalds Restaurant Williamtown

3.2.4 Social impact assessment methods

A range of methods were selected for the SIA. Each method was adopted to address one or more of the matters determined by the DPIE scoping tool, to require further social impact investigations. The selection process involved:

1. populating the DPIE scoping tool with the relevant information;
2. determining the level of assessment prescribed by the scoping tool; and
3. selecting a method or a combination of methods to satisfy the level of assessment, bearing in mind:

    - the specific social matter to which the assessment related;
    - the availability of existing data held by the project team (if any); and
    - feasibility of the methods (eg time, cost, reliability).

The methods adopted for the study are outlined below. The social matters to which each method relates are identified in Chapter 4.

Ethnographic content analysis (media analysis)

Altheide's (1996) Ethnographic Content Analysis (ECA) was selected and adapted as the method to assess impacted social matters identified during the scoping exercise. ECA is a qualitative media analysis methodology used to obtain, categorise and analyse different media documents (such as newspapers and magazines) in addition to other forms of media delivered online and via television. ECA is an approach which blends the "traditional notion of objective content analysis with participant observation to form ethnographic content analysis" (Altheide, 1996, p. 2). It is therefore unlike the traditional positivist and quantitative approach to media analysis which engages in a rigorous quantitative testing of phenomena against a template devoid of human interface (Guba & Lincoln, 2005). Instead ECA encourages the investigator to be reflexive and interactive, and it enables an element of ongoing discovery as progress is made towards the SIA research goal. It is in this vein that ECA enables documents to be "studied to understand culture or the process and the array of objects, symbols, and meanings that make up social reality shared by members of a society" (Altheide 1996, p.2).

The characteristics of ECA are clearly distinguished from those associated with quantitative approaches (QA) to media analysis (see Table 5 for a comparison). Unlike QA which is concerned with statistical reliability, Altheide (1996) suggests that the emphasis of ECA is fixed more so on research 'validity'. Although itself a term commonly associated with statistical tests, validity in this sense refers instead to the degree of rigour in a research project, as determined by the interpretive community who check the research for credibility and good practice (Bradshaw & Stratford, 2005). ECA is also dissimilar to QA in terms of researcher involvement. Each of the research phases in an ECA approach is very individualistic in the sense that the main investigator is 'involved' with the concepts, relevance and development of the protocol and the way in which items are collected for purposes of later analysis (Altheide, 1996). Furthermore, in contrast to QA, data collection for ECA is predominantly undertaken using a purposive or theoretical sampling technique and is not intended to provide a representative sample (refer Bradshaw and Stratford, 2005).

As shown in Table 5, ECA focuses on narrative data (in addition to numerical data that is more commonly associated with QA) and always allows the researcher to make analytical commentary on this data. This approach not only involves the measurement of the frequency and extent of terms consistent with QA approaches, but it also enables the investigation of text meaning, and encourages the provision of descriptive information (Altheide, 1996). The qualitative text analyst produces this descriptive information by repeatedly exploring the sampled texts, and by noting the peculiarities contained in the sample (Roberts, 1997). It is through this process that the analytical concepts emerge and are applied to the text in ECA research. Roberts (1997) describes this as a key difference between QA and ECA; on the one hand "quantitative researchers specify

their measures and their tests in advance…on the other hand, qualitative [ECA] researchers typically explore their data, applying one classification scheme after another, before settling on that scheme (or schemes) that in their view resonates best with their data" (Roberts 1997, p.2). Analysis therefore "takes place throughout the entire research process, a study is shaped and reshaped as a study proceeds, and data is gradually transformed into findings" (Watt, 2007, p. 95).

Table 5: A comparison of quantitative media analysis and ECA (source: Altheide 1996)

Characteristic	Quantitative approach to media analysis (QA)	Ethnographic approach to media analysis (ECA)
Emphasis	Reliability	Validity
Primary Researcher involvement	Data analysis and interpretation	All phases
Sample	Random or stratified	Purposive or theoretical
Type of data	Numbers	Numbers; narrative
Narrative description and comments	Seldom	Always
Concepts emerge during research	Seldom	Always
Data analysis	Statistical	Textual; statistical
Data presentation	Tables	Tables and text

Applying ECA to the SIA using online news articles

The most important element of the entire ECA exercise is the protocol (or a data collection sheet). It is "a way to ask questions of a document; a protocol is a list of questions, items, categories or variables that guide data collection from documents" (Altheide 1996, p.26). It is therefore an essential utility of ECA. The protocol itself consists of two tables – Table A and Table B - as shown in the example in Figure 4. Table A, the first of the two tables, has nine columns with the following headers and definitions:

1. case number – a number sequentially allocated to each article analysed (ie number '1' was allocated to the first article analysed, number '2' to the second and so on);
2. search string – the phrase used to search for online news articles, via the search function on the publications webpage;
3. source publication – the title of the newspaper which contained the article. Each article analysed in this ECA exercise was sourced from the *Port Stephens Examiner* website;
4. date of article – the production date of the newspaper article (found on the web page). Note only articles collected from June 2011 to February 2019 were collected;
5. title – the title of the newspaper article;
6. frame – a numeral, corresponding to a particular Frame in Table B which is allocated during the analysis of a *Port Stephens Examiner* article;
7. theme – a numeral, corresponding to a particular Theme in Table B which is allocated during the analysis of a *Port Stephens Examiner* article;
8. discourse - a numeral, corresponding to a particular Discourse in Table B which is allocated during the analysis of a Goulburn Post article; and
9. notes – miscellaneous information specific to an article can be included in the notes column.

TABLE A

Case No.	Search string	Publication	Date of article	Title	Frame	Theme	Discourse	Notes
1	Sand trucks + stockton and Sand tr	Port Stephens Examiner	23/01/2019	Different paths for Port Stephens state election candidates	1	1	1	
2	Sand trucks + stockton and Sand tr	Port Stephens Examiner	3/01/2019	Whale carcass removed from One Mile Beach	DQ			
3	Sand trucks + stockton and Sand tr	Port Stephens Examiner	18/10/2018	No Sand Mining in Bobs Farm action group reformed after pr	2	2	2	
4	Sand trucks + stockton and Sand tr	Port Stephens Examiner	3/10/2018	Bobs Farm sand mine proposal is back on the table	2	2	3	
5	Sand trucks + stockton and Sand tr	Port Stephens Examiner	20/09/2018	Residents turn out to meeting to hear proposal for Anna Bay	3	3	3	

TABLE B

Frames		Themes		Discourses	
Political attention to quarries and	1	Political opposition to road	1	Excessive quarry trucks using public infrastructure	1
Community attention to quarries	2	Community opposition to road impacts	2	Negative impacts on families and schools	2
EIS and infrastructure/traffic plan	3	Infrastructure/traffic studie	3	Additional truck movements (negative sentiment regarding	3
Road maintenance funding	4	Quarry trucks damage road	4	Quarry operators should share road maintenance burden	4
		Quarry benefits outweight	5	Additional truck movements (neutral sentiment regarding r	5
				Negative impacts for community safety	6
				Sand haulage route debate	7

Figure 4 – ECA protocol

A new record containing the above information was added to Table A each time an article containing a narrative about dust or safety (being two social matters identified during the scoping exercise) was read.

The second table (Table B) contained in the protocol lists all the categories (Frames, Themes and Discourses) that emerged from the *Port Stephens Examiner*. Table B is best understood as a 'lookup table' or a 'storage table' which holds the categories that are individually applied to *Port Stephens Examiner* articles during analysis. The three columns in Table B (refer Figure 4) have the following headers and definitions:

1. frames - "very broad thematic emphases or definitions of a report" or "a way of discussing the problem or the kind of discourse that will follow" (Altheide 1996, p.30);
2. themes - "general meanings or even 'miniframes for a report'" or "the recurring typical theses that run through a lot of reports" (Altheide 1996, p.30); and
3. discourses - "a series of representations, practices and performances through which meanings are produced" (Johnston & Gregory, 2000, p. 178).

Each *Port Stephens Examiner* article that mentioned or suggested an association to the target social impact matter was analysed for its relevance to the project. Using Table B, this objective was achieved by developing a Frame, Theme and Discourse for each article. As each article was read, the message it conveyed about the project was considered, and the most appropriate Frame, Theme and Discourse was allocated to it. Articles that did not contain content meeting the definitions of a Frame, Theme and Discourse were disqualified from the ECA. It is important to note that the Frames, Themes and Discourses developed and entered into Table B reflected only the manifest content of the news articles. Manifest content is the descriptive information contained in a media message that is easily recognised and immediately digested by the reader. Manifest content has been described as the information existing 'on the surface' of a text document, and it contrasts with latent content which is characterised by information 'hidden beneath the surface' of a text document which is obtained through deeper analysis (Lombard & Snyder-Dutch, 2002). The Frames, Themes and Discourses were developed, defined in one or two sentences, and added to Table B as they emerged from reading each article. The categories were therefore 'stored' in Table B, and they were assigned a numerical code which was eventually copied into the corresponding cell in Table A.

Rather than being produced at the end of the collection and analysis of newspaper articles, both tables which comprise the protocol are drawn up prior to commencement and entries are gradually and progressively added to it during the execution of ECA. Each time a pertinent article containing a discourse relevant to the target social impact matter was read, a new record was added to Table A. In addition, if no suitable categories (ie Frames, Themes or Discourses) existed in Table B, then new categories were developed and added to that table. The information added to each new record in the protocol corresponds with details sourced from each individual *Port Stephens Examiner* article. The protocol was therefore expanded as the newspaper sample was read.

There were 10 key steps involved in carrying out the ECA method, and whilst being fundamental to the practice of ECA, the Protocol is not utilised until step four. The following section will outline all 10 steps and further illustrate the utility of the Protocol described above.

The ten steps of ECA

The implementation of ECA to *Port Stephens Examiner* articles involved carrying out 10 of the key steps defined by Altheide (1996). Each of these 10 steps is listed below, along with a description of how it was applied in the context of the *Port Stephens Examiner* analysis.

- Step 1: Pursue a specific problem and opportunities to be investigated.

The SIA scoping tool identified social matters that required assessment as part of the SIA. These assessments resemble the problems and opportunities that need to be investigated.

- Step 2: Become familiar with the process and context of the information source. Explore possible sources of information.

Given its position as the most dominant and popular text media publication in the Port Stephens region, the *Port Stephens Examiner* is a unique source of social narratives. The publication broadcasts the views held by society in respect to topical issues and it does so in a standardised process. This process involves the regular and frequent publication of news topics in a uniform format. Articles from the publication are made available online and free of charge. For these reasons it was adopted for the ECA exercise.

- Step 3: Become familiar with several examples of relevant documents and select a unit of analysis.

Familiarity with individual *Port Stephens Examiner* articles was gained by completing a scoping activity. This activity involved conducting an online search for a *Port Stephens Examiner* article, using the search string “Sand trucks + Stockton”. The search was conducted using the search function on the *Port Stephens Examiner* webpage. The search string returned a page of search results, and the five highest ranked articles with Stockton mentioned in the title were read. The process enabled recognition of the layout of the articles and other sections of the page (eg comments section and advertisements) which were not analysed. At this step in the ECA it was revealed that articles returned in the search with the titles “Mega Gallery**:** The week in pictures”, “Photos of the week” and letters to the editor appearing under various titles, gave little value to the ECA. The content was rarely associated with the SIA objectives, reviewing the content was time prohibitive, and the articles were therefore excluded from the ECA (unless their value was immediately discernible in the website search results).

During the initial scoping activity, a decision was made concerning the unit of analysis to be incorporated into the ECA exercise. A ‘unit of analysis’ refers to the portion or segment (eg a particular page, an individual article, a certain paragraph) of relevant articles that will actually be subject to ECA. It was decided that the entire individual articles (including any heading, body text, caption text and/or images) that mentioned or suggested an association to the target social impact matters would be the unit of analysis. This decision was made “because it was clear from the content of the messages [contained in the *Port Stephens Examiner* articles] that they could not be further reduced before analysis without losing valuable contextual information” (Markman & Simons, 2003, p. 16).

- Step 4: List several categories (variables) to guide data collection and draft a protocol (data collection sheet).

Step 4 marked the phase where a protocol (or data collection sheet) was first introduced to the ECA exercise. Categories (ie Frames, Themes and Discourses) that emerged from the articles read during Step 3 were entered into a draft Protocol (refer Figure 4). In terms of discourses, there were initially four observed in the *Port Stephens Examiner* that conveyed specific information regarding the target social impact matters. They included:

1. excessive quarry trucks using public infrastructure;
2. negative impacts on families and schools;
3. additional truck movements (negative sentiment regarding road quality); and
4. quarry operators should share road maintenance burden.

At this step of the ECA, these understandings of the project were derived only from the description immediately recognised within each article. Subsequently, the above four categories only reflected the manifest content of the news articles. These categories were entered into the protocol as they emerged.

- Step 5: Test the protocol by collecting data from several documents.

At Step 5 the additional articles were collected to test the protocol. An additional search was made at this time using the search string "Sand trucks + Nelson Bay Road". During the collection and analysis activities there were additional Frames, Themes and Discourses that emerged from the manifest content of the news articles. An entry was created in the protocol for each article, and the protocol expanded progressively as a consequence.

- Step 6: Revise the protocol and select several additional cases to further refine the protocol.

A revision of the protocol was undertaken when all articles (obtained at the time) that mentioned or suggested an association to the target social impact matter had been tentatively analysed. The revision involved checking the definitions of all categories to ensure that they were succinct and appropriate for the articles that they represented. Modifications to inadequate categories listed in Table B of the protocol were made as needed. The modifications were made in one of four ways; categories were renamed, re-defined, split into two, or merged into one.

- Step 7: Arrive at a sampling rationale and strategy (eg theoretical, purposive, opportunistic, cluster or stratified).

Following the consideration of a range of sampling techniques, theoretical sampling was the technique adopted. Theoretical sampling involves “the selection of material based on emerging understanding of the topic under investigation” (Markman & Simons, 2003, p. 17). The theoretical sampling technique was adopted in order to identify and refine knowledge of narratives about the quarry, over time. At Step 7, other sampling parameters were confirmed such as the publication date range. Articles published between June 2011 and February 2019 were considered for the ECA method. This date range was selected as it commences when the most recent modification to the 2006 development consent was made. The consent was modified to include more appropriate controls to manage interactions with the public in active extraction areas. A logical extension of this scenario is that any social impacts derived from the project may have been reduced as a result of the modification. The date range would therefore capture any new or ongoing impacts, expressed through the media. Any articles published outside of the subject date range were excluded from the study.

- Step 8: Complete data collection for the target social matter.

The relevant search strings were applied and the collection of relevant *Port Stephens Examiner* articles continued in a sustained and rigorous fashion until all articles returned via the online searches had been covered. As articles were collected, they were added to the protocol following the procedure outlined earlier (ie a record of each article was created in Table A of the protocol using its attribute details, and each article was categorised with a Frame, Theme, and Discourse in Table B).

At the completion of Step 8 the sample had been obtained, each article in the sample had been subject to a manifest content analysis, and the results from these analyses had been recorded in the protocol. The results provided a means to understand the implications of the SSD for the target social impact matter, via the discourses being circulated amongst the population.

- Step 9: Consider the content analysis results shown in the ‘discourse’ column. Write summaries or overviews of the key findings.

Once every *Port Stephens Examiner* article listed in Table A of the protocol had been analysed and the results had been entered into the ‘discourse’ column, then the individual results were considered. Summaries were produced of each discourse, and they were the key findings of the ECA exercise.

- Step 10: Integrate the findings including the discourse interpretations and key concepts into the SIA report.

The final step of the ECA involved collating the results contained in the protocol and the discourse summaries into the SIA report. Chapter 6 contains the results.

Participant observation

Participant observation (PO) is a conventional method used in the social sciences. It is "considered a staple in anthropological studies, especially in ethnographic studies, and has been used as a data collection method for over a century" (Kawulich, 2005, p. 25)**.** The method provides a researcher with a means to collect data about cultural phenomena and the social settings in which they arise. In practice, this involves the researcher either openly or covertly examining the daily life of people under study, by "observing things that happen, listening to what is said, and questioning people, over some length of time" (Becker & Geer, 1957, p. 28).

In her thorough analysis its characteristics, Pearsall (1965) explained that PO is at once a role, a means of getting data, and a methodology for understanding human behaviour in natural contexts. Explanations of these three aspects of the method are offered below:

- role: PO implies the roles of a participant and an observer being present in a social setting. On the observer's side, the role is temporary and to a degree 'unnatural'. He [sic] may choose from a limited number of forms along a continuum from that of complete observer to that of complete participant" (Pearsall, 1965, p1). Gold (in Kawulich, 2005) nominates four roles that exist on this continuum (see Figure 5), which specify the degree to which the researcher involves himself/herself in participation in the culture under study:

    1. At one extreme is the *complete participant*, who is a member of the group being studied and who conceals his/her researcher role from the group to avoid disrupting normal activity. The disadvantages of this role are that the researcher may lack objectivity, the group members may feel distrustful of the researcher when the research role is revealed, and the ethics of the situation are questionable, since the group members are being deceived.
    2. In the *participant as observer* role, the researcher is a member of the group being studied, and the group is aware of the research activity. In this role, the researcher is a participant in the group who is observing others and who is interested more in observing than in participating, as his/her participation is a given, since he/she is a member of the group. This role also has disadvantages, in that there is a trade-off between the depth of the data revealed to the researcher and the level of confidentiality provided to the group for the information they provide.
    3. The *observer as participant* role enables the researcher to participate in the group activities as desired, yet the main role of the researcher in this scenario is to collect data, and the group being studied is aware of the researcher's observation activities. In this role, the researcher is an observer who is not a member of the group and who is interested in participating as a means for conducting better observation and, hence, generating more complete understanding of the group's activities. While the researcher may have access to many different people in this situation from whom he/she may obtain information, the group members control the level of information given.
    4. The opposite extreme role from the complete participant is the *complete observer*, in which the researcher is completely hidden from view while observing or when the researcher is in plain sight in a public setting, yet the public being studied is unaware of being observed. In either case, the observation in this role is unobtrusive and unknown to participants.

- means of gathering data: once a role outlined above is selected and the researcher is 'immersed' in the social setting, the researcher can record his/her observations about the person or group being studied. With a "reasonable vantage point, the right tools, and tables for documentation researchers can begin to collect, compare and count the presence, movement and features of individuals, groups and populations in defined spaces" (Laurier, 2010). The researcher can observe and record all aspects of the subject(s) behaviour in relation to the SIA research question(s). These may include nonverbal expression of feelings,

interaction between participants or their natural setting, how participants communicate with each other, and how much time is spent on various activities (Schmuck in Kawulich, 2005); and

- methodology for understanding human behaviour in natural contexts: In its purest methodological form, PO is the process of "establishing rapport within a community and learning to act in such a way as to blend into the community so that its members will act naturally, then removing oneself from the setting or community to immerse oneself in the data to understand what is going on and be able to write about it" (Kawulich, 2005, p. 24). As described above however, the degree to which a researcher intends to 'blend in' is dependent on the role he/she assumes for the activity. Whatever the case, when implemented successfully, the method will yield data from which the researcher will be able to analyse the human behaviour of interest, and ultimately arrive at a conclusion about the SIA research question(s).

Below it is explained how the methodology was applied in the context of the project.

Application of PO to the project

The *Stockton Sand Quarry Dredging Preliminary Environmental Assessment* (Element Environment, 2018) identified unauthorised access to the quarry as a potential community safety risk. Despite mitigation measures (eg security fencing including a gate locked after hours, high visibility line and signage, closed circuit television [CCTV], equipment and safe batter requirements, trespass procedures, and operating hours) being implemented by Boral, there have been safety incidents associated with members of the public accessing the quarry haul road to gain access to and from the beach. A total of nine incidents were recorded during the 2016-2017 reporting period, predominantly associated with recreational vehicles and pedestrians entering the quarry either unintentionally or deliberately to access the beachfront. The SIA scoping phase concluded that further engagement should be undertaken with the prominent recreational dune user groups to adequately assess this community safety matter.

During the EIS preparation phase of the SIA study, it was determined that further engagement with the user groups was not feasible. On the advice of quarry staff, this is due to the fact that members of the public that travel on the public road towards the site and the few that attempt to enter site without authority, are generally unidentified. The few that arrive to the quarry either recognise they are trespassing and leave quickly, or choose an access route that avoids contact with Boral staff. Their visit is fleeting in nature, establishing a dialogue with them is rarely possible, and accordingly, no contact details are possessed by the project team. In summary, there was little prospect of conducting 'further engagement' activities with the individuals concerned.

Due to this scenario, PO was selected for this SIA as an alternate method used to explore instances of potential or actual unauthorised access to the existing quarry, by members of the public. As an alternative to direct engagement with the public, it was an ideal method. This is because it enabled the project team to collect and record data about the behaviour of members of the public (ie the participants) travelling on the public road towards the quarry, including those who actually intended to enter the quarry, despite the difficulties outlined above.

Boral weighbridge staff volunteered their time to make observations about the participants. The weighbridge staff are permanently present at the entry to the quarry during operating hours, and they have visibility of the entry either by direct sight or CCTV footage. Accordingly, they were positioned perfectly to make and record observations. The staff were provided with an overview of the methodology, advice about what observations were required for the SIA, recording instructions, and a template to collect the necessary data. The SIA Lead Author provided this advice. Given the lack of opportunity for the weighbridge staff to be 'immersed' in the social setting, the role they adopted was predominantly that of a 'complete observer' (refer Figure 5).

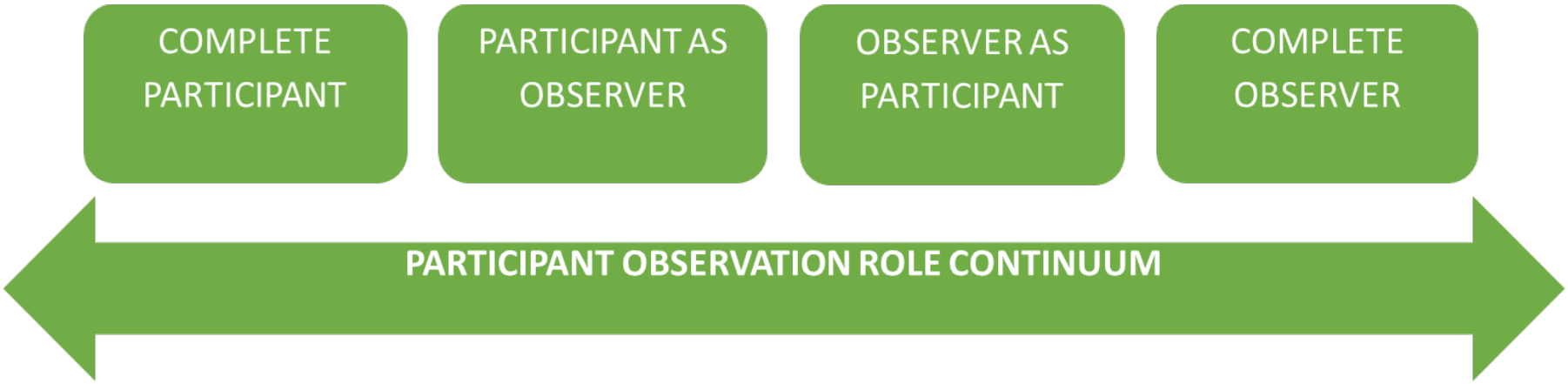


Figure 5 – Participant Observation role continuum (adapted from Gold in Kawulich, 2005)

On the rare occasion where contact was made with the participant, the role adopted was that of an 'observer as participant'. The data sheets were submitted to the SIA Lead Author for analysis at the completion of the exercise.

The PO activity commenced in early January 2019 and ceased in late March 2019. The EIS program was the main driver of the selected date range. The timeframe covered the warmer months of the year which generally attract a relatively larger volume of tourists and other dune users to the beach, so it was assumed to be the most reliable period in terms of capturing observations about the broadest range of participants possible.

The research questions which led the PO activity are:

- do the participants seem to be intentionally or unintentionally accessing site?;
- what is their known or predicted purpose for accessing site?; and
- was their safety put at risk?

Visual impact assessment

A visual impact assessment (VIA) should describe the likely nature and scale of changes in views resulting from a development, and changes to visual amenity experienced by the receptors (Knight & Therivel, 2018). In particular, the VIA conducted as part of the SIA was adopted in response to the possibility (considered during the project scoping phase) that Stockton Beach dune users could see the location of the project site. To investigate the matter, a site visit was conducted to make a visual observation from the dune system, at a location within the quarry boundary that was above the highest point of the publicly accessible area of the dune system adjacent to the quarry. Photographs were taken at the location, and existing photographs were also obtained from the Boral Quarry Manager.

The VIA applied by Andrews et. al. (2012) was adopted for this study. It enables the potential visual impact of the project to be assessed in relation to viewpoints of the dune users. The significance of potential visual impacts was assessed by considering:

1. magnitude - this relates to the magnitude of visual change in the landscape, and its proximity to the viewer. The magnitude of visual change is strongly influenced by the level of visibility of the proposed new work. This results from the combination of scale, extent, distance and duration of the views; and
2. sensitivity - in relation to the quality of the view and how sensitive it is to the proposed change. Visual sensitivity depends on the nature of the existing environment and on the likely response from people viewing the scene. People driving on a busy road and/or at high speeds are likely to be less sensitive to a change in the environment since they are focused on changes in traffic conditions and driving, compared to someone who is enjoying a recreational experience or someone who is viewing the scene from their living room.

The categories of magnitude and sensitivity of visibility are defined in Table 6.

Table 6 - Categories of magnitude and sensitivity (Andrews, Colclough, & Corkery, 2012)

Rank	Description
Negligible	Very minor loss or alteration to one or more key elements/features/characteristics of the baseline visual character (ie pre-SSD approval view) and/or introduction of elements that are consistent with the visual character to the existing landscape character (ie approximating the 'no change' situation).
Low	Minor loss of/or alteration to one or more key elements/features/characteristics of the baseline visual character (ie view pre-SSD approval) and/or introduction of elements that are consistent with the existing landscape character.
Moderate	Partial loss of/or alteration to one or more key elements/features/characteristics of the baseline visual character (ie view pre-SSD approval) and/or introduction of

Rank	Description
	elements that may be prominent but not considered to be substantially uncharacteristic of the existing landscape character.
High	Substantial to total loss of key elements/features/characteristics of the baseline visual character (ie view pre-SSD approval) and/or introduction of elements considered to be totally uncharacteristic of the existing landscape character.

As described above, the magnitude and sensitivity of potential visual impacts to existing views would depend on a combination of scale, extent, distance and duration of the views. Impacts were assessed by applying a consistent set of criteria to the highest dune viewpoint. The criteria are outlined in Table 7.

Table 7 - Visual impact criteria (Andrews, Colclough, & Corkery, 2012)

Criteria	Definition	Rating
Duration of view		
Long term	>1 hour	High
Moderate term	30 minute to 1 hour	Moderate
Short term	<30 minute	Low
Number of viewers		
High	>1,000	High
Moderate	100-999	Moderate
Low	<100	Low
Viewer sensitivity (type)		
Resident	N/A	High
Pedestrian/cyclist		Moderate
Motorist		Low
View sensitivity		
Pristine landscape	N/A	High
Moderately modified landscape		Moderate
Significantly modified landscape		Low
View distance/proximity		
Short	< 100m	High
Medium	100m-500m	Moderate
Long	>500m	Low

Semi-structured interview

Interviewing was selected as a SIA method to further explore the possibility that Stockton Beach dune users could see the location of the project site. An interview was conducted in a semi-structured format using a list of predetermined questions. This format 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 work of Bradshaw and Stratford (2005) 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 SIA interview, and the owner of a dune quad bike adventure business was invited to participate. The business operates daily escorted quad bike tours of the Stockton Beach dunes.

The implementation of the method involved:

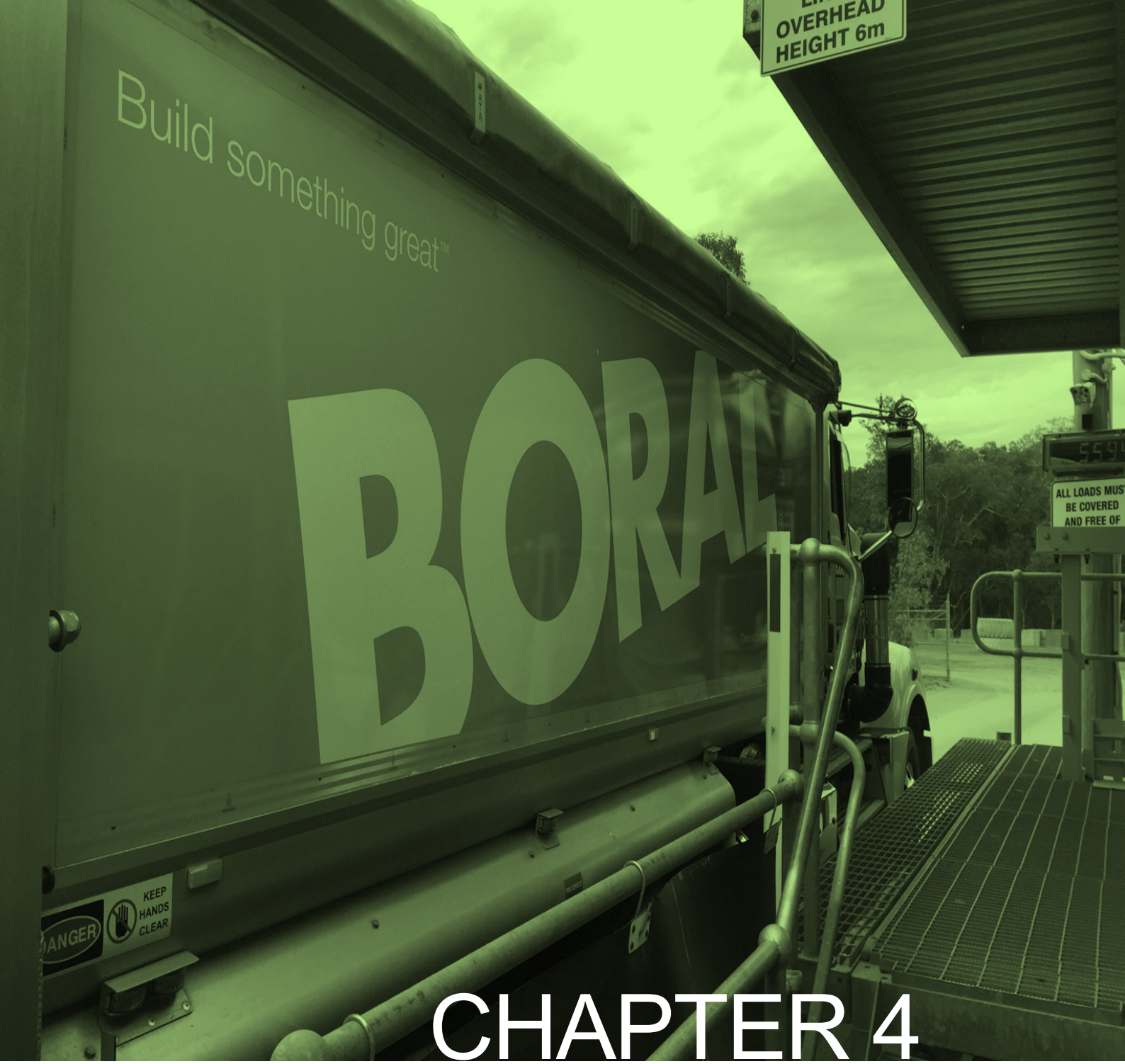
1. developing the pre-determined interview questions, designed to explore the social matters identified in the scoping tool;
2. sending an interview invitation letter to the participant. The letter explained the purpose of the interview, the intention to record it, and provided some frequently asked questions. It explained that consent was required, and sought to obtain it in a "free, prior and informed" (Vanclay, 2015, p. 6) fashion;
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; and
7. extracting transcript content for use in the SIA assessment.

3.2.5 Data limitations

Upon reflection of the methods implemented for this SIA, two obvious data limitations are discernible. The first of these relates to the poor attendance at the community information drop-in sessions held during the EIS preparation phase. Despite the sessions being well-advertised, adequate notice being given to the community, and the venue being accessible, attendance at the session was underwhelming (details are provided in Chapter 4). A greater number of attendees would have undoubtedly increased the volume of feedback about the project, which in turn would have strengthened the SIA. Other methods implemented for the study (eg ECA, semi-structured interview and site-tour) would have positively offset the data weakness presented by the level of attendance at the community information drop-in sessions.

A potential data limitation was also evident in the PO methodology adopted for this SIA study. As outlined above, quarry weighbridge staff took responsibility for the data collection aspect of the activity instead of the Lead SIA Author. Data was provided to the author rather than the data being *generated by* the author. If both the weighbridge staff and the author interpreted the behaviour of participants in any given social setting, then there would be potential for variation in those interpretations. It is only possible to speculate on how this scenario might influence the accuracy of observations made about human behaviour at the quarry. However, the instructions and data collection template provided by the author to the weighbridge staff would have mitigated the potential for variation. Furthermore, the decision to place data collection responsibility with the

weighbridge staff was justified in either case, as any alternative which removed that responsibility from weighbridge staff would have been both cost and time prohibitive.



CHAPTER 4

SIA SCOPING AND ENGAGEMENT OUTCOMES

4 SIA SCOPING PHASE AND COMMUNITY ENGAGEMENT OUTCOMES

A SIA scoping exercise was conducted to identify and assess social impacts associated with the project. The purpose of the SIA scoping exercise was to highlight what aspects of the natural or human environment (refer to the social impact categories in Appendix A) are expected to be impacted upon by activities associated with the project, how those impacts should be assessed and to what level of detail. During the scoping phase, early community engagement activities were conducted, the scoping tool (NSW Department of Planning, Industry and Environment, 2017) was used to determine the matters applicable to the project, key stakeholders were identified, and the ASI was developed. Outcomes of these undertakings are provided below.

4.1 Scoping phase outcomes

4.1.1 Early engagement results

The early engagement activities conducted by the project team enabled stakeholders to provide feedback about the project. The feedback was relevant to the SIA scoping phase and was used to consider what social impacts might warrant investigation. The results of the early engagement activities are outlined below, listed by the type of activity.

Letter inviting feedback about Boral's operations

No response or feedback about the project was received by the project team following the distribution of the letter to households nearby to the project site. The survey contained a link to an online survey which invited all recipients to submit their opinions. Nil residents completed the survey.

Emails

In response to emails sent to PSC Councillors separately to inform them about the consultation program for the project (including March 2018 doorknock program), one reply from a Councillor was received by the project team. The reply acknowledged and expressed gratitude to the project team for the update. It contained no specific feedback.

Interviews

Interviews with residents (via the random sample doorknock) living in Fern Bay and Fullerton Cove in early March 2018 generated feedback about traffic and road infrastructure, noise, and access to Stockton Beach, as shown in Table 8. A total of 31 properties were included in the doorknock. No residents were available to be interviewed at eight properties at the time of the doorknock. Note a property with multiple occupancies (such as a gated community) was treated as a single property in Table 8.

Table 8 – Interview results (scoping phase)

Period of residence in area (if disclosed by resident)	Feedback
Fullerton Cove	
Unknown	The quarry and its related traffic is not an issue Traffic movements related to industry are not dissimilar to those at Kooragang Island Raised new entrance to Fern Bay estate under construction – possible effects on through (quarry) traffic.

Period of Residence in Area (if disclosed by resident)	Feedback
3 years	Have had a scare on the Nelson Bay Road off-ramp with a truck looking like it wasn't going to brake Have observed some 'cowboy' behaviour from drivers of non-Boral trucks 'We can't hear your operations from our house'.
37 years	Sometimes get stray trucks using laneway – we contact the quarry and have it corrected Can't hear the operations Interested in purchasing some of the cleared land at back of house (owned by Boral) Would not like to see any of Boral's land turned over to residential development similar to that at Fern Bay Happy for the quarry to continue if resource is available Great to hear of rehabilitation already undertaken and that it is continuing.
19 years	No issues with the operations Per- and poly-fluoroalkyl substances (PFAS) contamination is the major local issue 'If we have a problem, we just call to the quarry Manager' Truck traffic was a significant problem back before construction of on/off ramps to Nelson Bay Road.
18 years	'It's a great business – we don't notice it' Occasionally a stray truck runs down the laneway but the quarry deals with it 'It's really good to be engaged about your business – well done' Nil issues with the possibility of continuing the operations.
43 years	The quarry is not a problem Trucks were a major issue before the on/off ramps.
40 years	Nil problems with the site Before the on/off ramps, trucks were an issue.
Unknown	Notice sand lying on inside of the on-ramp kerb on occasions No issues with the operations at all.
Unknown	No issues with the operations Sometimes there'll be a stray truck on the laneway – just contact the site and they address it Trucks are a problem in regard to the occasional independent quarry (also on Coxs Lane adjoining Nelson Bay Road).
Unknown	Enquired about an easier accessway to beach for horse riders Don't notice the operations 'The truck drivers are great around the horses when they spot us'.
Unknown	'I didn't even know you were there'.
Fern Bay	
Unknown	We've never particularly noticed trucks as part of the Nelson Bay Road traffic flow 'It's a public road, isn't it?'.
Unknown	I have noticed trucks in traffic flow but I have no particular concerns with them 'The trucks are certainly no worse than the buses in terms of presence. They actually slow down for the roundabout, unlike the cars, allowing you to get in'.
Unknown	Trucks do not pose a problem 'Cars queue across the roundabout and make it harder to join the flow, so the trucks don't actually stand out'.

Period of Residence in Area (if disclosed by resident)	Feedback
Unknown	Trucks are not a problem 'They are just another part of the rubbish traffic'.
Unknown	Boral trucks are not noticed beyond others.
Unknown	The main road is probably in need of widening as a general comment A new second entrance is being constructed at the northern end of the estate (left in, left out).
Unknown	Trucks are not a problem.
2 weeks	'We can't hear a thing'.
Unknown	We can't hear your operations from our house.
1 week	We don't notice it [the quarry].
Approx. 3 weeks	I notice absolutely nothing.
2 years	I am used to industrial noises through my employment 'I can't hear anything from your site, even in the early hours when coming home from night shift'.

Newsletter

No response or feedback was received by recipients of the May 2018 newsletter distributed to stakeholders in in Fullerton Cove and Fern Bay via hard copy, to MP offices via email, and online via the project website. The lack of response reduced the amount of data that would have otherwise been available to the SIA.

Meeting invitations

Members of the project team met with Kate Washington MP's staffers and briefed them about the project. The discussion was positive and the staffers were familiar with the issues relating to sand quarrying. The staffers raised one question about the project's implications for the water table. The project team responded that groundwater studies to date had not shown the project having a hydrogeological impact.

PSC meeting

Members of the project team presented a briefing to PSC officers and councillors respectively on 10 May 2018 and 26 July 2018. The material provided by the project team was welcomed by Council and no specific feedback was received.

Meeting invitations to Worimi LALC

Boral's National Indigenous Affairs Manager received no specific project feedback from the Worimi LALC at their meeting in January 2018.

4.1.2 Scoping tool

As outlined in the methodology chapter, the early engagement results presented above were used as DPIE scoping tool (NSW Department of Planning and Environment, 2017) inputs, and therefore assigned a relevant 'social matter' for the purpose of the scoping tool. Each social matter has a number of subcategories. For example, the Amenity matter contains subcategories including acoustic, visual, odour, and microclimate. For the purposes of this SIA, where it was determined that the project would be unlikely to impact a particular subcategory, that subcategory is not discussed below. Only those applicable to the project receive attention herein.

Matter 1: Amenity

The first Amenity sub-category determined to be applicable to the project is 'acoustic' amenity. The preliminary environmental assessment (Element Environment, 2018) determined that the project will introduce additional noise sources from the site, potentially resulting in greater noise levels experienced at residences to the south of the site and west of Nelson Bay Road. Ahead of the quantitative noise assessment which confirms acoustic impacts, early consultation with nearby residents suggested the impacts of the current operations are not significant. Residents did not raise any concerns about acoustic impacts from sources on site or from vehicles utilising the public road network. The following examples of feedback from residents in the residential area closest to the site (ie Fern Bay) highlight the comfort of the community in respect to noise impacts:

- "We can't hear a thing";
- "I can't hear anything from your site, even in the early hours when coming home from night shift"; and
- "We can't hear your operations from our house".

Confidence in the scoping phase that social impacts would arise from the project acoustics was further diminished by the fact that there is a moderate distance (approximately 500 m) between the project site and its nearest receivers.

Taking both the early consultation results and the proximity of receivers into account, the scoping exercise determined that there would be no requirement to conduct a SIA in regard to acoustic amenity, alongside the quantitative noise assessment required for the project.

The second Amenity subcategory determined during the scoping phase to be applicable to the project is 'visual' amenity. The preliminary environmental assessment (Element Environment, 2018) determined there is limited visual exposure of the project to the community, and it nominated Stockton Bight Beach as an isolated viewpoint occasionally visited by recreational dune users. Early consultation activities obtained sentiment that nearby residents hold towards the project and its influence on visual amenity. The statements offered by residents living near the project during the doorknock activity were typical of those collected:

- "We don't notice it [the quarry]"; and
- "I notice absolutely nothing".

According to the above, the scoping exercise determined that a standard SIA would be required in relation to visual amenity. The SIA would focus exclusively on the perception of social impacts created for recreational dune users, in relation to the minor initial Stockton Bight Beach viewpoint.

Matter 2: Access

The scoping exercise determined that 'road and rail network' is a subcategory of Access that is applicable to the project. The additional sand (approximately 250,000 tpa until the windblown sand development consent ceases) transported both north and south on Nelson Bay Road will require the local and regional road network to support a larger quantity of truck movements. It was anticipated that the standalone traffic impact assessment planned to be conducted for the EIS would confirm the likely impacts to the road network and determine the network access and capacity implications, much less the social impacts of increased traffic volumes.

From a social impact perspective, it was considered that road users would likely experience irritation and adverse driving conditions if the volume of heavy vehicle traffic is excessive. The 2016 census data (Australian Bureau of Statistics, 2018) indicates that the majority of inhabitants of Fullerton Cove (64.8%) and Fern Bay (74%) utilised their cars (as the driver) to get to and from their place of employment. This dependency on private vehicular use over public transport, along with the increasing population in the Fern Bay area in particular, has the potential to impact negatively on the capacity of the local road network with the proposed increase in heavy vehicles associated with the quarry. This dependency on private vehicular use will increase the exposure

of Fern Bay and Fullerton Cove residents to traffic along Nelson Bay Road in particular, potentially increasing their awareness of traffic volumes and congestion on the local road network.

Capacity issues and reduced access to the road network (for example, if Fern Bay or Fullerton Cove residents experienced queuing at the Nelson Bay Road and Seaside Boulevard intersection roundabout) would create stress for the travelling public. No traffic impact assessment to confirm such a scenario was available at the time the scoping exercise was conducted however, so comments from local residents collected during early engagement were relied upon to investigate the matter. Those comments highlighted a lack of concern with the current project related traffic situation. Examples of such comments include:

- "the quarry and its related traffic is not an issue";
- "we've never particularly noticed trucks as part of the Nelson Bay Road traffic flow"; and
- "I have noticed trucks in the traffic flow but I have no particular concerns with them".

Based on the fact that a standalone traffic impact assessment would be completed for the EIS and that residents appeared to have minimal concerns with quarry related traffic or the network capacity, the scoping exercise determined that a SIA would not be required to assess this matter. Nevertheless, the project team committed to an adaptive research approach in relation to the results of the traffic impact assessment. If results or ongoing community feedback isolated potential social issues, then more detailed social assessments would be required.

Matter 3: Built environment

The 'public infrastructure' subcategory (as part of the Built Environment) was determined to be applicable to the project during the scoping phase. There are close similarities between this subcategory and the 'road and rail network' subcategory discussed above. The distinction is that the social impact in this case would likely be created by the condition of the road network (ie the road surface quality) rather than the volume of vehicles using it. It was known that the standalone traffic impact assessment would to a degree investigate implications for the quality of public assets, though its scope would potentially exclude social impacts derived from the deterioration of such assets.

Public infrastructure or the condition of local roads was not raised by residents during the early engagement. This could be an indication that the current quality of local roads is satisfactory to the residents or further, that the residents do not consider that project related vehicles substantially influence road quality. It is feasible however to form an alternate view as to why the residents did not raise these topics. Whatever the case, it is obvious that poor quality road infrastructure will cause frustration and annoyance to any road users. Prior to the completion of the traffic impact assessment however, it was premature to predict the project would significantly reduce the quality of public infrastructure. Adopting a precautionary approach, the scoping exercise concluded that a standard SIA was required to assess this matter.

Matter 4: Heritage

As a subset of the Heritage matter, the 'natural' features of the site were identified in the scoping phase as being applicable to the project. A small portion of the dune system adjacent to the project site on Stockton Bight Beach (see the Figure 1) is the natural feature of interest. The Stockton Bight Beach and dune area is used for four-wheel driving, quad bike riding, hiking, horse riding and fishing among other recreational activities. During the scoping phase it was determined that a clear majority of commercial operators advertise four-wheel driving and quad bike riding (see Worimi Local Aboriginal Land Council, 2018) and it was therefore assumed that these activities would be most prominent in the subject dune location. There was no evidence to suggest that the current quarry operations impact the dune system or its recreational values. Ongoing operations were not anticipated to alter this scenario but there was a need to test this perception via further engagement with the community.

Considerations about this matter also included the Aboriginal population and stakeholder group. Fern Bay contains a small Aboriginal and Torres Strait Islander population, which has been established as approximately 3.1% of the community (Australian Bureau of Statistics, 2018). The Worimi LALC manage the Worimi Conservation Lands, which encompass the dune system adjacent to the project.

Despite the fact that Boral had an existing relationship with the Worimi LALC, the scoping phase determined that the views of this organisation and the broader traditional owner community towards the project required further investigation as part of the SIA. The scoping exercise recognised the potential social impact of the project for this stakeholder group and suggested that further focussed engagement was required for the EIS preparation.

Matter 5: Community

During the scoping phase, 'safety' emerged as a Community subcategory applicable to the Project. Table 9 lists the four potential Community safety matters of the project that would be relevant from a social impact perspective and identifies the relevant section of the EIS where these matters will be addressed.

Table 9: Public safety and relevant section of EIS

Environmental Matter	Relevant chapter of EIS
Health risk and nuisance factors from particulate matter (dust)	Air quality
Increased noise associated with extraction activities, including vehicular movements	Noise
Increased traffic volumes	Traffic and transport
Unauthorised access	Hazards and risks

Firstly, the continuation of quarrying activities has the potential to emit dust, primarily from vehicle movements on site. With the implementation of adequate dust control measures, the potential for significant negative air quality impacts from the project was considered to be low, which is commensurate with the fact that no concerns were raised by the public on this matter. Therefore, it was determined that the matter would be assessed in the air quality impact assessment section of the EIS.

Secondly, the site is surrounded by rural and environmental conservation land uses, which are generally characterized by low background noise levels. There is the potential for the project to result in an increase in noise levels within the community with the recommencement of quarrying activities within an area of the site, where extraction activities have not been undertaken since 2008. No feedback was received from residents regarding noise generated by the existing site or the project. Therefore, it was determined that this matter would be assessed in the noise impact assessment section of the EIS.

Thirdly, the increased vehicle movements north and south on Nelson Bay Road have potential road safety implications. Historical safety records do not indicate this as a potential issue. Feedback obtained from residents during early engagement did however raise a safety concern:

> "I have had a scare on the Nelson Bay Road off-ramp with a truck looking like it wasn't going to brake".

This or any similar fear in the community could be exacerbated by the introduction of an increased number of truck movements.

The manner in which potential traffic impacts associated with the project would be assessed from a technical and social perspective are discussed under 'Matter 2: Access' above.

Finally, unauthorised access to the project site by members of the public, whether unintentionally or intentionally, presents a potential safety risk. Historical records indicate that the majority of past incidents relate to recreational vehicles and pedestrians entering the quarry to access the beachfront. Despite the efforts on site to prevent unauthorised access, the scoping exercise acknowledged the potential for the public to attempt to gain access to the property in the future. In this scenario, there is a possibility of potential interaction between members of the public and the project operations, which could cause a safety incident. Therefore, it was determined that a standard SIA is required to assess unauthorised site access as part of this SIA study.

Apart from the standard SIA related to unauthorised site access, the scoping exercise determined that a SIA is not required to assess these community safety matters. It was expected that the air quality, noise, and traffic impact assessments, along with the hazards and risks chapter within the EIS, would adequately address these community safety matters. Further engagement with the prominent recreational dune user groups (in relation to community safety) was planned, but was not possible for the reasons outlined in the methodology chapter. The scoping exercise also acknowledged that the hazards and risks chapter of the EIS would consider the rehabilitated post extraction landform and any new or additional potential community safety implications associated with unauthorised site access.

Matter 6: Economic

Following a consideration of the preliminary environmental assessment (Element Environment, 2018) and Economic matters in the Guideline during the scoping phase, 'natural resource use' was obviously determined to be relevant. Natural fine sand extracted from the quarry is the specific natural resource, and it's use by the project qualified for social impact assessment. The resource is an essential component to construction materials and consequently, to local and regional development projects. The influence of the project on the supply volumes for these development projects is worthy of assessment.

The 'livelihood' of employees at the quarry also emerged in the scoping phase as a subcategory of economic matters that is applicable to the project. During interviews carried out for the ASI development, Boral staff stated that five quarry employees would maintain their employment, and that all are locally based. This impact of the project qualified for further assessment.

The scoping exercise determined that a desktop SIA would be adequate to assess the (likely positive) economic impacts created by the project in relation to natural resource use and its influence on livelihoods.

Summary

A summary of the scoping tool outcomes is provided in Table 10. It lists each social matter from the scoping tool (and relevant subcategory) described above, and the associated scoping tool input. For each social matter, it identifies the relevant social impact category per Section 1.1 of the Guideline (refer Appendix A) which will frame its assessment and discussion in the subsequent chapters of this study. It also identifies which matters will be the subject of a specialist study in the EIS, the level of assessment defined by the scoping tool, and the SIA method selected to address it.

Whilst the full range of social impact categories outlined in Section 1.1 of the Guideline was considered during the scoping phase, four (ie Community, Culture, Decision Making Systems, and Fears and Aspirations) were not recognised in the scoping tool outputs as having potential to cause a social impact. In each of these four cases, there was no material suggestion in the information offered by stakeholders, that any aspect of these social impact categories would be

influenced by the project. Speculation about some possible reasons for this is offered in Chapter 6.

Table 10 - Scoping tool outcomes

Social matter (relevant subcategory) and scoping tool input	Social impact category (Guideline section 1.1)	Will a specialist study be conducted for the EIS?	Level of assessment for the social impact (scoping tool output)	SIA method(s) implemented for the assessment
Amenity (acoustic) Stakeholders did not raise any concerns about acoustic impacts from sources on site or from vehicles utilising the public road network	Health and wellbeing	Yes	No SIA required	Nil
Amenity (visual) Stakeholders did not raise any concerns about visual impacts associated with the project	Surroundings	No	Standard SIA	VIA Semi-structured interview
Access (road and rail network) Residents had minimal concerns with quarry related traffic[2] or the network capacity	Access to and use of infrastructure, services and facilities	Yes	No SIA required	Further engagement and adaptive research approach in relation to the results of the traffic impact assessment
Built environment (public infrastructure) No stakeholder feedback was obtained in relation to the effect of the project on the quality of public infrastructure (ie road surfaces)	Access to and use of infrastructure, services and facilities	Yes	Standard SIA	ECA
Heritage (natural features) There was no evidence to suggest that the sites current operations impact the dune system or its recreational values	Surroundings	Yes	Standard SIA	Further engagement (consultation with Worimi LALC)
Community (safety) Site records confirm unauthorised site access (attempted and actual)	Health and wellbeing	No	Standard SIA	PO
Economic (natural resource use *and* livelihood) The preliminary environmental assessment established that natural fine sand derived from the	Personal and property rights	Yes	Desktop SIA	Desktop research

[2] One resident reported an observation of a truck using the Nelson Bay Road off-ramp in a manner deemed dangerous. It was determined in the scoping phase that an adaptive research approach would be taken in relation to this issue (ie if results or ongoing community feedback isolated traffic incidents as an issue, then more detailed social assessments would be required). Refer to the discussion of "Matter 5".

Social matter (relevant subcategory) and scoping tool input	Social impact category (Guideline section 1.1)	Will a specialist study be conducted for the EIS?	Level of assessment for the social impact (scoping tool output)	SIA method(s) implemented for the assessment
quarry will influence supplies for local and regional development projects				
Economic (livelihood) Boral staff stated that the project would extend the employment of five, locally-based quarry employees and provide additional employment.	Personal and property rights	Yes	Desktop SIA	Desktop research

4.1.3 Key stakeholders

The key stakeholders identified for the project are contained in the stakeholder matrix (Table 11). The matrix contains the key project stakeholders, and the engagement techniques applied to establish and foster a dialogue about the project.

Table 11 – Stakeholder matrix

Project stakeholder	Letter	Phone call	Email	Interview / Informal briefing / 'door knock'	Site visit / tour	Formal presentation	Community drop-in sessions notification	Community drop-in sessions	Newsletter	Meetings	Social media / online	Website / microsite
Host communities and fenceline neighbours												
Cox's Lane neighbours	X			X			X	X	X		X	X
Fern Bay residential area	X			X			X	X	X		X	X
Fullerton Cove residential area	X			X			X	X	X		X	X
Residents in wider region – Stockton/Williamtown							X	X	X		X	X
Indigenous groups												
Worimi LALC	X	X	X				X	X	X	X	X	X
Local government												
PSC Mayor	X		X			X	X	X	X	X	X	X
PSC GM	X		X			X	X	X	X	X	X	X
PSC elected councillors	X		X			X	X	X	X	X	X	X

Project stakeholder	Letter	Phone call	Email	Interview / Informal briefing / 'door knock'	Site visit / tour	Formal presentation	Community drop-in sessions notification	Community drop-in sessions	Newsletter	Meetings	Social media / online	Website / microsite
PSC planning representatives	X	X	X			X	X	X	X	X	X	X
State and federal government												
NSW Member for Port Stephens	X	X	X				X	X	X	X	X	X
NSW Member for Newcastle	X	X	X		X		X	X	X		X	X
NSW Department of Planning, Industry & Environment	X	X	X								X	X
NSW Environment Protection Authority	X		X								X	X
NSW Roads & Maritime Services	X		X								X	X
NSW Office of Environment and Heritage	X		X								X	X
Worimi Conservation Lands	X		X								X	X
Media												
Boral corporate media (ie Facebook and website)		X	X				X	X	X		X	X
Interest / activist groups												
Nil												
Business groups												
Quad bike king	X	X	X	X			X	X			X	X
Sand dune adventures		X	X				X	X		X	X	X
Sid Foggs Coaches			X	X					X			

4.1.4 Area of social influence

The nominated ASI for the project is illustrated in Figure 6. The area is comprised of a polygon containing the project site, the nearest communities including properties in Fern Bay and Fullerton Cove, and a small portion of the sand dune system adjacent to the project site. The polygon is also comprised of linear areas associated with the main transport routes proposed to be used by the project. These linear areas include Coxs Lane, and Nelson Bay Road from its intersection with Seaside Boulevard to its intersection with Cabbage Tree Road. There are no remote locations considered to be indirectly impacted.

The suburb of Fern Bay, at the southernmost extent of the Port Stephens LGA, is north of Stockton (the only suburb of Newcastle situated north of the Hunter River), and east of the north arm of the Hunter River (entrance of Fullerton Cove). In July 2010, the NSW Government approved a land release allowing for the development of approximately 684 homes at Fern Bay. This action paved the way for development associated with increased population growth identified in the *Lower Hunter Regional Strategy 2006 – 2031* (NSW Department of Planning, 2006). The regional significance of Fern Bay as a centre for employment and housing has also been outlined in the *Hunter Regional Plan 2036* (NSW Department of Planning and Environment, 2016).

Fullerton Cove is also a suburb of the Port Stephens LGA and is located to the north of Fern Bay. In the 2011 Census (Australian Bureau of Statistics, 2011), the Fullerton Cove population was just 300 people, whilst Fern Bay had a total population of 1,625. Both suburbs have experienced significant population growth between 2011 and 2016. In the 2016 Census (Australian Bureau of Statistics, 2018), the population of Fullerton Cove was 566 while Fern Bay was 2,763. Residences in Fullerton Cove are predominantly set on larger acreages (unlike the smaller residential lots in Fern Bay) along the Fullerton Road corridor. The properties in Fullerton Cove are older than those in Fern Bay and are physically separated from the project site by Nelson Bay Road and adjacent bushland.

The socio-economic profiles of Fullerton Cove and Fern Bay are outlined below. Insights into the relationships between their respective populations and the project, including social issues and concerns, were gathered during the door knock exercise (scoping phase) and submitted to DPIE.

Rationale for selecting the ASI

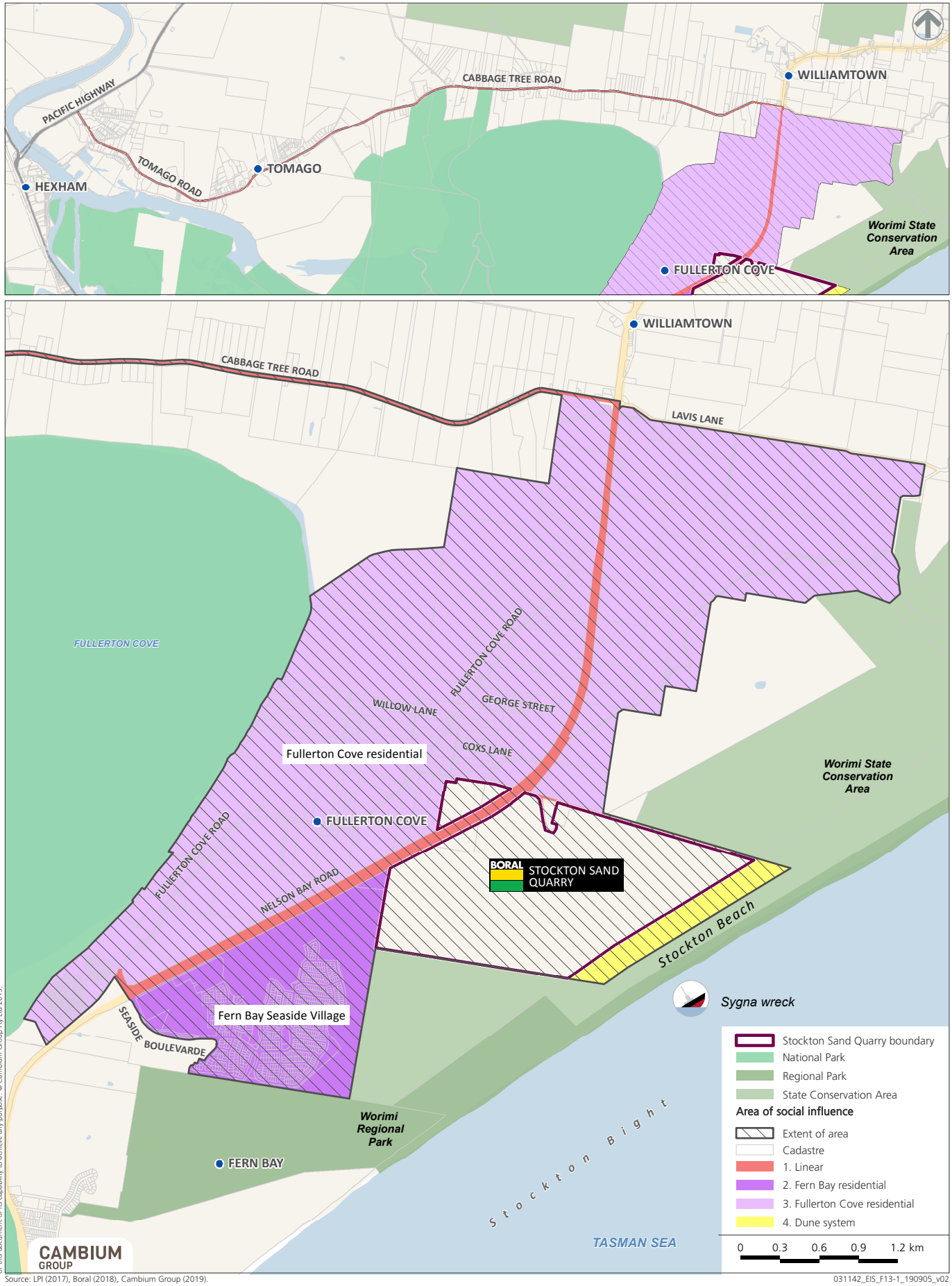
The task of developing the ASI was assisted by the fact that the project has a long-term history. Operations began on the site during the 1970s. Boral acquired the site in 1992 and has developed strong connections with local residents and their Stockton based employees. The influence of the project on social conditions locally is therefore well understood by Boral. This was evident during the semi-structured interviews conducted with Boral staff, which formed a basis for the ASI development. See to Table 12 for a summary of the interview results.

Historical correspondence records maintained by Boral provides evidence of complaints or issues raised by nearby residents and/or business owners. The Annual Environmental Management Reports (AEMR) submitted by Boral to DPIE in accordance with the existing development consent are one source of correspondence records. A review of the AEMRs from recent years indicate that no complaints were received about Boral's operations.

Traffic routes proposed to be used by project vehicles were considered during the ASI development. It was anticipated that most social impacts related to traffic would be experienced at the roundabout (Seaside Boulevard and Nelson Bay Road intersection). Furthermore, Coxs Lane and Nelson Bay Road from its intersection with Seaside Boulevard to its intersection with Cabbage Tree Road were considered the logical parts of the road network where social impacts derived from traffic would occur. On other roads, the volume of non-project related vehicles was expected to reduce the likelihood of a project-related social impact being created.

Figure 6
Area of social influence

STOCKTON SAND QUARRY DREDGING
ENVIRONMENTAL IMPACT STATEMENT



Source: LPI (2017), Boral (2018), Cambium Group (2019).

Whilst not directly qualifying these assumptions, the project traffic impact assessment (Transport and Urban Planning Pty Ltd, 2019) found traffic impacts of the additional trucks associated with the operation of the project on the adjacent road network, including the principal intersections adjacent the quarry, will be satisfactory.

Aside from the project history and traffic routes, the physical features of the site were also considered as part of the initial ASI development. Due to the natural topography and vegetation surrounding the site, the project is isolated from both a physical (refer to Figure 1) and visual perspective. It is not visible from Nelson Bay Road or surrounding residential areas, and Stockton Bight Beach is the only location where the existing quarry operations have visual exposure. The project will not interfere with public access to Stockton Bight Beach. There are no formal public access points to Stockton Bight through Boral's property. These observations influenced the constrained nature of the ASI.

Table 12 - Summary of interviews with Boral staff

ASI Factor discussed during interview	Feedback obtained
Supply chains	The project would have few linkages with firms at local and regional scales. Expanded operations at the site would require the procurement of specialist equipment at start-up from an overseas supplier. It is expected that operational expenditure following the initial start-up procurement activities would be exclusively for consumables (eg fuel) and maintenance. Manufacturing businesses and local or regional suppliers would not be influenced by the project beyond existing arrangements. The workforce supply chain would not be influenced by the project. The small, locally based workforce would remain to support the project. The workforce would not generate considerable expenditure in any particular locality, or significantly influence the supply of goods to the local area.
Haulage of sand and transport of other goods	The main truck routes that would be used by the project are: ▪ Coxs Lane, Nelson Bay Road (south of Coxs Lane) and Toule Street/Cormorant Road; and ▪ Coxs Lane, Nelson Bay Road between Cabbage Tree Road and Seaside Boulevarde and Cabbage Tree Road/Tomago Road. As the project will increase sand transportation from the site by up to 250,000 tpa, the part of the truck routes most relevant to the creation of social impacts should be included in the ASI. Boral staff anticipate that truck movements would be the only aspect of the project visible to the community.
Materials and equipment	Materials and equipment required by the project would largely be limited to that which would support dredging operations. The dredge, a variety of pipes, and a wash plant would be the major items required. These items should have a minor influence on the extent of the ASI.
The movement of workers (drive-in-drive-out and fly-in-fly-out working arrangements)	Five Boral staff currently work at the site. All are locally based. The project would maintain the employment of the current staff and increase the workforce. Boral also employs truck drivers and associated support personnel. The project would not create links to regional localities via the movement of workers.
Natural features and recreational values (eg dunes at Stockton)	Boral has operated at the site over a long period of time and has not disrupted the natural and recreational values of the adjacent dune system. The project operations would continue to co-exist with natural values and recreational features. Although not disruptive, Boral staff, the local community, and recreational users acknowledge the close proximity of the project to the dune system.
Ancillary infrastructure	The project would be a standalone site. There would be no ancillary infrastructure or secondary sites that would extend its footprint beyond the existing site.
Reputation of other operations in area	There are other extractive industries operating in the area. These operations have generally attracted negative publicity in recent years in

ASI Factor discussed during interview	Feedback obtained
	relation to traffic movements and waste. Community sentiment regarding other extractive operations is generally negative[3].

4.2 Further engagement results

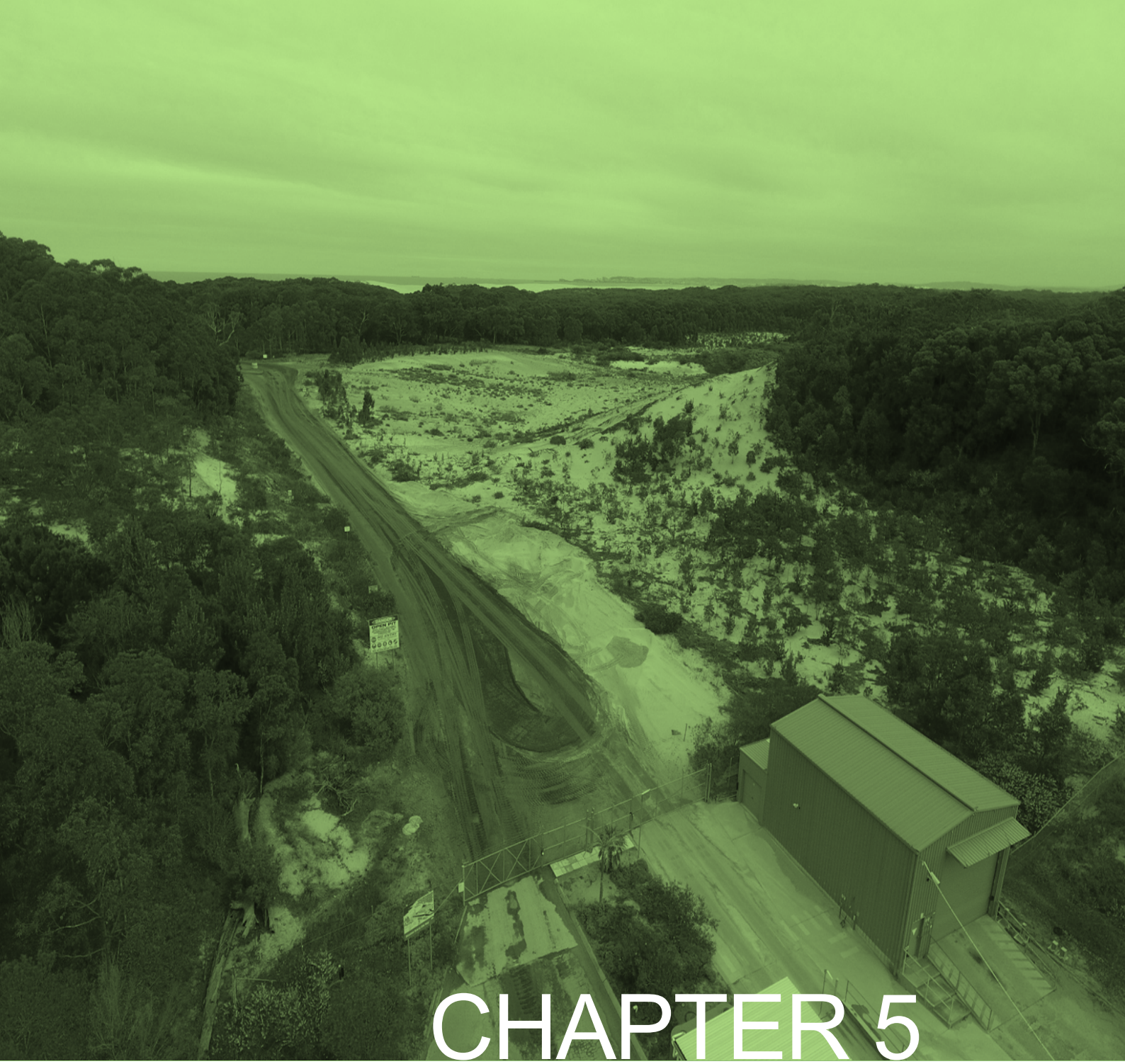
During the EIS preparation phase in early 2019, the project team conducted further stakeholder engagement via the range of stakeholder engagement methods outlined in the methodology chapter. The engagement activities emphasised and sought stakeholder feedback about the project. Table 13 contains the results of the further engagement program.

Table 13 – Further engagement results

Method	Description
Written methods	
Project newsletter and community drop-in sessions notification	Following its distribution, no specific feedback from stakeholders was received. It was concluded that it did not prompt a specific interest in the project. However, one community member who received the newsletter did attend the community drop-in session (see below).
Community drop-in sessions notification	70 notifications were distributed via letter-box drop in Fern Bay, and 60 were distributed in Fullerton Cove on 7 February 2019. The residential block nearest to the project site was included in the distribution area. Following its distribution, no specific feedback from stakeholders was received.
Emails	Emails were sent to project stakeholders including the PSC Mayor and ward councillors regarding the progress of the project. One Councillor replied via email to acknowledge receipt of the project team email. No specific feedback about the project was received.
Phone briefing (informal)	A member of the project team briefed the Port Stephens MP via telephone about the Project during early February 2019. The Port Stephens MP confirmed she would like to meet the project team later in the year. The Port Stephens MP did not raise specific concerns about the project.
In-person interactive methods	
Meeting – CEO Worimi LALC	At the meeting between Boral's Indigenous Affairs Manager and the CEO Worimi LALC, no concerns about the project were raised by the CEO. The CEO made a request for consultation to occur with five stakeholders whom are either neighbours of the project, part of the Indigenous community, representatives of NSW Government agencies, or a combination of these. The CEO also requested ongoing meetings as a means to receive project updates. Boral's Indigenous Affairs Manager agreed to the requests.
Site tour (Newcastle MP)	Members of the project team escorted the Newcastle MP during the visit. Boral staff provided details about the project and addressed questions raised by the Newcastle MP. Nil concerns were formally raised with the project team during or following the site tour.
Community drop-in sessions	The community drop-in sessions advertised locally and held on 14 February 2019 attracted only two community members (a husband and wife couple) from Fullerton Cove, who received the project newsletter and community drop-in sessions notification. Consequently, little data was collected from the sessions. See a summary of the conversation with the couple in Appendix C.

[3] Following the interview, a search was conducted for public commentary about other quarry operators referred to by Boral staff. See media commentary for example; McCarthy (2016) and Environmental Protection Authority (2017).

Method	Description
Consultation with resident	A member of the project team had a conversation with Fern Bay resident, following the traffic query he raised with a project consultant conducting field work adjacent to the project site. The project team member explained the proposal for project related traffic, and confirmed the quantity of proposed traffic movements. The resident was satisfied with the responses. Subsequent to the conversation, the project newsletter and community drop-in sessions notification, and the community drop-in sessions notification was provided to the resident via letter-box drop
Consultation with neighbours via doorknock	See Appendix D for a summary of the consultations
Media methods	
Website	No project related feedback was received via the website feedback form or via the contact phone number listed on the webpage.
Facebook campaign	The project Facebook post (refer Appendix B) received some reply comments. Within three hours of being uploaded, the post attracted 10 'likes', one 'love', one 'share' and one positive comment from a quarry customer who was satisfied with the service he received from quarry staff. Later, it attracted one ‘angry’ emoji and two comments criticising sand extraction generally.



CHAPTER 5

THE SOCIAL BASELINE

5 EXISTING SOCIAL BASELINE

This chapter presents the social baseline for the project. The baseline is the nominated set of social indicators for communities potentially affected by the project. It provides a point of comparison – it can be used as reference data against which to measure the impacts of the project as it develops, and/or to determine the adequacy or otherwise of existing facilities (Vanclay, 2015). All data used in the baseline is derived from the *2016 Australian Census of Population and Housing* (Australian Bureau of Statistics, 2018) unless an alternate source is cited.

The unit of analysis for the regional context is the Hunter region, as defined by the *Hunter Regional Plan 2036* (NSW Department of Planning and Environment, 2016). The equivalent local contexts are the Fern Bay SSC (or State Suburb) and Stockton-Fullerton Cove SA2 (Statistical Area 2) census geographies. A comparison to NSW data is provided where possible.

5.1 Regional context

As a major Australian east coast city, Newcastle is the capital city of the Hunter Region. The city has strong historical links to the extractive industries but over the last two decades has experienced structural economic changes. Newcastle has diversified from its traditional extractive industry base to other economies including defence, education and service industries. Recently the city has benefitted from an urban renewal program led by the NSW Government, with its $650 million investment to the city centre, strengthening connections between the city and waterfront, creating job opportunities, providing new housing, and delivering attractive public spaces connected to better transport (New South Wales Government, 2019). The Port of Newcastle, Newcastle Airport, and heavy rail links facilitate the transport of freight and passengers across the region.

Beyond its capital city, the Hunter Region has unique characteristics which ensure it is one of the strongest regional economies in the country. It has proven premium farming, wine and equine industries, and prominence as a high-quality tourism destination (Deloitte Access Economics, 2013). The region boasts tourist destinations both on its coastline (eg Port Stephens, Forster-Tuncurry) and in its hinterland courtesy of the Hunter being a mature wine making region. Given its diversifying status, future growth and development of the Hunter Region will depend on number of factors including its integration with Asia, changing settlement and migration patterns tied to the greater Sydney population, transitioning to a less carbon intensive economy, digital economic advances, and accessibility in terms or road, rail and freight connectivity (Deloitte Access Economics, 2013).

The prominent socio-economic characteristics associated with the region are identified by NSW Department of Planning and Environment (2016). The Hunter economy accounted for 28% of the entire gross regional product in NSW during 2016. It is one of three best thoroughbred centres in the world, and is the oldest wine making region in Australia. Tourism figures suggest it performs strongly compared to other NSW regions, with over 3.3 million domestic overnight tourists visiting the Hunter Region in 2016. This number accounted for almost 16% of all domestic overnight tourists that visited a destination in regional NSW.

In terms of its population, the region contained 732,400 residents in 2016, and this is expected to increase to 862,250 by 2036, when a quarter of the population will be aged over 65 years of age. Age and sex data (see Table 14) provides a contrast between each Hunter Region LGA population and the NSW population during 2016. An equal number of LGAs (4) had both a lower and higher median age compared to wider NSW. The Muswellbrook LGA population is unique as it contained the lowest proportion of females and had the lowest median age compared to populations in the other geographies.

Table 14 - Age and sex comparison, Hunter LGAs Vs NSW

Council area	Proportion of males	Proportion of females	Median age
Lake Macquarie	48.4	51.2	42
Cessnock	49.7	50.3	38
Singleton	50.9	49.1	36
Muswellbrook	51.3	48.7	35
Upper Hunter	49.4	50.6	41
Dungog	50.1	49.9	45
Maitland	48.8	51.2	36
Port Stephens	49.4	50.6	45
Newcastle	49.3	50.7	37
NSW	49.3	50.7	38

Employment in the Hunter region is marginally weaker compared to the NSW state data. The region has a higher proportion of unemployed people and a smaller proportion of people in full-time work, despite having a larger proportion employed part-time. The employment figures for the region are unsurprising given buoyancy provided by mining activities. Coal mining was the industry that employed most people and accounted for 9% of the regional population during 2016. Other major industries of employment included hospitals (except psychiatric hospitals) (3.2%), aged care residential services (3.0%), supermarket and grocery stores (2.6%) and takeaway food services (2.4%).

5.2 Existing population (local context)

5.2.1 Local government

The project is situated in the Port Stephens LGA which is highlighted in Figure 7. The LGA comprises the coastline from Newcastle in the south to Nelson Bay in the north, and Paterson to the west. The Pacific Highway dissects the LGA.

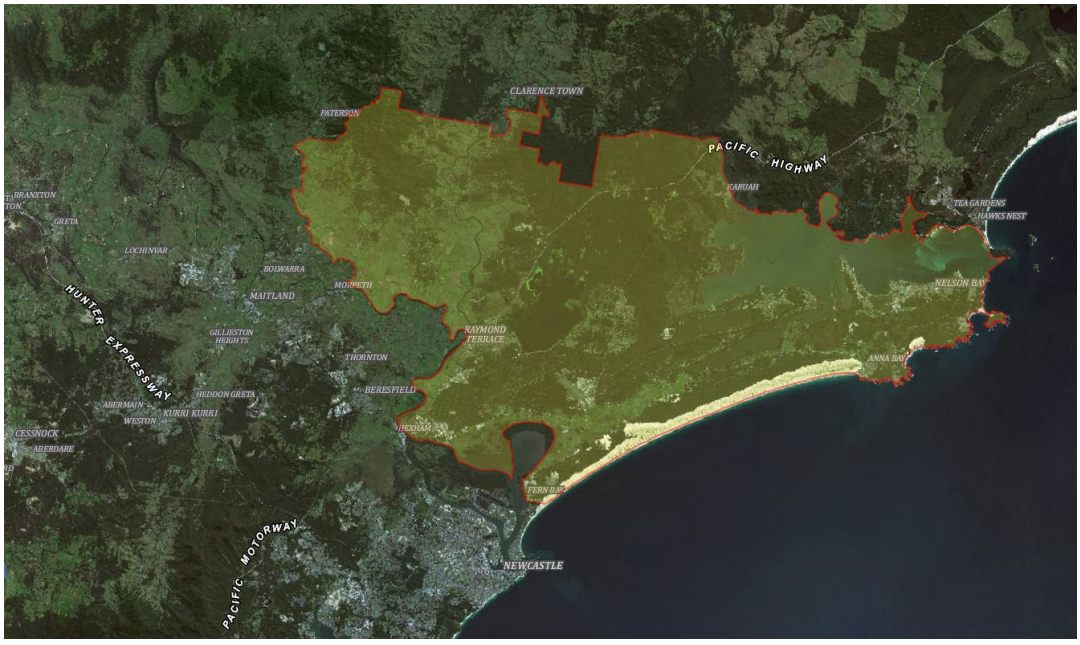


Figure 7 – Port Stephens LGA

5.2.2 Community

Community profile

Socio-economic data from the census provides a snapshot of the community profile in the local area. The data in Table 15 enables a comparison of the Fern Bay, Stockton – Fullerton Cove and NSW populations in respect to a range of socio-economic indicators.

Table 15 – Socio-economic indicators

Socio-economic indicator	Fern Bay	Stockton - Fullerton Cove (SA2)	NSW
Total population	2,763	566	7,467,527
Male	49.50%	49.90%	49.30%
Female	50.50%	50.10%	50.70%
Median age	53	51	38
Average children per family for families with children	1.8	1.7	1.9
Average people per household	2.2	2.3	2.6
Median weekly household income	$1,049	$1,164	$1,486
Median monthly mortgage repayments	$2,167	$2,000	$1,986
Median weekly rent	$430	$330	$380
Average motor vehicles per dwelling	1.6	1.6	1.7

The populations do not differ markedly in terms of gender. It is clear that an older population resides in both Fern Bay and the Stockton – Fullerton Cove areas, in comparison to broader NSW. In the study area, the average number of children per household, people per household, incomes, and motor vehicles per dwelling are smaller when compared to NSW averages.

The median age of 53 for Fern Bay, and 51 for Fullerton Cove suggests that the two are aging suburbs catering to established members of the workforce or retirees. This position is corroborated by the fact that 55% of community members in Fern Bay and 45.8% of community members in Fullerton Cove own their homes outright, and only 23% of homes in Fern Bay and 27.2% of homes in Fullerton Cove are owned with a mortgage. Accordingly, the family structure of Fern Bay favours families without children (58.1%) over families with children (32.1%). This is echoed in Fullerton Cove with the composition of families comprising 50.2% of couples without children compared to 34.0% of couples with children. The aging status of the community is further substantiated by the fact that 41.6% of couple families in Fern Bay and 34.7% in Fullerton Cove are not working.

Population projections

During 2016, the Port Stephens LGA population was 74,100. It is forecast to grow to 92,650 by 2036. Total households and implied dwellings[4] will follow the growth trajectory predicted for the population. The rate of growth in each case is predicted to plateau slightly from 2031. Figure 8 illustrates these projections.

[4] The projection of implied dwelling demand shows how many dwellings are likely to be needed to accommodate the projected population and the households likely to form. It is a demand-driven estimate (NSW Department of Planning and Environment, 2019).

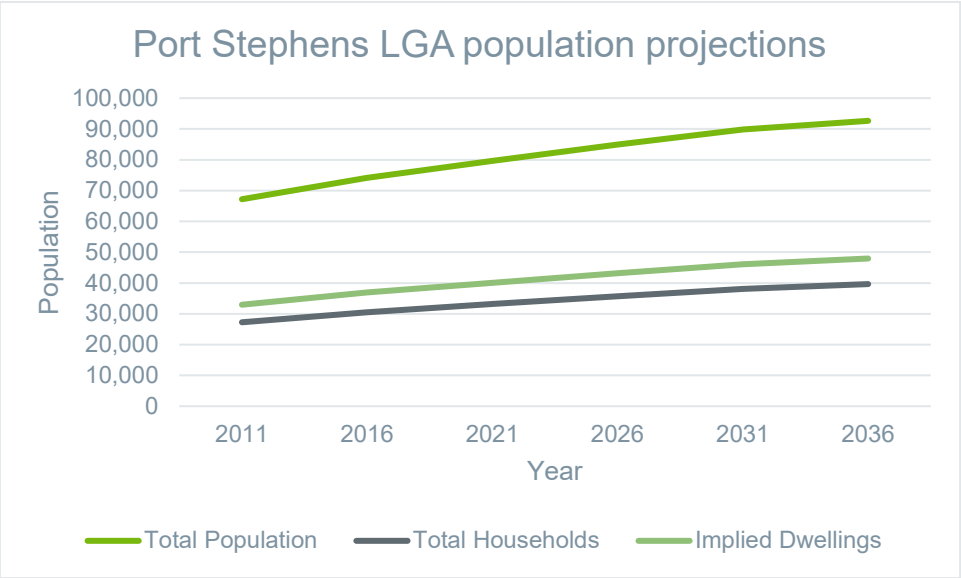


Figure 8 - Local Government Area Population and Household Projections, and Implied Dwelling Requirements (NSW Department of Planning and Environment, 2019)

Family composition

The composition of families in both Stockton – Fullerton Cove and Fern Bay is distinct in comparison to the NSW equivalent (see Table 16). Across NSW there are higher proportions of families (either couples or single parents) with children than in the geographies closest to the project. These statistics underscore the older demograhic and the relatively smaller number of dependent children in the local area.

Table 16 – Family composition

Family composition	Stockton - Fullerton Cove	%	Fern Bay	%	New South Wales	%
Couple family without children	1,010	50.2	465	58.1	709,524	36.6
Couple family with children	683	34	257	32.1	887,358	45.7
One parent family	292	14.5	74	9.2	310,906	16
Other family	25	1.2	4	0.5	32,438	1.7

Indigenous population

The Indigenous populations in the geographies nearest to the project are not drastically different to the proportion of Indigenous people residing in NSW as a whole (see Table 17). As with the non-Indigenous population locally, it is evident that the local geographies contain a comparatively older Indigenous population. This is demonstrated by the median ages in Stockton – Fullerton Cove (27) and Fern Bay (25) being larger than that of the NSW equivalent (22).

Table 17 - Aboriginal and/or Torres Strait Islander peoples

Characteristic	Stockton - Fullerton Cove	%	Fern Bay	%	New South Wales	%
Male	154	51.3	39	47.0	107,368	49.7
Female	146	48.7	44	53.0	108,809	50.3
Median age	27	--	25	-	22	--

Place of birth

In terms of the birthplaces of residents in the communities surrounding the project, England, New Zealand, Scotland, USA, and Germany were reported most frequently at the Census. Excluding those residents born in Australia, the bulk of the local populations were born in Commonwealth nations. The data contained in Table 18 demonstrates there is not a major contrast between the proportions of residents born in these foreign locations, in Stockton - Fullerton Cove, Fern Bay, or NSW more broadly.

Table 18 – Birthplace of residents (excluding Australia)

Birthplace	Stockton - Fullerton Cove	%	Fern Bay	%	New South Wales	%
England	215	2.9	103	3.8	226,564	3
New Zealand	79	1.1	33	1.2	117,136	1.6
Scotland	36	0.5	25	0.9	28,579	0.4
United States of America	30	0.4	21	0.8	30,081	0.4
Germany	35	0.5	18	0.7	29,541	0.4

Multi-culturalism

Non-English languages spoken at home provide an indicator of multi-culturalism in communities. Contrasting language profiles were reported in the Stockton - Fullerton Cove and Fern Bay geographies as shown in Table 19 and Table 20. German and Spanish languages were reported by residents in both local areas as being among the popular non-English languages spoken at home. An obvious departure from the NSW non-English language profile is evident amongst the Stockton - Fullerton Cove population, where only 0.2% spoke Mandarin compared with 3.2% of the NSW population. Other language types were more consistent between the local geographies and NSW.

Table 19 – Language other than English, spoken at home (Stockton - Fullerton Cove)

Language	Stockton - Fullerton Cove	%	New South Wales	%
German	21	0.3	23,033	0.3
Thai	14	0.2	24,839	0.3
Spanish	13	0.2	63,527	0.8
Mandarin	12	0.2	239,945	3.2
Tagalog	11	0.1	45,130	0.6

Table 20 - Language other than English, spoken at home (Fern Bay)

Language	Fern Bay	%	New South Wales	%
German	10	0.4	23,033	0.3
Spanish	9	0.3	63,527	0.8
Khmer	6	0.2	11,694	0.2
Dutch	4	0.1	8,686	0.1
Hindi	4	0.1	67,034	0.9

Employment

Employment status data derived from the Census and reproduced in Table 21, indicates that both Fern Bay and Stockton-Fullerton Cove residents maintain similar working patterns. The main inconsistency between the two resident groups is the proportion of residents that stated both parents in couple families were not working. A greater proportion (41.6%) of Fern Bay residents reported this status, compared to 34.7% of the population in Stockton-Fullerton Cove. Overall, the data illustrates that smaller proportions of the Fern Bay and Stockton-Fullerton Cove residents are working, relative to the collective NSW population.

Table 21 – Employment status

Employment Status of Parents in Couple Families	Fern Bay (%)	Fern Bay (No.)	Stockton-Fullerton Cove SA2 (%)	Stockton-Fullerton Cove SA2 (No.)	NSW (%)	NSW (No.)
Both Employed, Worked full-time	14.8	108	15.9	270	22.6	360,916
Both employed, worked part time	2.1	15	2.7	46	4.0	63,106
One employed full-time, one part time	15.3	112	18.6	315	20.6	329,567
One employed full time, other not working	10.7	78	10.7	181	15.0	240,084
One employed part time, other not working	4.1	30	4.9	84	6.1	96,933
Both not working	41.6	304	34.7	590	21.0	334,742
Other (includes away from work)	4.2	31	4.8	81	5.1	80,905
Labour force not stated (by one or both parents in a couple family)	7.3	53	7.7	131	5.7	90,630

Education

Educational attainment data associated with the local populations is contained in Table 22. It shows that data for the local populations is generally consistent. Conversely, it shows that larger proportions of the local populations attained a school qualification compared to the NSW population, up until the year 10 certificate. This scenario did not hold true for the post-year 10 qualifications however, including university qualifications. The strength of mining and agricultural industries historically in the Hunter region, is perhaps one explanation for this pattern. These

industries would typically require a workforce with practical skills obtained through trade certificates and apprenticeships, rather than through university programs.

Table 22 – Educational attainment

Level of highest educational attainment (People aged 15 years and over)	Stockton - Fullerton Cove	%	Fern Bay	%	New South Wales	%
Bachelor Degree level and above	890	13.8	331	14.2	1,424,716	23.4
Advanced Diploma and Diploma level	506	7.9	187	8	543,142	8.9
Certificate level IV	233	3.6	82	3.5	167,947	2.8
Certificate level III	1,080	16.8	379	16.3	730,498	12
Year 12	589	9.2	215	9.2	930,654	15.3
Year 11	183	2.8	74	3.2	203,574	3.3
Year 10	936	14.6	382	16.4	702,178	11.5
Certificate level II	4	0.1	6	0.3	4,849	0.1
Certificate level I	0	0	0	0	625	0
Year 9 or below	707	11	332	14.2	513,209	8.4
No educational attainment	11	0.2	3	0.1	54,870	0.9
Not stated	1,069	16.6	252	10.8	627,465	10.3

5.2.3 Place

Status of industry

The industries that provide most employment opportunities for the Stockton - Fullerton Cove and Fern Bay workforces are identified in Table 23. It is not surprising that Defence is a strong employment industry for both local populations, given their proximity to the Williamtown RAAF base. The same might be said for State Government Administration data, presuming the base also provides administrative opportunities for the civilian population. The prominence of the Aged Care Residential Services industry is consistent with the older demographic in the area, which promotes a demand for such services.

Table 23 – Employment by industry.

Industry of employment	Stockton - Fullerton Cove	%	Fern Bay	%	New South Wales	%
Defence	126	4.9	82	9.8	21,848	0.6

Industry of employment	Stockton - Fullerton Cove	%	Fern Bay	%	New South Wales	%
Aged Care Residential Services	83	3.2	30	3.6	67,209	2
State Government Administration	66	2.6	25	3	45,546	1.3
Hospitals (except Psychiatric Hospitals)	95	3.7	22	2.6	119,350	3.5

Income

In the Stockton - Fullerton Cove and Fern Bay areas median weekly incomes for people aged 15 years and older, are less than the equivalent NSW measurement. This pattern applies to personal, family and household incomes, as shown in Table 24.

Table 24 - Median weekly income for people aged 15 years and over

Income type	Stockton - Fullerton Cove	Fern Bay	New South Wales
Personal	590	544	664
Family	1,489	1,416	1,780
Household	1,164	1,049	1,486

Council services

Each year in April/May, PSC conducts a survey across the LGA. This survey seeks feedback from residents and visitors on their satisfaction with facilities and services provided by PSC. This annual survey is broadly representative of the population of Port Stephens. The results of the survey are reported to Councillors and staff to inform planning decisions and the allocation of resources.

Table 25 contains survey report (Port Stephens Council, 2018) results regarding the reported satisfaction with a range of Council services. The satisfaction levels can be interpreted as an indication of how attractive Port Stephens is as a 'place', to its residents. In each of the service categories listed, an increase in satisfaction occurred from the time of the first survey in 2012, to the latest survey in 2018, albeit with fluctuations measured during the inter-years. An exception to the trend is evident in children's services which decreased over the sampling period.

Table 25 – Satisfaction with Council services in the Port Stephens LGA (Port Stephens Council, 2018)

All figures in the table below are percentages.

(n= 1287)	2018 Aggregate	2017 Aggregate	2016 Aggregate	2015 Aggregate	2014 Aggregate	2013 Aggregate	2012 Aggregate
Library Services	99.15	98.0	98.6	99.3.	72.4	N/A*	N/A*
Children's Services	99	87.5-100	98.3	98.0	99.6	99.8	N/A**
Ranger Services (e.g. Animal Management)	76.50	70.6	62.6	62.6	63.6	60.4	65.5
Rangers Services (Parking)	74.43	74.3	59.5	61.5	60.1	61.6	56.3
Garbage Collection Services	94.58	93.9	93.5	86.1	93.3	92.7	92.3
Access to waste depots and waste transfer stations	87.38	76.5	81.7	72.2	82.1	76.5	74.3

Safety

Perceptions of safety were also collected as part of the PSC survey. Results in Table 26 illustrate variable perceptions based on the LGA location and time of day. It is not surprising that daylight hours generated a sentiment of safety for a larger number of residents. Daylight hours were not deemed by all to generate feelings of safety however, with three residents indicating they feel unsafe at home and in their neighbourhoods during this time.

Table 26 – Perceptions of safety in the Port Stephens LGA (Port Stephens Council, 2018)

	Very safe	Safe	Moderately safe	Not very safe	Unsafe
At home during the day	672	477	119	13	3
At home at night	532	522	184	36	7
In your neighbourhood during the day	616	508	137	18	3
In your neighbourhood during the night	414	498	279	72	19

Crash and casualty statistics (see Figure 9) collected by Transport for NSW (2019) also provide an insight into safety across the LGA. These figures are also collected annually and will therefore be valuable to baseline monitoring. Between the two datasets presented in the figure, there is an obvious unexplained discrepancy in relation to the number of fatalities in 2016. Nevertheless, the data presents a spike in road deaths at this time.

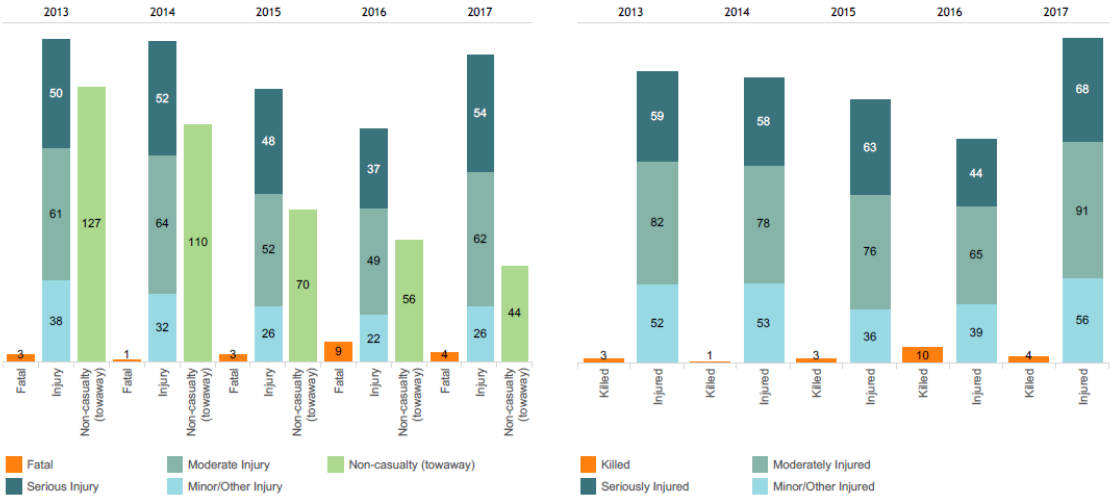


Figure 9 – Crash and casualty statistics, Port Stephens LGA (Transport for NSW, 2019)

Socio-economic index

Socio Economic Indexes for Areas (SEIFA) is a suite of indexes that have been created by the ABS from social and economic Census information.

Each index ranks geographic areas across Australia in terms of their relative socio-economic advantage and disadvantage. Figure 10 presents information from the Index of Relative Socio-economic Disadvantage (IRSD), a general socio-economic index that summarises a range of information about the economic and social conditions of people and households within the Port Stephens LGA. This index includes only measures of relative disadvantage (refer to Compelling Economics Pty Ltd., 2019, for those measures). A low SEIFA score indicates relatively greater disadvantage in general. For example, an area could have a low score if there are (among other

things) many households with low income, many people with no qualifications, or many people in low skill occupations. Conversely, a high SEIFA score indicates a relative lack of disadvantage in general.

The SEIFA score for Port Stephens LGA in 2016 was 980. The scores for the smaller subset geographical areas are slightly higher, with Fern Bay achieving 984, and Fullerton Cove achieving 1035. These scores are relatively high in the range shown in Figure 10 (ie 188-1186).

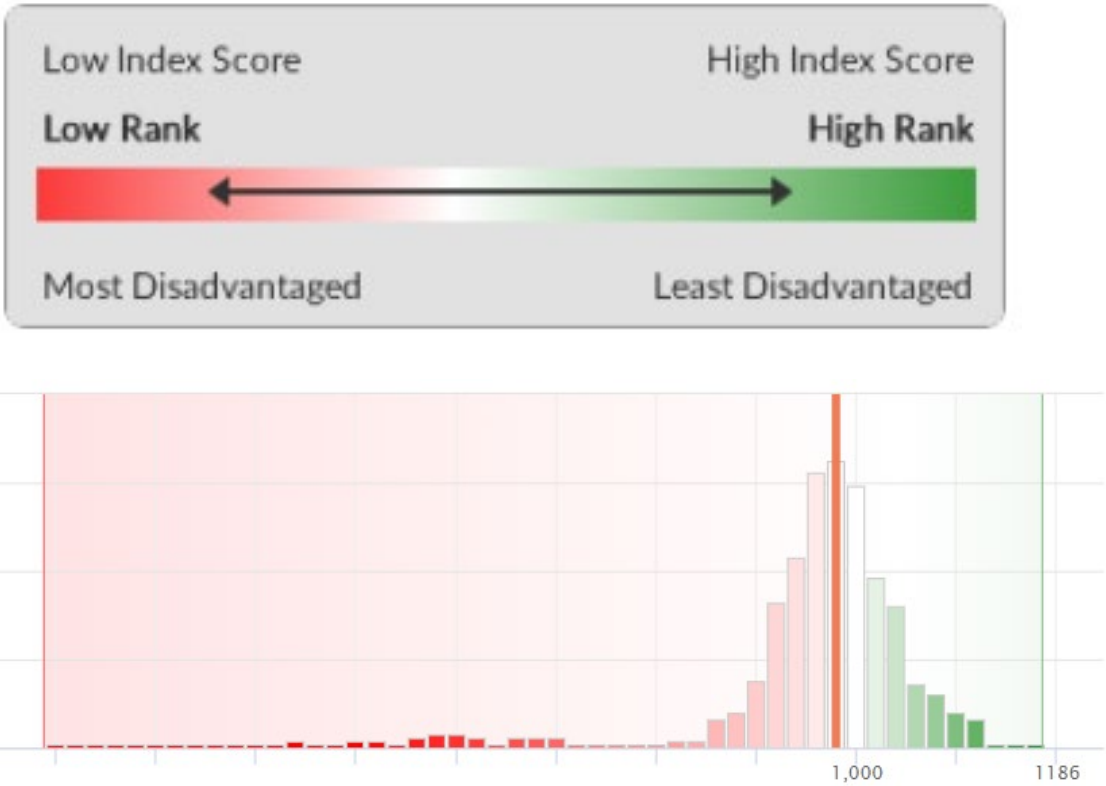


Figure 10 – SEIFA score for Port Stephens LGA (Compelling Economics Pty Ltd., 2019)

5.2.4 Governance

Management of local government resources

Interpreted as a measure of governance in the LGA, PSCs survey (refer Port Stephens Council, 2018) collected feedback about how well the authority manages its resources. The resources in question are its workforce, its assets, and its finances. Figure 11 contains the survey results. In each case approximately 40% of survey respondents were somewhat confident that PSC was managing its resources well. Considering also the proportions of respondents that reported being confident and very confident that PSC was managing their resources well, it can be concluded that the majority of respondents are satisfied about resource management overall.

Figure 11 – Council's management of workforce, assets, and finance (Port Stephens Council, 2018)

5.3 Existing social infrastructure

Social infrastructure refers to facilities and services that enhance the social capacity of communities and may include infrastructure related to health, housing, youth, aged care, leisure, community safety facilities and road safety (Franks, 2012). As with the social indicators presented above, the social infrastructure identified in areas surrounding the project prior to SSD approval will provide a reference point against which social impacts may be measured if the project proceeds. Such impacts can take the form of a decrease in the quantity, diversity, or capacity of the existing social infrastructure, courtesy of demand from an expanded workforce and their relatives relocating to an area. Conversely, an influx of staff and their families, or changes to the

footprint of a project may stimulate new social attributes of the communities, bolster organisational capacities, and contribute to the supply of services.

The analysis conducted for this study identified a range of essential social infrastructure which underpin the social wellbeing of the population. Such infrastructure includes:

- education and child care facilities (five in total);
- community centres and town halls (four);
- art and cultural facilities (four);
- emergency and justice facilities (two);
- health facilities (four);
- aged care facilities (two);
- open space (six);
- sport and recreation facilities (seven); and
- places of worship (two).

The locations of all identified infrastructure are shown in Figure 12.

Figure 12
Social infrastructure

STOCKTON SAND QUARRY DREDGING
ENVIRONMENTAL IMPACT STATEMENT

Source: LPI (2018), Boral (2018), Element Environment (2019), Cambium Group (2019).

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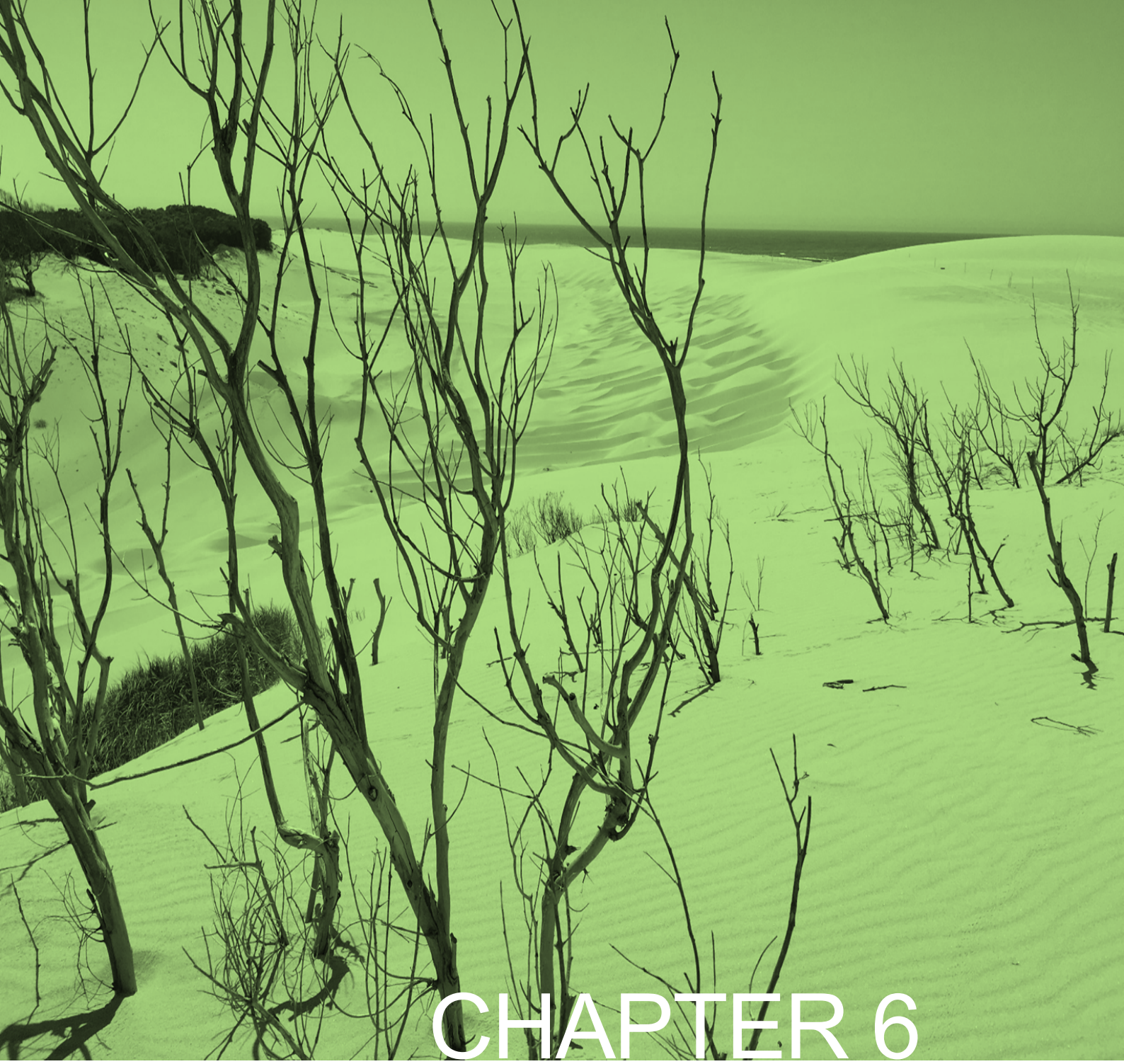


CHAPTER 6

IMPACT ASSESSMENT

6 ASSESSMENT OF SOCIAL IMPACTS

In this chapter an assessment of the potential negative social impacts associated with the project has been completed on the assumption there is no mitigation. Predicted positive impacts associated with the project are also assessed below. Outcomes of the assessments are discussed according to the Social Risk Matrix contained in Appendix C3 of the Guideline (see Appendix E).

6.1 Way of life

'Way of life' was the first social impact category considered and assessed for the project. It was considered as part of the SIA scoping exercise and determined to be a category not influenced by the project. According to the Guideline, this applies to the influence of the project on how people live, work, play and interact with one another on a daily basis. It was subsequently disqualified from the SIA. Refer to the summary in Section 4.1.2 for an explanation regarding its disqualification from the SIA.

6.2 Community

Consistent with the Guideline, 'Community', including its composition, cohesion, character, how it functions, and sense of place, was considered in the SIA study. The matter was considered as part of the scoping exercise and determined to be a social impact category not affected by the project. Refer to the scoping tool results (the summary in section 4.1.2) for an explanation regarding its disqualification from the SIA.

In the absence of any contrary evidence gathered during the course of this SIA study, a range of explanations might be plausible as to why a community impact did not emerge. The size, scale and location of the project are potentially among the factors. It may be that the project is sufficiently 'hidden' from a visual and acoustic perspective (details about these findings are provided below), and that the small scale ASI does not influence public dialogue about the composition, cohesion, character, functions, or sense of place for neighbouring communities.

6.3 Access to and use of infrastructure, services and facilities

The social impact category related to access and use of infrastructure (per the Guideline), was identified in the SIA as being relevant to the project. The social matter subsets of this category that required assessment include impacts to the 1) Road and rail network and 2) Public infrastructure.

The EIS includes a comprehensive traffic impact assessment (refer Transport and urban Planning Pty Ltd, 2019). It is a specialist study which addresses the two matters above. To supplement the traffic assessment, the ECA methodology was applied for the purpose of the SIA.

6.3.1 Road and rail network

Although the scoping exercise determined that no SIA was required to assess this matter, the project team committed to an adaptive research approach at the completion of the exercise. By adopting this approach, if any EIS results (including those derived from the traffic impact assessment) isolated potential social issues regarding the road network, then detailed social assessments would have been conducted. The same adaptive approach would have been applied if negative feedback was received via further engagement activities during the EIS preparation phase.

No suggestion of social impacts related to the road network emerged from the EIS results. Furthermore, no feedback about these impacts was received via further engagement activities which included the community information sessions, requests for feedback made via emails to the project database, and the further engagement resident consultations made via the doorknock of targeted residences closest to the quarry. Accordingly, the traffic impact assessment (Transport and Urban Planning Pty Ltd, 2019) was relied upon as the leading study into this matter, and further analysis via the implementation of a SIA methodology was not required.

The findings of the traffic impact assessment were favourable to the community in terms of the potential for social impacts to arise from the project, and its influence of the surrounding road network. It found that:

- traffic impacts from the additional trucks associated with the project, on the adjacent road network including the principal intersections adjacent the quarry, will be satisfactory;
- future cumulative traffic impacts associated with the project, on the principal intersections until 2029, will also be satisfactory;
- construction traffic impacts are assessed as satisfactory;
- the project is not expected to have any negative impacts on other road users including pedestrians, cyclists and public transport vehicles (buses), and or on road safety; and
- after 2028, truck numbers generated by the quarry will reduce. When compared to the existing consent (DA 140-5-2006), the additional truck volumes will be 14 truck-loads (28 two-way truck movements) on an average day and 28 truck-loads (56 two way truck movements) on a maximum day. These truck movements will be spread over the road network.

Based on the above findings, the impact for the local community and road users at all stages of the project life-cycle, is predicted to have a **low social risk rating.** It is considered to be immaterial and not requiring the implementation of a mitigation measure.

6.3.2 Public infrastructure

In the scoping phase, public infrastructure (or the condition of local roads) was not identified as a social matter relevant to the SIA. The condition of local roads was not raised by residents during the early or further engagement activities so feedback about this matter was extremely limited. However, acknowledging the increased volume of heavy vehicles proposed for the project and the absence of a traffic impact assessment during the scoping phase, a precautionary approach was adopted. This approach involved the implementation of a standard SIA, via the ECA method. The ECA results supplement the traffic impact assessment which is now available.

Thirty-seven articles were obtained and analysed as part of the ECA (see Appendix F for the ECA protocol and list of articles), to assess the social impacts to public infrastructure. Of those articles, 27 were disqualified as they did not contain a public infrastructure discourse. The following seven discourses emerged from the ECA exercise, each conveying some negative sentiment (excluding item five) towards the social impacts of heavy vehicles using public infrastructure. The discourses listed at items 1,3, and 4 contained a reference to the condition of road pavements:

1. excessive number of quarry trucks using public infrastructure;
2. trucks have negative impacts on families and schools;
3. the introduction of additional truck movements (negative sentiment regarding road quality);
4. quarry operators should share road maintenance burden;
5. the introduction of additional truck movements (neutral sentiment regarding road quality);
6. negative impacts for community safety; and
7. sand haulage route debate.

Whilst heavy vehicles were a feature of each discourse, neither the project, the project location, Fullerton Cove more broadly, or the ASI were their exclusive focus. In other words, the discourses related to truck operations across the Port Stephens LGA, not specifically to truck operations

associated with the project. These observations have implications for the assessment of social impacts under the 'access to and use of infrastructure' social impact category. They suggest that the social impacts in question are cumulative in nature. They are borne from the volume of heavy vehicles from across the region, using public infrastructure. That is, the collection of heavy vehicles sourced from multiple projects both within the ASI and beyond, are producing a negative social impact in relation to public infrastructure. Overall, the results of the ECA exercise illustrate a social unease in relation to the collective volume of heavy vehicles, the introduction of additional truck movements, and the road maintenance burden created by heavy vehicles for public infrastructure across an area much broader than the ASI.

ECA results aside, results of the traffic impact assessment (Transport and Urban Planning Pty Ltd, 2019) and the associated road safety audit are relevant to this matter. The audit examined the existing road pavement and the provision for heavy vehicles. It assessed these against current road practice guidelines and standards, with the objective of identifying any real or potential road safety hazards. The audit identified a number of minor maintenance issues along the haulage route, but did not identify any specific road safety issues that required follow up. These results create a disconnect between the community dialogue about public infrastructure social impacts and the actual impacts predicted to arise from the project. They suggest these impacts are more dominantly perceived or imagined, rather than being material.

Therefore, this social impact was assessed to have a **moderate social risk rating** during the operational project life-cycle stage. This rating was applied on the prediction that the additional heavy vehicle traffic would likely contribute to the cumulative social impact evident in media articles and the ECA results, even if that impact was one perceived by the community.

6.4 Culture

Consistent with the Guideline, 'Culture', including shared beliefs, customs, values and stories, and connections to land, places, and buildings (including Aboriginal culture and connection to country), was considered in the SIA study. The matter was considered as part of the scoping phase and determined to be a social impact category not affected by the project. Refer to the scoping tool results (the summary in Section 4.1.2) for an explanation regarding its disqualification from the SIA.

6.5 Health and wellbeing

The 'Health and Wellbeing' social impact category defined in the Guideline is relevant to the SIA in relation to two social matters. They are: 1) 'acoustic' amenity and 2) 'community safety'. For the acoustic impacts associated with the project, the scoping exercise determined that no SIA would be required alongside the noise impact assessment conducted by Wilkinson Murray (2019). In relation to community safety, the scoping exercise determined that a standard SIA would be required in the absence of any specialist study designed to investigate the matter. The PO method was applied for this purpose.

Assessment results for both social matters are provided below.

6.5.1 Acoustic amenity

The *Stockton Sand Quarry Noise Impact Assessment* (Wilkinson Murray, 2019) conducted for the project involved a detailed assessment of potential operational noise impacts. Acknowledging that the project will generate heavy vehicle movements along Nelson Bay Road, Cabbage Tree Road and Medowie Road, it also involved an assessment road traffic noise (among other noise sources such as plant and equipment). Unattended noise monitoring was conducted to determine the

existing ambient noise levels at the most potentially affected residential receivers in the area surrounding the project.

Results of the noise impact assessment describe that predicted noise levels for the project comply with the established project noise trigger levels and accordingly, no further noise mitigation measures or controls are required to be implemented. In relation to noise impacts derived from heavy vehicle movements on the surrounding road network, the predicted relative increase in noise levels are within the allowable limits, on all designate access routes. In summary, the predicted noise levels for the project are compliant with relevant legislation and standards.

From a social impact perspective, the project is predicted to have a **low social risk rating** in all stages of the project life-cycle. The risk is considered to immaterial and not requiring the implementation of a mitigation measure. This determination was made in consideration of the Wilkinson Murray (2019) findings, and also the fact that no noise concerns or issues were raised by stakeholders in the consultation and engagement activities conducted for the project.

6.5.2 Community safety

Results of the PO exercise show that 17 participant events were observed by the quarry staff. Of these, two events involved actual instances of unauthorised access to the site during the observation period, from early January to late March 2019. For all other instances, members of the public did not enter the quarry and there is every possibility that the participants involved were merely using the public road [5]with no intention of accessing the quarry. They either turned away voluntarily at the quarry entry, some having read the signage (see Figure 13 and Figure 14) on display, or were prompted by quarry staff to turn away. A summary of the other characteristics of the recorded instances are provided in Table 27.

[5] During the PO exercise, quarry staff explained that Google maps currently provides directions to Stockton Bight beach and the Sygna via Cox's Lane. This is likely to draw members of the public to the quarry entrance. Boral have requested that Google correct this and remove the directions from their mapping software. The request was accepted, yet at the time of writing there was no change to this situation. Boral has advised that the matter is being actively followed up.

Figure 13 – Beach access signage

Figure 14 – Warning signage

An analysis of the data in Table 27 was made in respect to the three PO research questions. The questions and analysis results are below.

1. *Do the participants seem to be intentionally or unintentionally accessing site?*

During the observation period, PO results indicate that intentional or unintentional site access did occur, albeit for a small percentage (12%) of the recorded instances.

2. *What was the known or predicted purpose of those people attempting to access the project site?*

The purpose of the persons who accessed the site without authority is known for only one of the two recorded instances. Results indicate that the person involved on this occasion was intending to access the beach. Based on the conversation held with the member of the public, quarry weighbridge staff describe that the person was:

> "in a rush…[I] stopped the car as it was heading through the compound...[the] driver seemed to be late to pick people up from the beach. [I] advised him where the beach access was and he proceeded off site" (quarry weighbridge operator).

The purpose of the second person who accessed site is not known, as quarry staff were not able to have a conversation or determine with certainty what intention that person held.

As shown in Table 27, on five other occasions the travel mode of persons who were potentially interested in site access was travel by foot, horse, and bicycle. The implied purpose in each case was recreation, however there is no evidence to verify this.

3. *Was the safety of those who accessed the project site put at risk?*

In the two instances of unauthorised site access, there was no immediate safety risk to the members of the public. The weighbridge staff were able to alert the people to quarry operations, either by gesture or conversation, and advised them to leave the quarry in a safe manner. Members of the public then departed voluntarily. The cause of risk in these events rests entirely with members of the pubic who choose to undertake their recreational pursuits whilst ignoring the prominent warning signage and/or communications of quarry staff.

After considering and assessing the PO results, **a moderate social risk rating** is considered to be adequate for the project, applicable at all life-cycle stages of the project.

Table 27 – Summary of PO results

Event number	Date	Caucasian or other appearance	Age group (adult or youth)	Number of people	Travel mode	Route	Displayed awareness of site or recognition of warning signage?
1	14/01/2019	Caucasian	Adult	2	Horse	Coxs Lane only	No
2	17/01/2019	Unknown	Adult	1	Walking	Coxs Lane only	No
3	17/01/2019	Unknown	Adult	1	Bicycle	Coxs Lane only	No
4	18/01/2019	Unknown	Unknown	Unknown	Car	Coxs Lane only	Yes, read signage
5	18/01/2019	Not Caucasian	Unknown	Unknown	Car	Coxs Lane only	Yes, read signage
6	22/01/2019	Unknown	Adult	2	Car	Coxs Lane only	Yes
7	22/01/2019	Unknown	Adult	2	Car	Coxs Lane only	Yes, read signage
8	23/01/2019	Unknown	Adult	2	Car	Coxs Lane only	Yes
9	23/01/2019	Unknown	Adult	2	Car	Coxs Lane/Compound access road	Yes
10	24/01/2019	Unknown	Unknown	1	Bicycle	Coxs Lane only	Yes
11	24/01/2019	Unknown	Adult	2	Car	Coxs Lane/Compound access road	Yes, read signage
12	24/01/2019	Unknown	Adult	2	Car	Coxs Lane/Compound access road	Yes, read signage
13	25/01/2019	Unknown	Adult	1	Bicycle	Compound access road	No
14	29/01/2019	Unknown	Adult	2	Car	Coxs Lane/Compound access road	Yes
15	18/02/2019	Caucasian	Adult	1	Car	Through compound	Yes, after alert from staff
16	6/03/2019	Unknown	Unknown	2	Car	Coxs Lane/Compound access road	Yes
17	12/03/2019	Caucasian	Adult	1	Car	Coxs Lane only	Yes

6.6 Surroundings

As subsets of the 'Surroundings' social impact category, two social matters were determined to be relevant to the SIA. They are 1) 'visual amenity' for recreational dune users of Stockton Bight Beach and 2) 'heritage (natural features)'.

No specialist study was conducted as part of the EIS to investigate the potential visual amenity impacts of the project, and the scoping exercise determined a standard SIA was required. Accordingly, a semi-structured interview and the VIA method demonstrated by Andrews et. al. (2012) were applied. In relation to heritage (natural features), the interface between the Indigenous community and the dune areas adjacent the project which encompass the Worimi Conservation Lands, formed a focal point of the scoping exercise. For the purposes of the SIA, it was determined that further engagement with the Worimi WLALC was required in relation to the heritage matter. This was in addition to the Aboriginal cultural heritage assessment of the project.

Assessments of these matters are below.

6.6.1 Visual amenity

At the site visit conducted for the purpose of the VIA, the photograph displayed in Figure 15 was taken at a location within the quarry boundary that was above the highest point of the publicly accessible area of the dune system adjacent to the quarry. Given that recreational dune users are not authorised to breach the boundary rope and access the vantage point depicted in the photograph, there is no option for them to gain a better vantage point of the quarry and proposed project site, unless they access the site without authorisation.

In Figure 15 the project site is not visible. It exists in an area of the quarry that is a substantial distance behind the vegetation visible in the background of the photograph, and that area is characterised by a surface depression. As a result, the project site is completely obscured by the vegetation.

After the visual impact results described above were considered in relation to the receiver (ie the dune user), the Andrews et. al. (2012) visual assessment method was applied. The conclusion reached was that visual impact at the dune vantage point ranks as negligible. This decision was made on the basis that the rating for all criteria is low.

Figure 15 – Highest viewpoint on the dunes with a view towards the proposed dredge pond location

Aside from the VIA outcome, results of the semi-structured interview facilitated an assessment of potential visual amenity issues, and the associated social impacts for recreational dune users at

Stockton Bight. The following extracts from the interview overwhelmingly indicate that the potential for a visual impact to be created by the project is negligible:

> "The only thing we see is the danger tape and I wouldn't describe that as an eyesore".
>
> "To be honest we [quad bike riders] don't stop there…we're running past there and customers don't have a chance [to see the quarry]".
>
> "I don't even know why it's coming up on the radar as a visual impact…you'd need to talk to the pilots from Williamtown airport about that [laughter]".
>
> "We take twenty odd thousand [quad bike] customers along there, and I'm not aware of any concerned by the danger tape [causing] a visual impact" (owner, quad bike adventure company).

On the basis of the VIA, semi-structured interview, and engagement results, the SIA determined that a **low social risk rating** is most suitable for the potential visual amenity impacts predicted for the project. This rating would apply at each of the project life-cycle stages. Furthermore, the risk is considered to be immaterial and would not necessitate the implementation of a mitigation measure.

6.6.2 Heritage (natural features)

Further engagement with Worimi LALC did not yield any specific feedback in relation to potential social impacts likely to be caused by the project. This applies broadly to Aboriginal heritage matters, and more specifically to natural heritage features being the sand dunes where the Worimi LALC operate quad bike tour business, Sand Dune Adventures. In conversation with the CEO Worimi LALC, Boral's Indigenous Affairs Manager agreed to the request to include nominated stakeholders in future communication campaigns. Consultation with Worimi LALC also occurred during Aboriginal cultural heritage assessment process. Consultation with the 19 registered Aboriginal stakeholders identified that the local area has cultural heritage value to the local Aboriginal community. The Aboriginal cultural heritage assessment report (Kelleher Nightingale Consulting, 2019) states that Aboriginal stakeholders expressed the cultural importance and significance of the vegetated hind dune landscape around the study area. Importantly, the report states that no specific Aboriginal cultural values were identified within the study area.

Noting the absence of concerns expressed by the Worimi LALC or other Aboriginal persons during the scoping and EIS preparation phases, the SIA determined a **low social risk rating** was applicable to the heritage aspect of the project, at each of its life-cycle stages. The risk is sufficiently low to be immaterial and not requiring the implementation of a mitigation measure.

6.7 Personal and property rights

Two social matters related to the 'Personal and property rights' social impact category qualified for analysis for the SIA. They are 1) Economic (natural resource use) and 2) Economic (Livelihood). To investigate these two and other potential economic impacts of the Project for the EIS, Gillespie Economics (2019) conducted the *Stockton Sand Quarry Dredging Economic Assessment*. Subsequently, the scoping exercise determined that desktop research would be adequate to assess the above two social matters. Assessment results for each matter are provided below.

6.7.1 Economic (natural resource use)

There is a shortage of natural fine sand supply in the local and regional economy, and it is relevant to the SIA that the project will provide a partial remedy to this situation. Natural fine sand is an essential component to construction materials and consequently, to local and regional development projects. The project presents an opportunity to maintain supply at a cost-effective price.

Gillespie Economics (2019) make further comments about the benefit of the project in relation to its contribution to find sand supply. The assessment states that:

> "demand for sand is dependent on there being a demand for some other product, such as concrete, cement, asphalt and construction materials, which in turn is dependent on demand for construction. With the significant increase in approved infrastructure projects in Sydney and other parts of NSW, the leading suppliers of sand are under pressure to meet this increased demand" (p.7).
>
> "Sand is a high bulk-low cost commodity and hence it is preferable for it to be located close to markets to minimise transport costs. A shortage in the supply of construction sand for the Sydney market has been predicted for many years as access to local onshore sources of construction sand has become increasingly difficult through resource depletion eg Penrith Lakes, and increasing land use constraints surrounding potential alternative sources. In the short term, demand for construction sand can be met by increasing production from existing sources, including Stockton sand quarry" (p.7).
>
> "A CBA [cost benefit analysis] of the Project indicated that it would have net social benefits to Australia of $41M, and net social benefits to NSW of $17M. Hence the Project is desirable and justified from an economic efficiency perspective" (p.7).

According to the analysis above, it is predicted that the project will yield a positive impact from an Economic (natural resource use) perspective. This prediction is made on the basis that the level of interest, scale of benefit, equity in the distribution of the benefit, and likelihood of the benefit is forecast to be **high.**

6.7.2 Economic (livelihood)

An obvious positive impact of the project would be the extension of local employment for the five current quarry employees, and the employment of four additional staff. Interviews with Boral management confirmed the current quarry employees are locally-based. Although this workforce is not large, it must be recognised that the maintenance of employment for a single staff member would enable an income for the household unit of that employee. In this scenario, the number of people benefitting from the project would be larger than the nine individuals employed by the project. Employment for the Project workforce will ensure income for the associated families (or housemates as the case may be).

In a deeper analysis of this matter, Gillespie Economics (2019) found that:

> "The project will provide continued quarry employment for approximately five (four full-time and one casual) employees currently on-site and another four (two full time and two casual). The project is also estimated to provide continued transport employment for 17 people from the local area, plus employment for an additional nine people from the local area.
>
> Economic activity analysis, using IO analysis, estimated that quarry production at 750,000 tonnes per annum (tpa) relative to 500,000 tpa is estimated to make up to

the following incremental contribution to the regional economy: $5 M in annual direct and indirect regional output or business turnover, $3 M in annual direct and indirect regional value added, $1 M in annual direct and indirect household income, and nine direct and indirect jobs" (p.3).

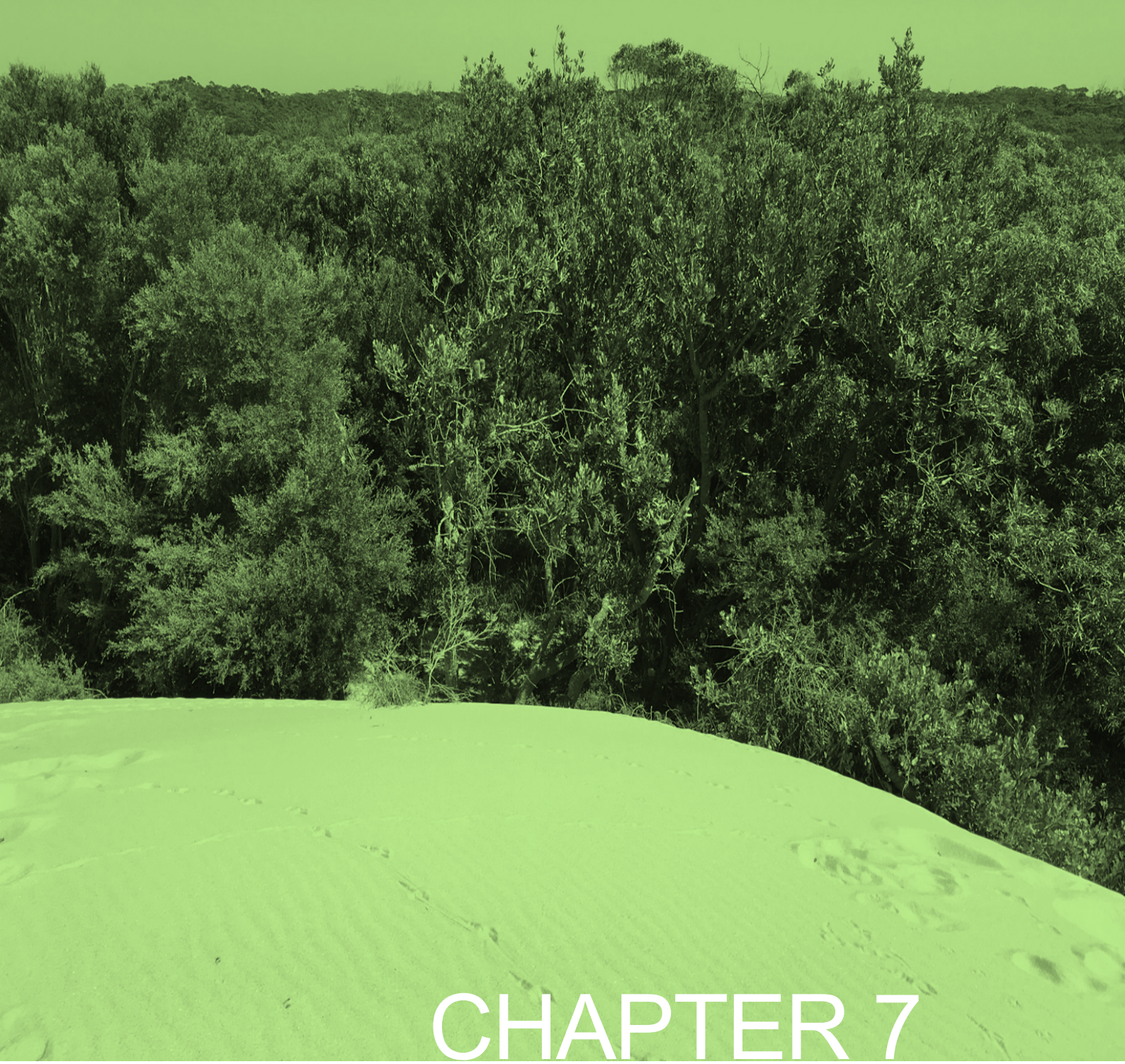
Considering the information obtained for this aspect of the SIA, a positive 'Economic (Livelihood)' social impact for the local population is predicted. The level of interest, scale of benefit, equity in the distribution of the benefit, and likelihood of the benefit is forecast to be **moderate**.

6.8 Decision-making systems

'Decision-making systems' is the social impact category that relates to the influence that individuals have on decisions that affect their lives, and access to complaint, remedy and grievance mechanisms. This category did not emerge in the scoping exercise as one that was potentially affected by the project, or one that required attention in the SIA. It was subsequently disqualified from the SIA for the reasons outlined in the summary in Section 4.1.2.

6.9 Fears and aspirations

According to the Guideline, the final social impact category assessed during the SIA was 'Fears and Aspirations'. The category relates to one or more of the social impact categories discussed previously, or fears about the future of the communities surrounding the project. As per the other social impact categories, 'Fears and Aspirations' of the community was a focus of the scoping exercise, but it did not emerge as a category likely to be influenced by the project. It was treated the same way as other social impact categories deemed to be irrelevant and was disqualified from the SIA. Again, the rationale for its disqualification is provided in Section 4.1.2.



CHAPTER 7

CONCLUSION AND RECOMMENDATIONS

7 SIA CONCLUSION AND RECOMMENDATIONS

This chapter presents the conclusion and recommendations of the SIA. The conclusion identifies the predicted positive social impacts, and only those negative social impacts of the project deemed in the previous chapter to be material. Where material negative impacts are forecast, there are measures available to mitigate them which would improve the social risk ratings allocated in the impact assessment chapter. These measures are identified in the recommendations section below.

7.1 Conclusion

This SIA report outlines the process implemented to identify, predict, evaluate, and develop responses to the social impacts of the project. The report exists as a specialist study developed to support the overall EIS and SSD application.

Boral owns and operates the quarry, a long-standing operation that currently extracts sand from the windblown (transgressive) sand dunes of Stockton Bight, and transports up to 500,000 tonnes of sand product per year for use in the building, landscaping and construction markets. Due to current and predicted future demand for sand in the local Hunter and Sydney regions, Boral is seeking approval for continued and expanded operations at the site through a SSD application. The project involves the extraction of sand from the inland vegetated dunes by front-end loader/excavator in Stage 1 and subsequent dredging. The project would seek to permit a site wide increase on the dispatch limit to 750,000 tpa (ie the windblown sand extraction area and the project operations combined) up until 2028, after which the site wide limit would reduce to no more than 500,000 tpa. The project would be for a period of up to 25 years.

The project's ASI encompasses the nearest communities to the quarry including properties in Fern Bay and Fullerton Cove, and a small portion of the sand dune system adjacent to the project site. Coxs Lane and Nelson Bay Road (from its intersection with Seaside Boulevard to its intersection with Cabbage Tree Road) are the prominent roads associated with the project. Although the project is located in the Port Stephens LGA, Newcastle is the major city nearby. As the regional centre of the Hunter, Newcastle has strong historic links to extractive industries. However, during the last two decades, the region has experienced structural economic changes, diversifying from its traditional extractive industry base to other economies including defence, education and service industries. The Port of Newcastle, Newcastle Airport, and heavy rail links facilitate the transport of freight and passengers across this region of coastal and hinterland tourist destinations.

The social baseline for the project provides a socio-economic description of the Fern Bay and Stockton-Fullerton Cove populations in comparison to the NSW population. It is clear an older population resides in both Fern Bay and the Stockton – Fullerton Cove areas in comparison to broader NSW. In the study area, the average number of children per household, people per household, incomes, and motor vehicles per dwelling are smaller than the NSW averages. Across NSW there are more families (either couples or single parents) with children than in the geographies closest to the project. These statistics underscore the older demographic and relatively smaller number of dependent children in the local area. The Indigenous populations in the geographies nearest the project are not drastically different to the proportion of Indigenous people residing in NSW as a whole. The same cannot be said of a range of other socio-economic indicators however, including multi-culturalism (eg less Mandarin speaking individuals in the study area), employment (eg less people working), and income (less income).

A range of engagement and SIA methods were used to collect and analyse information to determine the potential for social impacts as a consequence of the project. Results of the SIA

analysis were considered according to the social impact categories defined in the Guideline. Of those categories, four were determined to be relevant to the project:

1. access to and use of infrastructure, services and facilities;
2. health and wellbeing;
3. surroundings; and
4. personal and property rights.

The project is predicted to yield limited positive and negative socio-economic impacts for the regional and local populations across these categories, as identified in Table 28. In terms of the predicted positive economic impacts associated with natural resource use, the project would likely have substantial effects (without any enhancement). Ensuring the supply of 'fine' sand will provide security to the building and construction industry both locally and regionally, and mitigate the potential shortage of an essential building product. Without enhancement, there are also positive impacts related to the economic livelihood of quarry employees. Although there are only a small number of employees associated with the project, employment benefits in the form of income will spread to other members of the respective households. Employment is weaker in the study area compared the NSW average, so small employment gains in the local area cannot be understated.

The predicted negative personal safety social impact is localised (ie at property). The other is both cumulative and perceptual in nature. Some mitigation measures are available to address these predicted negative project impacts. The measures are identified in the recommendations below.

Table 28 - Predicted positive and negative social impacts

Social impact type	Social impact category	Predicted social impact
Positive	Personal and property rights	Mitigation of a potential shortage of natural fine sand supply in the local and regional economy
		Employment benefits in the form of income for quarry employees and their households
Negative	Access to and use of infrastructure, services and facilities	Community perception of cumulative impacts to road quality caused by heavy vehicles, per the ECA results
	Health and wellbeing	Personal safety impact to members of the public that access site without authority

7.2 Recommendations

It is recommended that the measures nominated below are implemented to offset the predicted negative social impacts of the project.

7.2.1 Access to and use of infrastructure, services and facilities

An increase in the volume of heavy vehicles using local roads, and the perceived or actual negative influence of those vehicles on road pavement quality, are social risks identified by this SIA through the ECA only (as opposed to direct feedback during engagement activities). These social risks have been thoroughly considered and documented in this SIA, the EIS and associated technical studies. The EIS will be placed on public exhibition and all stakeholders will have the opportunity to view how these social risks have been assessed, and the proposed mitigation and management measures to address them. When the EIS is placed on public exhibition it is recommended that:

- Fullerton Cove residents are notified in writing about the availability of the EIS on exhibition, the increased truck volumes derived from the project, where these matters are addressed in the EIS, SIA and technical studies, how/where they can view the documentation, and an invitation to contact Boral to discuss any residual or additional concerns they may have; and
- Boral places a notice on the project webpage (and sends the web link to the notice via other media channels typically used throughout the SSD stakeholder engagement process) to notify stakeholders about the EIS exhibition process as outlined above.

In both of these EIS exhibition phase notification initiatives, Boral should refer to the increase in truck numbers proposed for roads used by project vehicles, and the high-level results of the road safety audit.

7.2.2 Health and wellbeing

The SIA concluded that potential personal safety risks remain in relation to unauthorised site access. Boral has taken all reasonable and necessary steps to ensure the security of the site and the safety of the public. Staff efforts and quarry features include security fencing and lockable gates, high visibility line and signage, CCTV, safe batter requirements, trespass procedures, and operating hours, yet a small number of people continue to access site without authority.

With other options exhausted, this SIA recommends that the initial request made to Google be repeated with the objective of removing the Stockton Bight beach route (via the quarry) from Google maps. Achieving that objective would potentially dissuade members of the public from attempting to access the quarry without authority.

7.2.3 Summary of negative impacts and recommended mitigation measures

The negative social impacts predicted for the project, their description, and recommendations outlined to address them are summarised in Table 29. Should the recommendations be implemented, lower social risk ratings would be achieved. Some low residual risks would remain. Of these risks, the risk to personal safety would be immaterial.

Table 29 - Summary of negative impacts and recommended mitigation measures

Social Impact Category	Impact Description			Impact without mitigation		Impact with mitigation		
	Impact	Timing	Affected parties	Impact characteristic	Social risk rating	Mitigation	Social risk rating	Residual risk description
Access to and use of infrastructure, services and facilities	Impact to condition of public roads	Operational	Road users (roads surrounding the project)	Cumulative (perceived or actual) risk of additional heavy vehicle traffic affecting road quality	Moderate	Written notification about the availability of the EIS on exhibition, including the dissemination of EIS information about project heavy vehicles	Low	Low
Health and wellbeing	Impact to personal safety	Operational	Unauthorised community members	Personal safety risk from unauthorised site access	Moderate	The initial request made to Google is repeated with the objective of removing the Stockton Bight beach route (via the quarry) from Google maps	Low (if Google maps is corrected)	Low and immaterial (if Google maps is corrected)

7.3 Management and monitoring framework

The mitigation measures summarised in Table 29 should be implemented as part of a broader management and monitoring framework for the quarry. A range of management plans will be developed or updated as part of the project operations, and those addressing safety issues will assist with the management of the negative project impacts identified in Table 29. The management plans may include the:

- environmental management strategy;
- air quality management plan; and
- safety management plan.

Aside from the various management plans, performance measures applicable to the management framework are listed in Table 30, along with the measure type defined in the DPIE assessment and mitigation framework (NSW Department of Planning and Environment, 2017). Community sentiment derived from stakeholder feedback exists as a performance measure and is additional to those listed in Table 30.

Table 30 – Performance measures

Social impact category	Objectives	Affected parties	Actions	Performance measures	Measure type
Access to and use of infrastructure, services and facilities	Counter cumulative and perceptual risk of increased heavy vehicle volumes	Road users (roads surrounding the project)	Written EIS exhibition notification to Fullerton Cove residents	Distribution of notifications to stakeholders during EIS exhibition	Prescriptive[6]
			Provision of notification via web link, to disseminate EIS information about Project heavy vehicles		
Health and wellbeing	Mitigate personal safety risks for people attempting to access the quarry without authority	Unauthorised community members	Repeat the initial request to Google with the objective of removing the Stockton Bight beach route (via the quarry) from Google maps	Google maps is correct	Prescriptive

7.4 Monitoring

A social impact monitoring framework would apply to all phases of the project life-cycle. Monitoring results would be disclosed via the submission of an annual environmental management report (the principal reporting mechanism for the project). The report would be prepared and submitted to DPIE in accordance with conditions of the new SSD approval and would include reporting on all key matters assessed in the EIS.

Table 31 outlines the social issues which will be monitored to ensure compliance and meet the social objectives. In accordance with the Guideline, the table outlines the:

- key social issues to be monitored;
- how and when monitoring data will be collected; and
- community participation.

Although not included in Table 31, the project complaints register is an additional data source that applies to each social issue and provides value to the monitoring framework. The register will continue to operate and provide data in relation to each social issue should a complaint be submitted.

[6] Actions that need to be taken or things that must not be done, for example, adopt a known best-practice technology, design or management approach to mitigate the impact.

Table 31 – Monitoring framework

Social impact category	Social issue	Data source	Data availability / frequency
Access to and use of infrastructure, services and facilities	Road user satisfaction	Council feedback	As available
		Feedback received via Boral corporate communications channels or quarry staff	
Health and wellbeing	Community safety	Quarry staff and CCTV	Constantly during business hours (weighbridge staff) and after hours (CCTV)

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APPENDIX A

Social impact categories from section 1.1. of the Guideline (NSW Department of Planning, Industry and Environment, 2017)

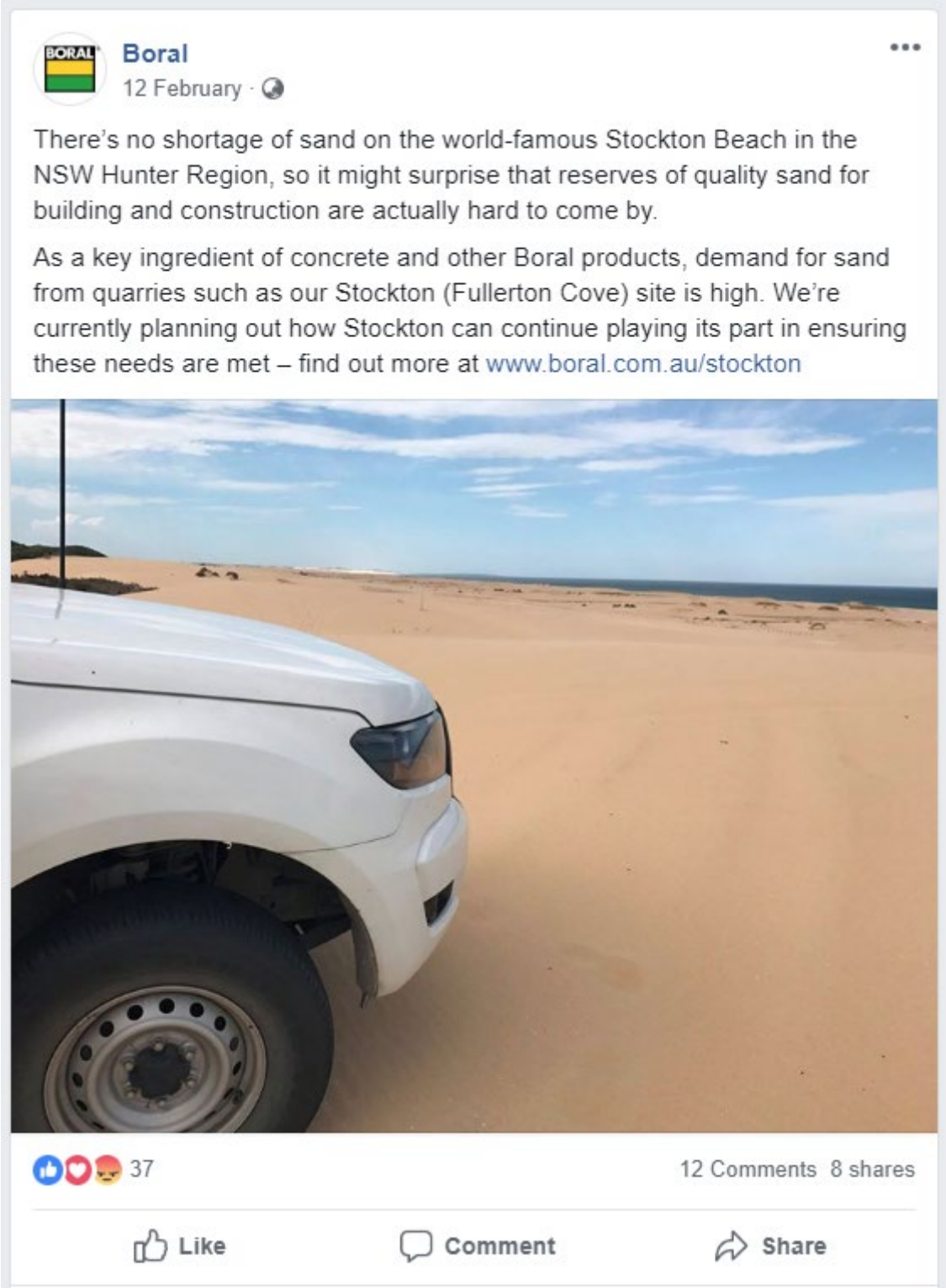
1.1 What are social impacts?

In the context of this guideline, a social impact is a consequence experienced by people[5] due to changes associated with a State significant resource project. As a guide[6], social impacts can involve changes to people's:

- **way of life**, including:
  - how people live, for example, how they get around, access to adequate housing
  - how people work, for example, access to adequate employment, working conditions and/or practices
  - how people play, for example, access to recreation activities
  - how people interact with one another on a daily basis
- **community**, including its composition, cohesion, character, how it functions and sense of place
- **access to and use of infrastructure, services and facilities**, whether provided by local, state, or federal governments, or by for-profit or not-for-profit organisations or volunteer groups
- **culture**, including shared beliefs, customs, values and stories, and connections to land, places, and buildings (including Aboriginal culture and connection to country)
- **health and wellbeing**, including physical and mental health[7]
- **surroundings**, including access to and use of ecosystem services[8], public safety and security, access to and use of the natural and built environment, and its aesthetic value and/or amenity[9]
- **personal and property rights**, including whether their economic livelihoods are affected, and whether they experience personal disadvantage or have their civil liberties affected
- **decision-making systems**, particularly the extent to which they can have a say in decisions that affect their lives, and have access to complaint, remedy and grievance mechanisms
- **fears and aspirations** related to one or a combination of the above, or about the future of their community.

APPENDIX B

Boral Facebook post



APPENDIX C

Community drop-in session summary

Residents question/comments (address: George Street, Fullerton Cove)	Boral project team response
What would be the proposed dredge depth - 1m?	No, 15m
So you complete the dredging and just walk away?	The site is proposed to be rehabilitated post-operation. Rehabilitation process was explained.
Rocla pit was not rehabilitated	Unlike the Rocla operation, the pit would definitely be rehabilitated. project conditions mandate rehabilitation
Where are the boundaries and what is the setback?	A map with boundaries was provided. It was explained that the buffer zone is 15m from the boundary in the windblown dune area
How close can Boral go to the boundary? You must put a batter down it?	The boundary was identified on the map and staff explained that the project would operate inside current boundary
What is the slope of the batters?	20 degrees, planted with native vegetation. It was explained that this environment would counter ripples from dredge operations
How long would the work be done for?	It is a 25-year plan
When will rehabilitation take place?	It would be done concurrently with the operations
How many trucks per day will be operating?	There would be no change to the current permission which allows 150 movements per day. There would be no trucks on local roads (note - this response was accurate at the time of the discussion)
Will the operations change the water table? We are concerned about the water (which we use for irrigation)	Current assessments don't show an impact to the water table
Is the project in the red (PFAS) zone?	No, the site is outside the published PFAS red zone
Will we be notified about the application and determination?	Yes, via letter box drop

APPENDIX D

Summary of consultation with residents via doorknock (August 2019)

Topics discussed	Conversation detail
Coxs Lane	
N/A - resident not at home	
Planning application	Resident asked about the duration of the planning approval being sought. project team advised that the approval would enable the operations to continue for another 25 years post the current consent.
Rehabilitation	Resident asked if there will there be an artificial lake post the dredge operations? project team advised that the site would be rehabilitated (note - this response was accurate at the time of the discussion).
Positive feedback	Resident stated that Boral is a good corporate neighbour.
N/A - resident not at home	
Local employment	Continued operations at the quarry will be positive for local employment. Resident has no issues or concerns about the quarry.
Heavy vehicle on Coxs Lane	Resident observed heavy vehicles using Coxs Lane last week. Up to four heavy vehicles were observed on one day. project team confirmed that the vehicles were working for the CQP quarry (21 Coxs Lane), and Boral had spoken to the quarry manager who in turn counselled the drivers responsible.
PFAS	The resident was curious about results from the PFAS monitoring program associated with the bore on the property adjacent to hers. The project team confirmed that Boral has been monitoring PFAS levels via the bore, and no PFAS had been detected from the samples.
Heavy vehicle on Coxs Lane	Resident observed heavy vehicles using Coxs Lane last week. project team confirmed that the vehicles were working for the CQP quarry (21 Coxs Lane), and Boral had spoken to the quarry manager who in turn counselled the drivers responsible.
Supply of product	Resident enquired about the purchase of sand for use on her property. project team explained product available and purchase process.
George Street	
N/A	Resident stated he had no problem with the quarry operations.
Positive feedback	Resident stated she had no problem with the quarry operations and suggested that the quarry was performing a positive role by preventing the westward movement of windblown sand, and therefore protecting private property.
N/A	Resident stated he had no problem with the quarry operations.
N/A - resident not at home	
N/A - resident not at home	
N/A - resident not at home	
Fullerton Cove Road	
N/A - resident not at home	
Local employment	Continued operations at the quarry will be positive for local employment. Resident has no issues or concerns about the quarry.
N/A	Local business requested an email with current quarry newsletter. project team actioned the request.
N/A	Resident was rushing to an appointment and was too busy to discuss the project.

APPENDIX E

Social risk matrix

			Consequence Level				
			1	2	3	4	5
			Minimal	Minor	Moderate	Major	Catastrophic
Likelihood Level	A	Almost certain	A1	A2	A3	A4	A5
	B	Likely	B1	B2	B3	B4	B5
	C	Possible	C1	C2	C3	C4	C5
	D	Unlikely	D1	D2	D3	D4	D5
	E	Rare	E1	E2	E3	E4	E5
Social Risk Rating							
	Low		Moderate		High		Extreme

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