



Social & Economic Impact Assessment

Maroota Friable Sandstone Extraction Project

JULY 2021 | 099278.10SEIA



Deerubbin LALC

DESIGN
COLLABORATIVE



Statement of Validity

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Declaration

I declare that this Social and Economic Impact Assessment component of the Environmental Impact Statement contains all information relevant to the Maroota Sands Project and that the information contained in this assessment is neither false nor misleading.

Signature:



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ABBREVIATIONS

SEIA	Social and Economic Impact Assessment
EIS	Environmental Impact Statement
DLALC	Deerubbin Local Aboriginal Land Council
SEARs	Secretaries Environmental Assessment Requirements
LGA	Local Government Area
CBA	Cost Benefit Analysis
LEA	Local Effects Analysis
SIMP	Social Impact Management Plan

1. Introduction & Executive Summary

Design Collaborative has been retained to prepare an Environmental Impact Statement (*EIS*) on behalf of the Deerubbin Local Aboriginal Land Council (*DLALC – the Applicant*) to accompany a State Significant Development Application (*the Application*). The Application seeks consent for a proposed friable sandstone extraction industry (*the Project*) located at Wiseman’s Ferry Road, Maroota (*the Project Site*).

Design Collaborative Pty Ltd has prepared this Social and Economic Impact Assessment (*SEIA*) to support the Environmental Impact Statement (*EIS*) and address the ‘social’ and ‘economic’ components of the Project’s Secretaries Environmental Assessment Requirements (*SEARs*). Those requirements are shown in **Table 1** below.

Table 1 – SEARs Social & Economic
Requirement
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 <i>Social impact assessment guideline for State significant mining, petroleum production and extractive industry development</i>, paying particular consideration to: • how the development might affect people’s way of life, community, access to and use of infrastructure, services and facilities, culture, health and wellbeing, surroundings, personal and property rights, decision-making systems, and fears and aspirations; • the principles in Section 1.3 of the guideline; • the review questions in Appendix D of the guideline; and • the recommendations made in Attachment 3.
A detailed assessment of the likely economic impacts of the development, paying particular attention to: • the significance of the resource; • the costs and benefits of the project; identifying whether the development as a whole would result in a net benefit to NSW, including consideration of fluctuation in commodity markets and exchange rates; and • the demand on local infrastructure and services.

The social component of the SEIA has been prepared in accordance with the *Social Impact Assessment guidelines for State significant mining, petroleum production and extractive industry development* (SIA Guidelines) dated September 2017. The draft *Social Impact Assessment Guidelines for State Significant Projects* released in October 2020 were also reviewed and applied where necessary.

The economic component of the SEIA has been prepared with consideration to:

- *The NSW Government Guidelines for the economic assessment of mining and coal seam gas proposal* dated December 2015,
- *Technical Notes supporting the Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposal* dated April 2018, and

1.1 Project Location

The Project is located within the State Suburb of Maroota. The figure below identifies the location of the Project within the State Suburb.

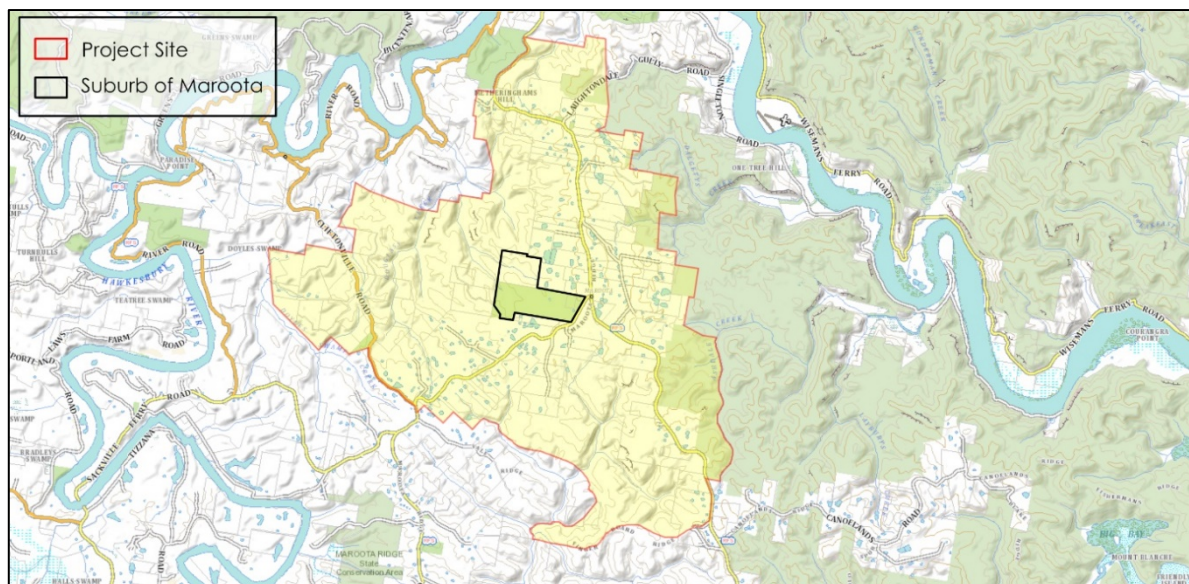


Figure 1: State Suburb of Maroota (Source: SIX Maps)

The Project is located within The Hills Shire Local Government Area (LGA) and The Project is located with the SA3 of Dural–Wisemans Ferry.

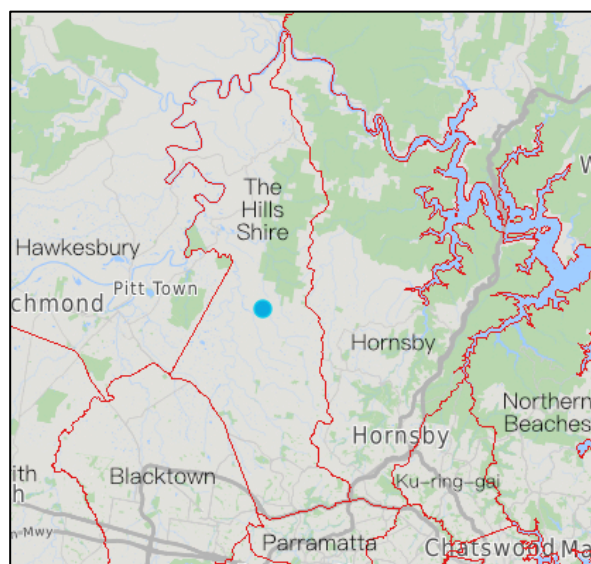


Figure 2: The Hills Shire Local Government Area (Source: MapData Services Pty Ltd, Australian Bureau of Statistics)

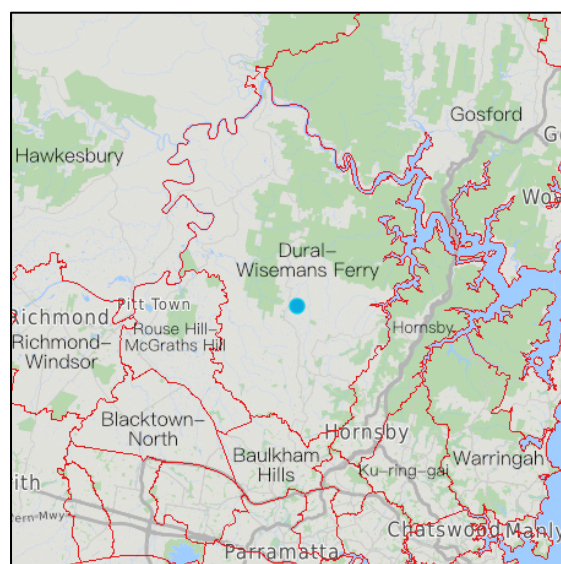


Figure 3: Maroota's location within Dural–Wisemans Ferry SA3 (Source: MapData Services Pty Ltd, Australian Bureau of Statistics)

1.2 Maroota's Demographics

Maroota is a small suburb with a population of 617 and a limited variety of businesses, and few community facilities. The Socio–Economic Indexes for Areas (SEIFA) derived from the Australian Bureau of Statistics

(ABS) rank Maroota and The Hills Shire amongst the more advantaged suburbs (top 40%) and the most advantaged (top 20%) Local Government Area (LGA) within NSW for social and economic status.

Maroota and the Hills Shire LGA's population characteristics are generally consistent with NSW State averages. However, there is a higher proportion of young residents under 15 and a lower proportion of residents identifying as Aboriginal and Torres Strait Islander in these areas.

Maroota has fewer residents that hold a degree or certificate qualifications compared to NSW averages and a lower proportion of the residents working as professionals (7.6%). 62.2% of the population are employed full time. The highest percentage of the population work as a manager (22.3%), Administrative Workers (12.7%) and Labourers (11%), Machinery Operators and Drivers (10.7%). 0% of the workforce travelled to work by public transport. Maroota has a lower unemployment rate than the NSW average, although the proportion of its earning less than \$650 in gross weekly income is also lower.

1.3 Social Impact Assessment Summary

The purpose of a Social Impact Assessment is to predict, analyse, manage and monitor the intended and unintended, negative and positive social impacts of a project. Social impact is a consequence experienced by people due to changes associated with a Project. It can involve their way of life, community, access to and use of infrastructure, services and facilities, culture, health and wellbeing, surroundings, personal and property rights, decision-making systems, and fears and aspirations. Social impacts can be experienced perceptually or physically and can impact individuals, social groups or the community in general.

The project's "*area of social influence*" refers to those stakeholders and communities who are potentially impacted by the project. The immediate vicinity, being occupiers and landowners within 1km of the Project site are most sensitive to potential amenity impacts such as noise, vibration and dust. The figure below identifies lots within 1km and 2km radius of the Project.

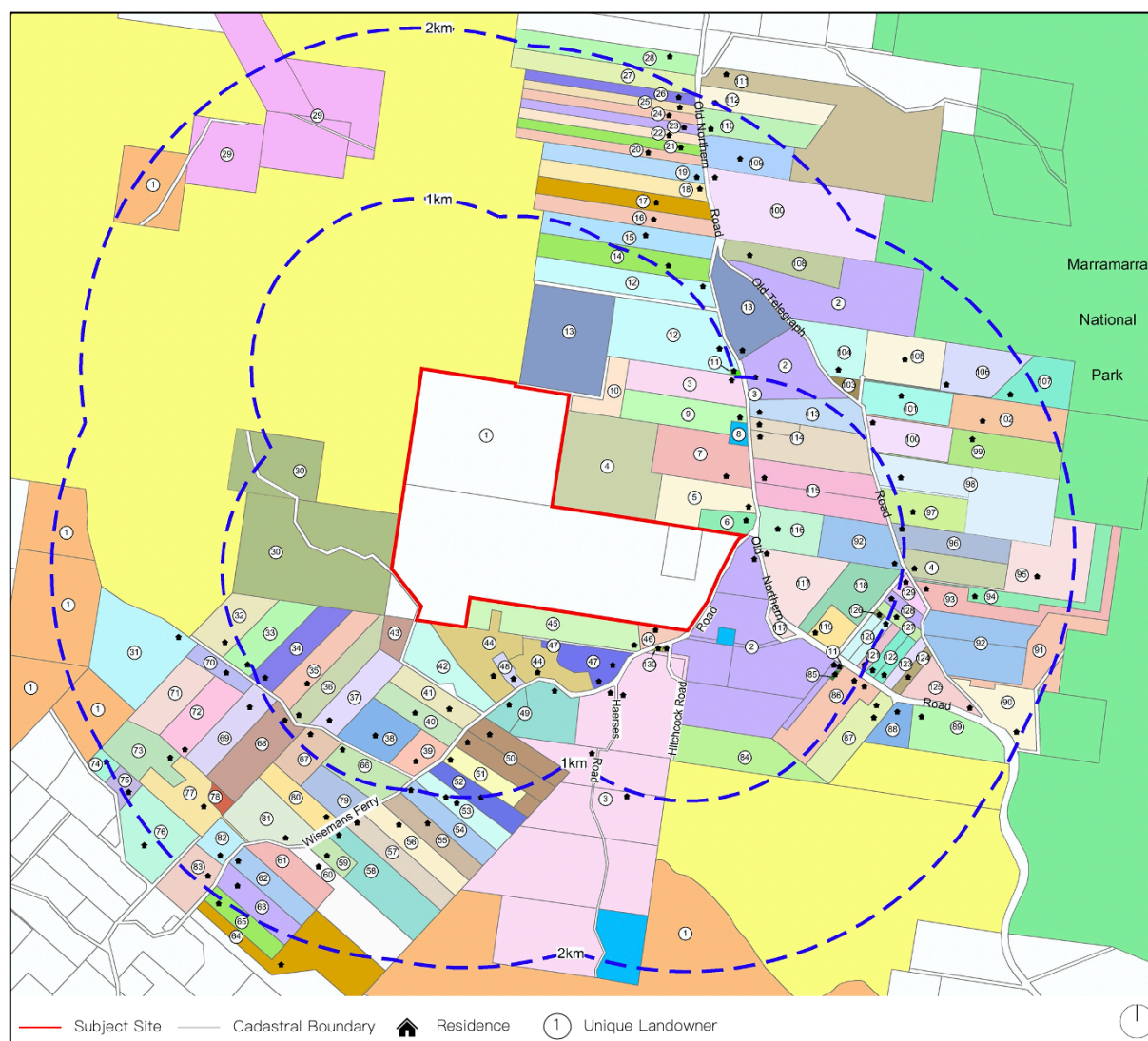


Figure 4: Immediate Vicinity (Base Image, RW Corkery, 2017)

1.3.1 Risk of Social Impacts

Using the International Association for Impact Assessment's social risk matrix, the SEIA assessed the risk of social impacts associated with the Project before and after the implementation of mitigation measures. These findings are presented in the table below.

Table 2 — Social & Economic Impact Assessment Summary

Matter	Potential Social Impact	Theme	Receptors impacted	Duration	Severity	Sensitivity	Likelihood	Consequence	Social Risk w/o mitigation	Social Risk w/ mitigation
Amenity	Dust impacts disrupting surrounding residents' way of life.	- Way of life - Health & wellbeing - Fears and aspirations	Surrounding Residents	Project construction and operation	Low	High	Rare	Moderate	Low	Low
	Change to the visual character of the Project Site and surrounds.	- Way of life - Community - Surroundings - Fears and aspirations	- Surrounding Residents - Tourists - Old Northern Road and Wisemans Ferry Road Drivers	Project construction, operation and rehabilitation	Low	Moderate	Possible	Minor	Moderate	Low
	Noise impacts from the Project's operations disrupting surrounding residents' way of life.	- Way of life - Fears and aspirations - Health and Wellbeing	Surrounding Residents	Project construction and operation	Moderate	High	Possible	Moderate	High	Moderate
	Noise impacts from truck movements disrupting surrounding residents' way of life.	- Way of life - Fears and aspirations - Health and Wellbeing	- Surrounding Residents - Haul route residents	Project construction and operation	Low	High	Unlikely	Minor	Low	Low
	Vibration impacts from the Project's operations disrupting surrounding residents' way of life.	- Way of life - Health & wellbeing	Surrounding residents	Project construction and operation	Low	High	Rare	Minor	NIL	NIL
	Increased waste from construction and daily operation	- Way of life - Health & wellbeing	N/A	Project construction, Operation	Moderate	Moderate	Almost Certain	High	Low	NIL
Heritage	Destruction of European heritage items	Culture	- Surrounding Residents - Broader Community - State of NSW	Project construction	Low	Moderate	Rare	Minor	Low	Low
	Destruction of Aboriginal cultural heritage items	Culture	- Surrounding Residents - Broader Community - State of NSW - Aboriginal Groups	Project construction	Moderate	High	Possible	Moderate	High	Low

Matter	Potential Social Impact	Theme	Receptors impacted	Duration	Severity	Sensitivity	Likelihood	Consequence	Social Risk w/o mitigation	Social Risk w/ mitigation
Community	Change to the established character of the Maroota locality.	- Way of life - Community - Culture - Surroundings	- Surrounding Residents - Broader Community	Project construction, operation and rehabilitation	Low	Moderate	Possible	Minor	Low	Low
	Lack of participation in the Project's design and decision making process	Decision-making systems	- Surrounding Residents - Broader Community - Other Stakeholders	Project assessment and operation	Low	High	Unlikely	Moderate	Low	Low
Health & Safety	Public safety issues associated with increased truck movements Wisemans Ferry Road and Old Northern Road	- Access to and use of infrastructure - Health & wellbeing	- Surrounding Residents - Broader Community - Haul route users	Project construction, operation and rehabilitation	Moderate	Moderate	Possible	Moderate	Moderate	Low
Economic	Access to employment that complements the skillsets of the Maroota community.	- Way of life - Community - Fears and aspirations	- Surrounding Residents - Broader Community		–	–	Almost Certain	–	High Positive Social Impact	High Positive Social Impact
	On-going training and certification for the Maroota workforce	- Way of life - Fears and aspirations	- Surrounding Residents - Broader Community		–	–	Likely	–	Moderate Positive Social Impact	High Positive Social Impact
Biodiversity	Removal of bushland and disturbance of flora and fauna	Surrounding	Surrounding Residents, Broader Community, State of NSW	Project Construction	High	High	Almost Certain	High	High	Moderate
	Establishment of a 309ha Biodiversity Stewardship Site	Surroundings	- Surrounding Residents - Broader Community - State of NSW	In perpetuity	–	–	Almost Certain	–	High Positive Social Impact	High Positive Social Impact
Land	Impacts to the land capability of surrounding land	- Way of life - Surroundings - Personal and property rights	Surrounding Residents	Project construction, operation and rehabilitation	Low	High	Rare	Moderate	Moderate	Low
Water	Reduction in groundwater and surface water available for surrounding users	Personal and property rights	Surrounding Residents	Project operations	Low	Moderate	Unlikely	Minor	Moderate	Low

The highest risk for adverse social impact lies in operational noise and biodiversity impacts.

A real-time noise monitoring network will be installed and maintained for the Project's duration to mitigate adverse impacts from operational noise. The noise monitoring network includes data from the meteorological monitoring station to detect noise-enhancing weather conditions to ensure operations are adjusted as necessary. If the relevant noise criteria is exceeded, compliance reports will be required to be submitted to the relevant environmental authorities and additional noise mitigation measures.

A website will be established to provide public information and contact details for the Project's duration, including meeting minutes of the community consultation committee to ensure that the community concerns are addressed. In addition, a 24-hour complaints hotline will be established to ensure that community complaints are addressed, and corrective actions are implemented as necessary.

As a sand quarry, it is unavoidable that approximately 50ha of bushland will be removed with resultant disturbance to flora and fauna. DLALC will establish a 309ha Biodiversity Stewardship Site to generate sufficient offset credits to compensate for the loss of bushland. A Biodiversity Management Plan will also be prepared to guide the management of the Project Site during the Project's life. A 50 metre native bushland corridor will also be rehabilitated along the northwest boundary of the extraction area. With the proposed mitigation measures implemented, the risk for biodiversity impacts will be reduced to moderate.

1.2.2 Positive Social Impacts

Revenue Stream to Enable Housing, Employment, Health, Education, Land Management and Cultural Programs and Projects

When considering the Project's social impacts, it is essential to note that DLALC, as an Aboriginal Land Council, is required to reinvest any profit to fulfil its mission and functions. That mission is to strengthen the confidence and self-reliance of Aboriginal people and families and to provide them with greater opportunities. The organisation's functions include acquiring and managing land and providing community benefit schemes, including community housing, employment assistance, education and training, scholarships, cultural activities, funeral funds, child-care, and aged care services.

DLALC has been actively working towards using its landholdings to realise their mission and functions by evolving and operating according to their Community Land and Business (CL&B) Plan, which outlines their legal obligations, objectives, and strategies. The CL&B business identifies the development of a sand extractive industry at the Project Site as a priority project due to the presence of a State significant sandstone deposit which presents an unparalleled opportunity for a revenue stream to fund DLALC's programs and projects (see **Figure 1**). These include, but not limited to:

- The adaptive re-use and repair of the historic Parramatta Gaol as a community facility.
- Developing a scholarship fund to support primary, secondary, and tertiary Aboriginal students.
- The employment of an Education and Employment Co-Ordinator to support DLALC's education and employment objectives.

- Social and affordable housing developments in Western Sydney.
- A depot at Cranebrook to support DLALC's land management operations.
- High intensity agri-businesses.
- Bio-certified lands managed by DLALC.
- A new Sydney cemetery in partnership with Rookwood for Western Sydney.

Each of these projects represents additional long-term employment opportunities and economic activity for the NSW State as it recovers from economic impacts of Covid-19. Therefore, the Project's positive social impacts include both its immediate and direct benefits as well as the longer-term indirect economic, social and environmental benefits provided by the projects and programs that it will enable.

Post-Covid 19 and Long-Term Employment

The Project will provide 8 full-time and 4 part-time jobs associated with the extractive industry's operation, construction jobs, 'flow-on' jobs and environmental management jobs. Importantly, these jobs build upon the established mining and extractive industry skillset within the Hills Shire economy.

Protection, Management and Enhancement of 309ha of High-Quality Biodiversity Lands

The Proponent proposes to offset 309ha of 'like-for-like' high-quality biodiversity lands in a Biodiversity Stewardship Agreement to account for the Project's unavoidable biodiversity impacts. These lands will be protected, managed and enhanced for the benefit of future generations. Notably, the Proponent currently possesses the landholdings required for this offset. The management of these lands represents additional employment opportunities.

Rehabilitation of the Project Site

The Project incorporates a progressive rehabilitation plan. The proposed final land use will be a combination of native bushland and improved pasture for a post-mining grazing enterprise. This final land-use complements the vision of the Hills Shire Council and *Sydney Regional Environmental Plan No.9 – Extractive Industry* that rehabilitated extractive industry sites at Maroota be used as productive agricultural lands. Like extractive industries, agricultural lands are compatible with the established character, landscape and natural quality of the Maroota locality. Furthermore, the proposed final land use will continue to provide employment opportunities at the Project Site.

Ongoing Training and Certification

The Proponent is committed to leveraging and further developing this established strength of the Hills Shire economy by providing ongoing training and certification for their employees. The development of a further quarry is particularly important as it will provide employment opportunities with other extractive industries in the region near the end of their operations.

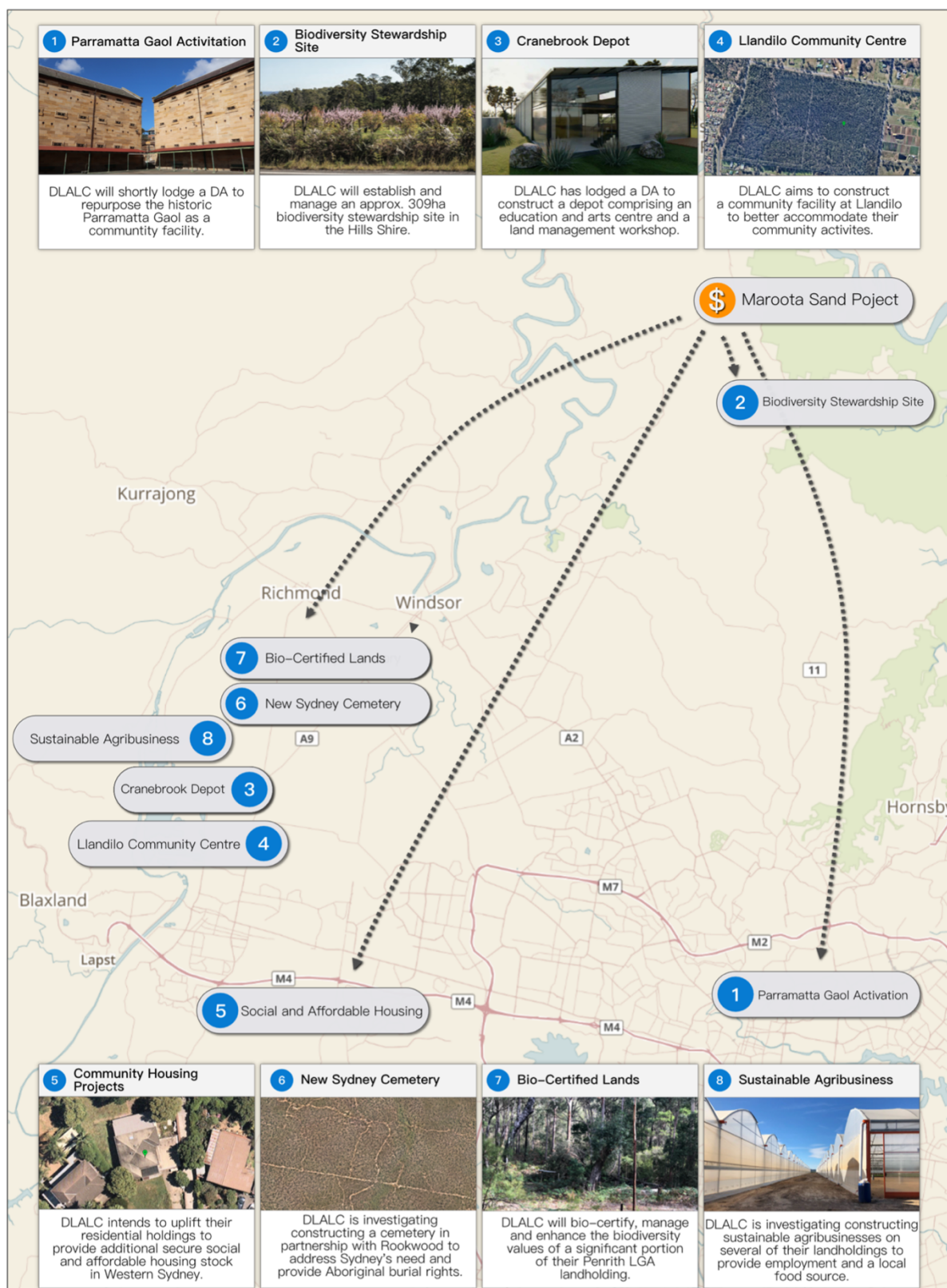


Figure 5: Projects & Programs Enabled by the Project (Source: Maphub 2021; Nearmap 2021; SLR Consulting 2020)

1.3 Economic Impact Assessment Summary

The economic component of the SEIA considered the significance of the resource that the Project seeks to extract and performed a Cost Benefit Analysis to determine the Project's net benefit to the NSW community. The findings of the economic assessment is presented below.

Overall Net-Benefit to the NSW Community

The Cost Benefit Analyses found that the Project's benefits, including economic benefits to NSW workers, and Net Producers Surplus attributable to NSW, equates to \$30.41m in present day value with a 7% discount rate. Meanwhile, the Project's costs, including environment, social and transport-related costs, equates to \$11.12m in present day value. Overall, the Project is expected to result in a net benefit of \$19.29m for the NSW Community. The sensitivity analysis presented in Section 7.2.4 confirms that Project will continue to provide a net benefit to the NSW community, despite commodity fluctuations.

Table 3 — Net Benefit of the Project to the NSW Community		
Benefits	Cost	Net Present Value
\$30.41m	\$11.12m	\$19.29m

Regionally Significant Resource that is Positioned to Reduce the Cost of Private and State Infrastructure Projects

Sydney Regional Environmental Plan No 9 — Extractive Industry (No 2 — 1995) identifies the resource that the Project seeks to extract as regionally significant. As construction sand is a high-bulk low-unit cost commodity that is highly sensitive to transport costs, the Project is strategically located to provide cost-efficient locally supplied construction sand to the Sydney construction market.

The NSW Offshore Sand Review 2016 notes that Sydney region consumed approximately 7 million tonnes of construction sand in 2016, of which 1 million tonnes was imported from outside Greater Sydney.

This figure is anticipated to grow given the significant infrastructure projects laid out in the State's Infrastructure Strategy and imminent closure of one of Sydney's most significant sources of construction sand at Kurnell Peninsula.

The Penrith Lakes Quarry, one of the largest sand quarries in Sydney, closed in September 2020 after being in use for more than 130 years, extracting over 160 million tonnes of aggregate that supplied 80% of the sand and gravel used in the Sydney construction industry.

As an example of efficiencies of proximity and scale, the anticipated transport costs from Maroota are approximately \$14 per tonne compared with \$28 per tonne from Stockton (**Figure 2**).¹

Sand is a high bulk-low unit cost commodity. This type of commodity is best sourced close to the market as it would significantly reduce transportation cost. Stockton is chosen as a comparison due to its current

¹ NSW Government Department of Trade and Investment, (2016), *NSW Offshore Sand Review*, NSW Government, pg. 5.

supply of approximately 500,000 tonnes of sand to the Sydney market and its distance being 180km from Sydney CBD.

With the Project potentially meeting half of the 1 million tonnes of construction sand presently delivered from outside the Greater Sydney Region, that is a potential saving of \$7m per year – some \$190m across the Project's life. Thus, the subject resource is significant to the NSW community.

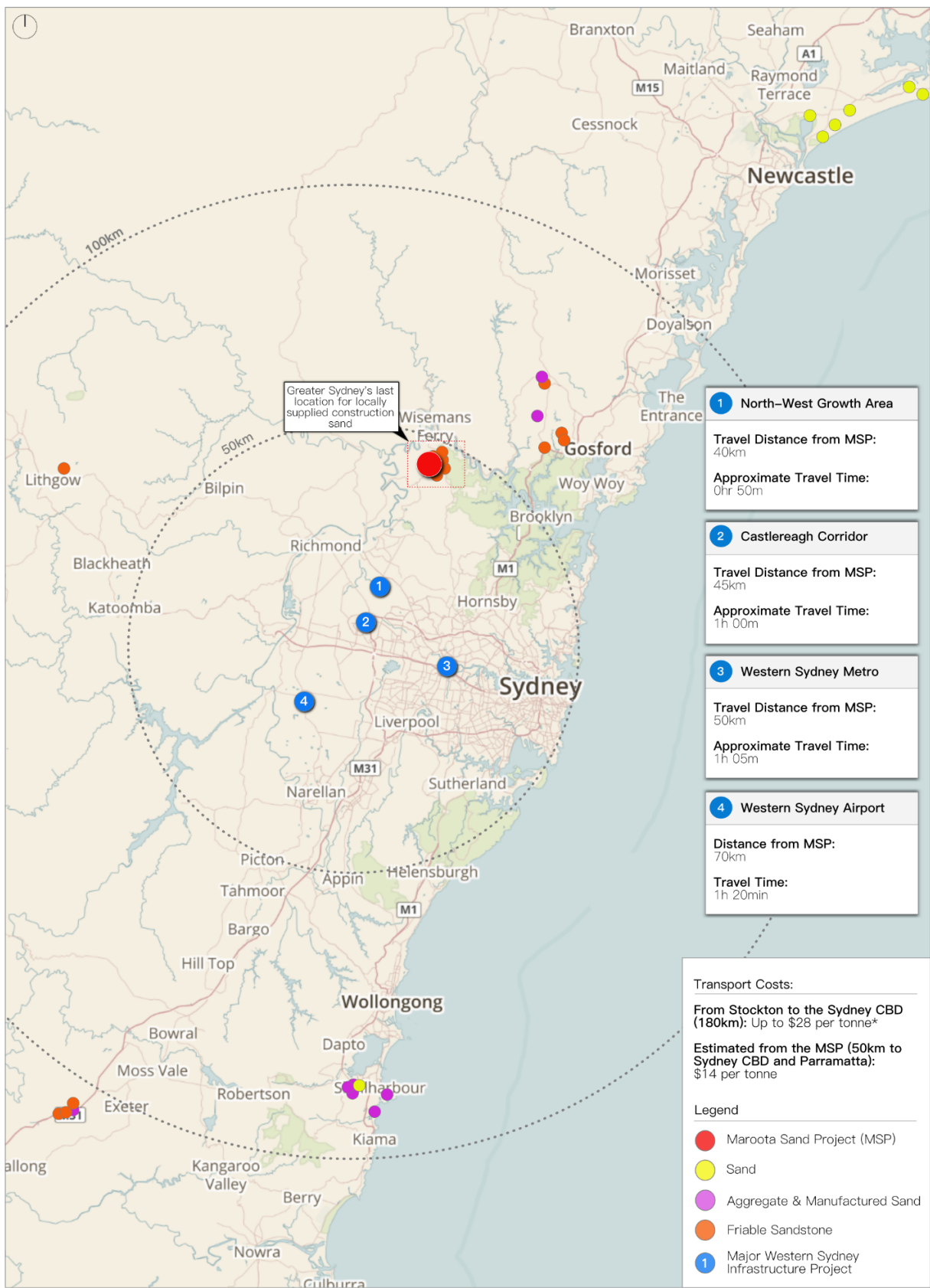


Figure 6: Proximity of the Project to Western Sydney Infrastructure Projects Compared to Sydney's Other Sources of Construction Sand (Source: Maphub, 2021) (*Information Source: NSW Governments Offshore Sand Review)

Enhancement of the NSW Government Aboriginal Procurement Policy

The NSW Government Aboriginal Procurement Policy seeks to increase Aboriginal skills and economic participation in the development of NSW. The Policy seeks to achieve this by leveraging the NSW Government's procurement capacity to support Aboriginal employment opportunities and the growth of Aboriginal-owned businesses.

The Policy aims to award 3% of total domestic contracts for goods and services issued by NSW Government agencies to Aboriginal-owned business by 2021.² In 2019, the percentage of government contracts awarded to Aboriginal-owned business fell from 0.44% the previous year to 0.43%. This represents a significant shortfall of 86%.³ The Project can help address this shortfall by providing an Aboriginal-owned source of construction sand that can be procured as part of the NSW Government's planned \$107.1 billion worth of State infrastructure projects to 2022–23.⁴

Despite improvements in the recent years, Indigenous Australians is known to experience disadvantage. They have a lower life expectancy than non-indigenous Australians and are more likely to experience unemployment, homelessness, violence and imprisonment.⁵

In June 2021 the NSW Government announced that \$350 million will be funded to vital Aboriginal programs to support the most vulnerable people and families in NSW. The funding will be distributed across housing (\$259.6 million), roads (\$34.1 million) and various social programs.⁶

DLALC seeks to strengthen the confidence and self-reliance of Aboriginal people and families, and to provide greater opportunity to Aboriginal people and families. With over 600 adult members in the organisation and their families residing in Western Sydney, the Project will serve as a significant economic pipeline from Maroota for project funding and benefits.

All profit generated from the Maroota Project will fund various DLALC programmes to provide Aboriginal people and families with better education, more employment opportunities, increase supply of affordable housing, and also develop a funeral program to ensure that members at all stages are taken care of.

The economic benefits of approving a non-profit organisation owned and operated Quarry Project is capable of taking a substantial amount off the welfare budget for Aboriginals. With the less privileged

² NSW Government, (2018), *Aboriginal Procurement Policy*, NSW Government, <https://buy.nsw.gov.au/policy-library/policies/aboriginal-procurement-policy>

³ NSW Treasury, (2019), *Aboriginal Procurement Policy & Aboriginal Participation in Construction Policy 2019 Review*, NSW Government, https://buy.nsw.gov.au/_data/assets/pdf_file/0006/607821/app_apic_policy_2019_review_accessible_pdf_1.pdf

⁴ NSW Treasury, (2021), *NSW Budget 2020–21: Building a Better NSW*, NSW Government <https://www.budget.nsw.gov.au/budget-detail/building-better-nsw>

⁵ AHMAC (Australian Health Ministers' Advisory Council) 2017. *Aboriginal and Torres Strait Islander Health Performance Framework 2017* report

⁶ Aboriginal Affairs NSW (2021), *Funding boost for vital Aboriginal programs, housing and infrastructure*, NSW Government, <https://www.aboriginalaffairs.nsw.gov.au/our-agency/news/funding-boost-for-vital-aboriginal-programs-housing-and-infrastructure/>

offered education and permanent training at different facilities owned by DLALC, they are given a better chance to learn, work and live, therefore improving their chances of overcoming poverty in the long run.

1.4 SEIA Structure

This SEIA is structured under the following headings.

1. Executive Summary

Introduction and an overview of the findings of the SEIA

2. Project Description

Overview of the proposed project.

3. Assessment Methodology

Outlines the definition of social and economic impact, and the assessment methodology used for the SEIA.

4. Social and Economic Baseline Study

Details the existing social environment, conditions and trends relevant to those social impacts assessed.

5. Community Engagement

Overview of perceived community and stakeholder concerns, arising through community consultation.

6. Assessment of Social Impacts

Description, analysis and evaluation of potential social impacts and mitigation measures

7. Assessment of Economic Impacts

Description, analysis and evaluation of potential economic impacts and mitigation measures

8. Management Measures & Monitoring

Management measures and a monitoring framework designed to mitigate negative social impacts and enhance positive social impacts.

9. Conclusion

Conclusions of the SEIA.

2. Project Description

2.1 Project Site

The Subject Site comprises three parcels of land described as:

- Lot 7005 DP 1055724;
- Lot 202 DP 752025; and
- Lot 213 DP 752025

The Project Site is predominantly undeveloped with dense vegetation consisting of forest, woodland and heathlands covering the majority of the site. Improvements are limited to a number of fire trails that traverse the site; an access road that bisects Lot 7005 DP1055724 known as 'Patricia Fay Drive' that connects Wiseman's Ferry Road to an adjoining sand operation to the north and a powerline and slurry pipeline that run alongside Patricia Fay Drive.

The Project Site and surrounds comprise a range of landscape types and visual catchments defined by localised highpoints and ridgelines. The character of the local landscape is predominantly natural bushland and open to semi-open rural lands for pastoral and agricultural activities. Open undulating rural lands are typically located alongside Old Northern Road and Wisemans Ferry Road while bushland is visible in the middle and backgrounds. Extractive industries are scattered intermittently across the landscape. **Figure 3** provides an aerial photograph of the Project Site.

The Project Site is located in the south-west outskirts of the Maroota Township. Maroota is around 40kms to the north of the Parramatta CBD, 50kms to the north-west of the Sydney CBD and some 8kms to the south of Wisemans Ferry. Old Northern Road and Wisemans Ferry Road provide main road links from the Project Site to the Sydney metropolitan area. Both are classified roads under the control of RMS. Old Northern Road links Baulkham Hills to Wisemans Ferry via Castle Hill, Dural, Glenorie and Maroota and provides access to the Sydney Motorway system. Wisemans Ferry Road provides a strategic link to Windsor to the south-west and then Penrith to the south. **Figure 4** shows the location of the Project Site within its regional context.



Figure 7: Aerial Photograph of the Project Site (Source: Nearmap, 18 March 2020)



Figure 8: Regional Context (Source: Nearmap, March 2021)

2.2 Project Operations

The Project involves the development of an extractive industry to extract and process friable sandstone and sand deposits from an area of approximately 49ha to produce a range of construction sand products. DLALC envisages annual sales in the order of 500,000 tonnes per year. The Figure below shows the proposed layout of the extractive industry.

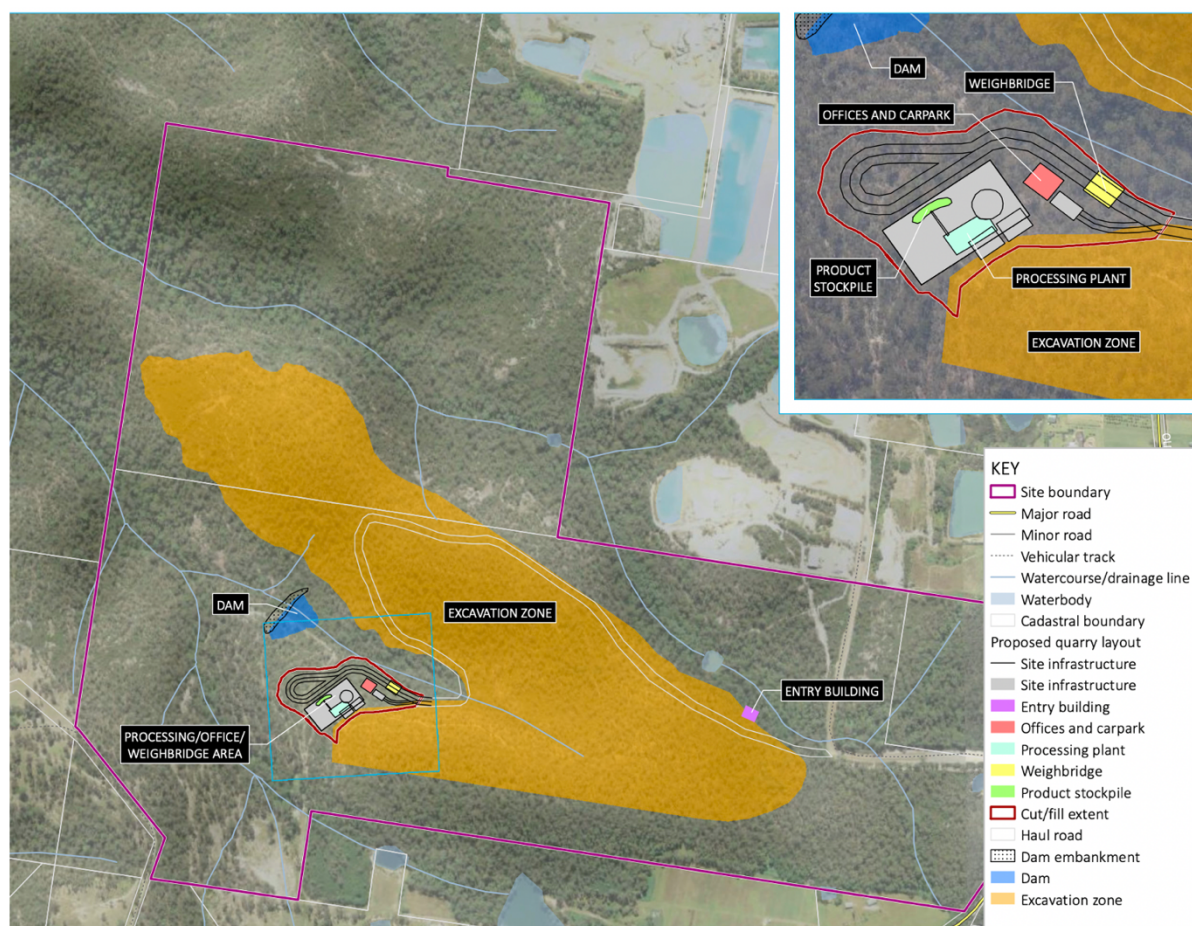


Figure 9: Proposed Layout Figure (Source: RPM Global & EMM 2020)

The Application seeks development consent under ‘Division 4.7 – Stage Significant Development’ of the *Environmental Planning and Assessment Act 1979 (the EP&A Act)* for the use of the Project Site as an *extractive industry*.⁷ The extracted material primarily comprises Hawkesbury Sandstone, shale and clays. Extracted material will be processed onsite, stockpiled and distributed by external contractors. The extracted material can be processed into a fine-medium graded sand with crushed sandstone, fine graded sand and a fine aggregate being produced as by-products.

⁷ An **extractive industry** is defined under the Standard Instrument as “the winning or removal of extractive materials (otherwise than from a mine) by methods such as excavating, dredging, tunnelling or quarrying, including the storing, stockpiling or processing extractive materials by methods such as recycling, washing, crushing, sawing or separating”, but does not include turf farming”. Extractive material means “sand, soil, gravel, rock or similar substances that are not minerals within the meaning of the Mining Act 1992”.

The following table provides an overview of the Project.

Table 4 — Project Description		
Key Element	Detail	
Proposed Land Use	<i>Extractive Industry</i>	
Extraction Method	Overburden Stripping & Raw Feed Extraction	
Resource	Hawkesbury Sandstone, shale and clay	
Processing Method	Processed into washed sand of various diameters including for use in concrete and road base, and other resource-based products as appropriate.	
Quarry Life	Approximately 28 years. Approval sought for 30 years.	
Groundwater Buffer	2m above the wet-weather groundwater levels	
Disturbance Area	43.89 extraction area 2.4ha site Infrastructure Area 0.31 ha access haul road (outside the extraction area) 0.2ha Surface water Dam Total: 47.2ha	
Annual Production	500,000 tonnes	
Total Resource Recovered	15,200 million tonnes of raw sandstone processed into 13,680 million tonnes of saleable product 160 tonnes of shale 370 tonnes of overburden	
Management of Waste	Tailings will be press dried and incorporated with the overburden to form the final landforms. Other waste will be segregated and removed by a licensed contractor.	
Plant & Equipment	- Relocatable sand processing plant - Weighbridge - Administration office and carpark - Water tank integrated within the production plant - Storage bins for dried tailings - Internal haul roads - Sales haul road - Electrical power supply - Potable water supply - Enviro-cycle sewage system - Machinery workshop and diesel storage tanks - Site fencing - Surface water dam - Groundwater bore	
Truck movements	120 truck movements Monday to Friday 60 truck movements Saturday	
Employment	1 full-time quarry manager 1 full-time and 1 part-time weighbridge & sales 1 full-time and 1 part-time excavator operator 2 full-time articulated truck drivers 2 full-time sales loaders 1 part-time water cart driver 1 full-time and 1 part-time sand plant operator 15–20 privately contracted truck drivers.	
Hours of Operation	- Sales — 6am to 6pm, Monday to Saturday - Quarry operations — 7am to 6pm, Monday to Saturday	

3. Social Impact Assessment Methodology

The purpose of a Social Impact Assessment is to predict, analyse, manage and monitor the intended and unintended, negative and positive social impacts of a project. The following section defines social impacts and outlines the methodology used for this SEIA.

The Social Impact Assessment Methodology used for the purposes of this assessment is informed by the IAIA *Social Impact Assessment Guidance*⁸ and the *SIA Guidelines*⁹. This methodology is presented in the below flow chart and discussed in following sections.

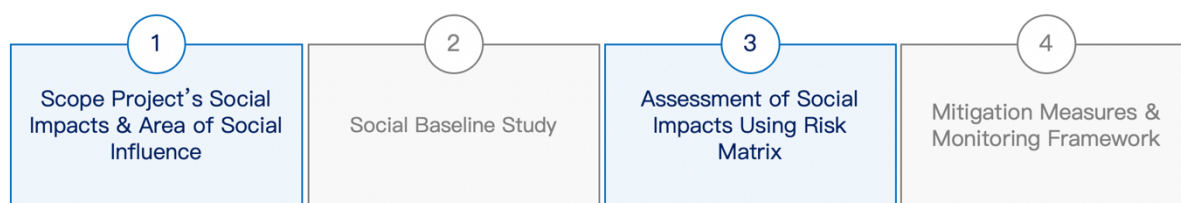


Figure 10: Social Impact Assessment Methodology

3.1 What are Social Impacts?

The International Association for Impact Assessment (IAIA) defines social impact as intended and unintended social consequences, both positive and negative, associated with a planned intervention that affects people either directly or indirectly.

Social impacts can be experienced either perceptually or physically and can impact individuals, families, social groups, workplaces and government agencies or the community more generally¹⁰. The *Social Impact Assessment guideline for State Significant Mining, Petroleum Production and Extraction Industries* (SIA Guidelines), outlines that social impacts can involve changes to people's way of life, including:

- *how 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;*

⁸ Vanclay, Esteves, Aucamp and Franks (2015) *Social Impact Assessment: Guidance for Assessing and managing the social impacts of Project*, International Association for Impact Assessment

⁹ NSW Planning, Industry & Environment (2017) *Social Impact Assessment guideline for State Significant Mining, Petroleum Production and Extraction Industries*, NSW Government

¹⁰ Vanclay, Esteves, Aucamp and Franks (2015) *Social Impact Assessment: Guidance for Assessing and managing the social impacts of Project*, International Association for Impact Assessment

- *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;*
- *surroundings, including access to and use of ecosystem services, public safety and security, access to and use of the natural and built environment, and its aesthetic value and/or amenity; and*
- *personal and property rights, including whether their economic livelihoods are affected, and whether they experience personal disadvantage or have their civil liberties affected.¹¹*

Social impacts are thus broadly defined and relate to community and individual perceptions. Community engagement is, therefore, an important component of the Social Impact Assessment process to understand these perceptions.

Cumulative impacts are the “*successive, incremental and combined impacts (both positive and negative) of activities on society, the economy and the environment*”. Of particular relevance to the Maroota Sand Project is the consideration of the cumulative social impacts of past, current and future activities relating to other sand quarries in the surrounding area.

3.2 Area of Social Influence

A project’s “*area of social influence*” refers to those stakeholders and communities who are potentially impacted by the project. As complex linkages and networks connect people, social impacts are rarely contained in a predefined geographical area.

The Maroota Sand Project’s area of social influence was identified during the scoping phase of the EIA process and grouped into the following categories:

3.2.1 Immediate Vicinity

This area comprises occupiers and landowners within 1km of the Project site. These community members are most sensitive to potential amenity impacts such as noise, vibration and dust. The figure below identifies lots within 1km and 2km radius of the Project.

¹¹ NSW Planning, Industry & Environment (2017) Social Impact Assessment guideline for State Significant Mining, Petroleum Production and Extraction Industries, NSW Government

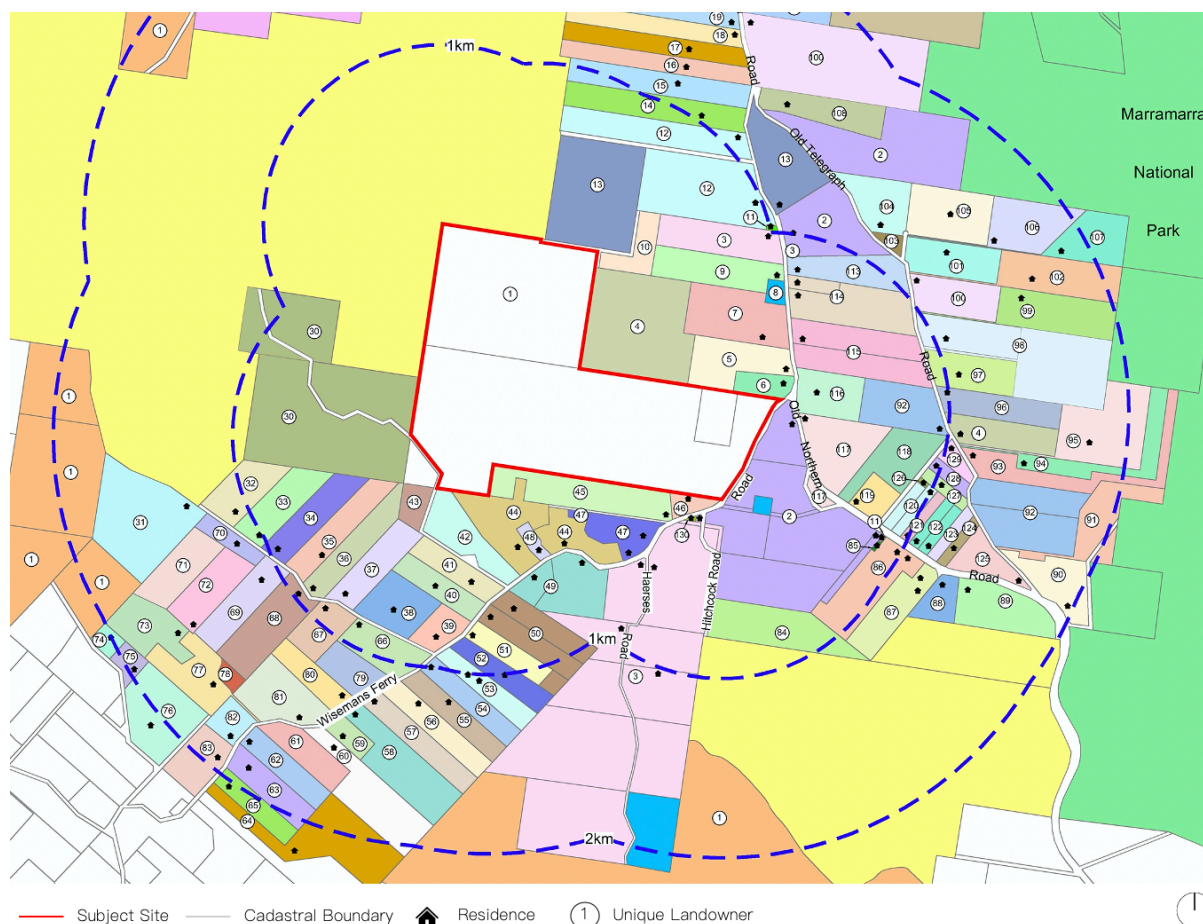


Figure 11: Immediate Vicinity (Base Image, RW Corkery, 2017)

3.2.2 Local Community – State Suburb of Maroota

The Project is located within the State Suburb of Maroota. The figure below identifies the location of the Project within the State Suburb.

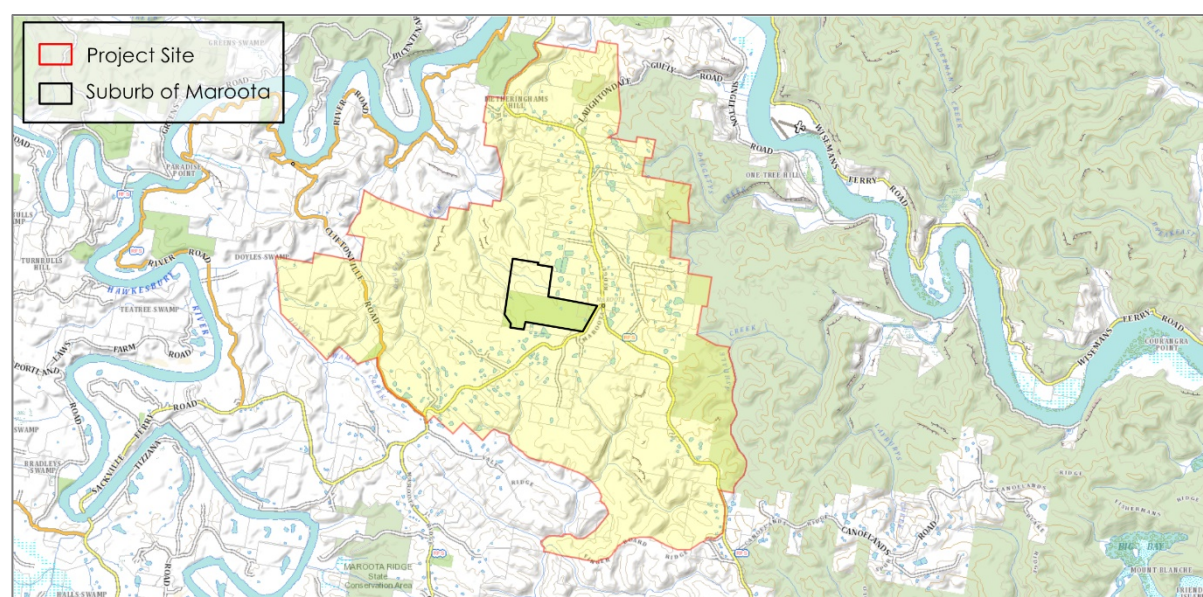


Figure 12: State Suburb of Maroota (Source: SIX Maps)

3.2.3 Broader Community – Hills Shire LGA

The Project is located within The Hills Shire Local Government Area (LGA). The figure below identifies the location of the Project within the LGA.

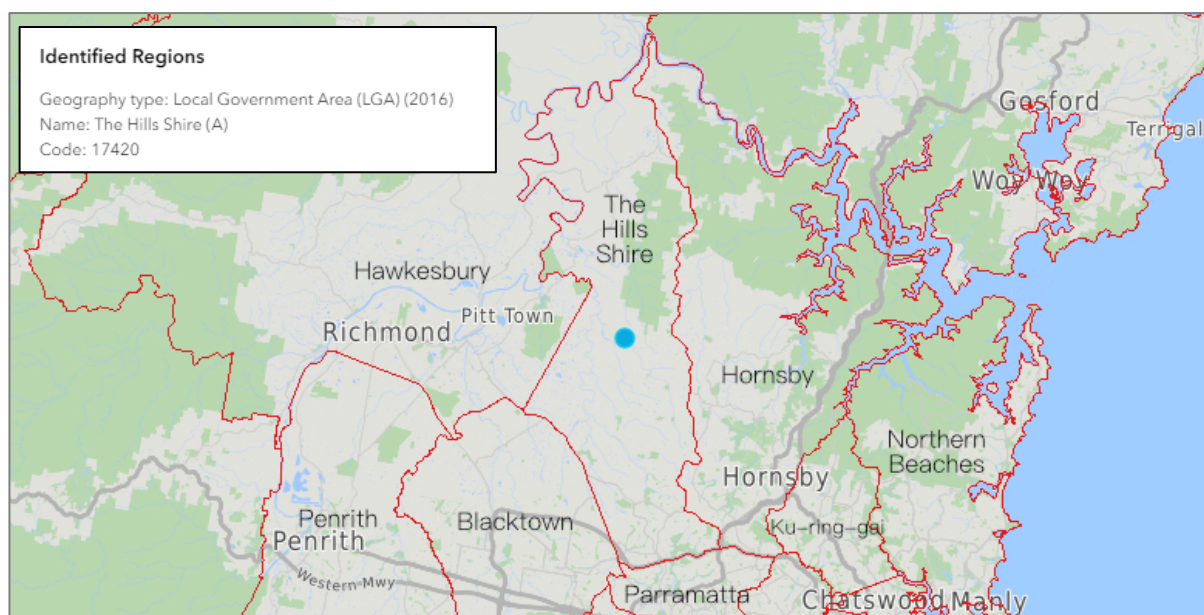


Figure 13: The Hills Shire Local Government Area (Source: MapData Services Pty Ltd, Australian Bureau of Statistics)

3.2.4 Locality – SA3

Under the NSW Guidelines, the locality is defined by the Statistical Area Level 3 (SA3) of the Project. Maroota is located within the SA3 of Dural–Wisemans Ferry which is across the Hills Shire LGA and Hornsby LGA.

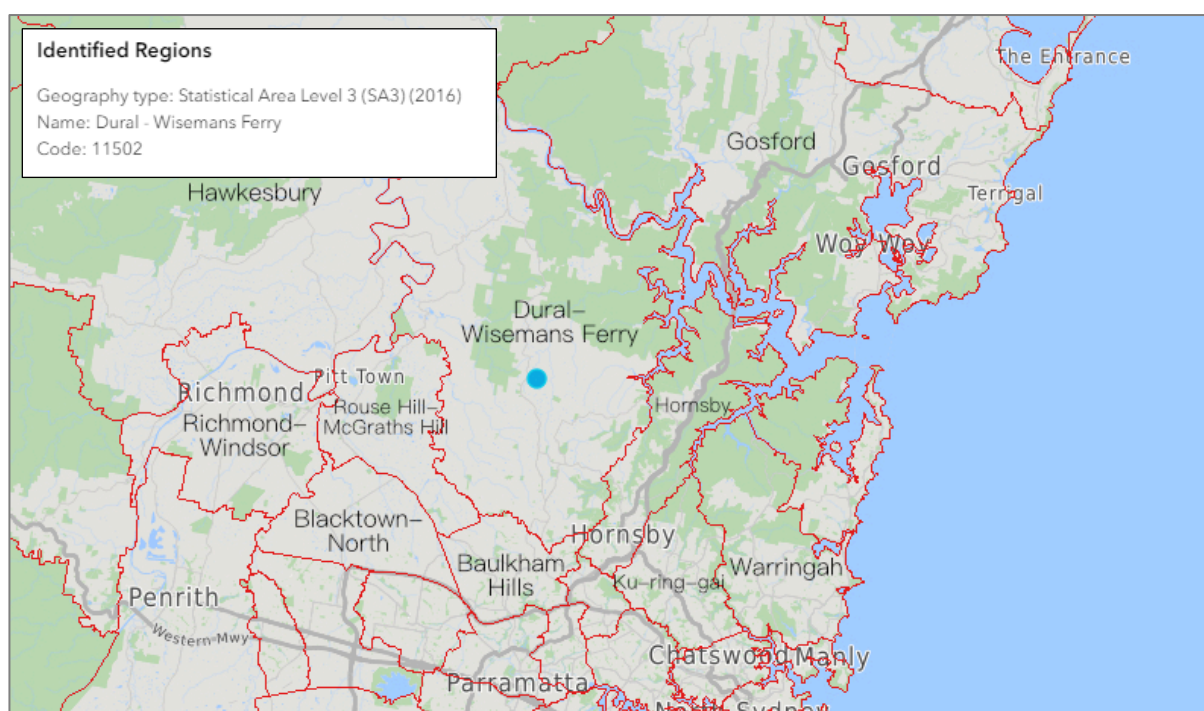


Figure 14: Maroota's location within Dural–Wisemans Ferry SA3 (Source: MapData Services Pty Ltd, Australian Bureau of Statistics)

3.2.5 Other Stakeholders & Community Members

Other stakeholders and community members are those who are potentially impacted by the Project, despite not being within close proximity of the Project Site. The stakeholders are listed in the following table:

Table 5 – Community Members and Stakeholders	
Government Stakeholders	Community Members and Stakeholders
• The Hills Shire Council • Hornsby Shire Council • Department of Planning, Environment and Industry (DPIE) and its relevant departments • NSW Office of Heritage and Environment • NSW Department of Primary Industries (NSW Forestry, Agriculture and Fisheries) • NSW Department of Industries (Water) • Greater Sydney Local Land Services • NSW Health • NSW Rural Fire Service • Transport for NSW • Water NSW • NSW Environmental Protection Agency • Roads and Maritime Services	• Sydney Hills Business Chamber • Hornsby Chamber of Commerce • Community and Environmental Groups • Maroota Public School • Commercial Competitors

3.3 Scoped Social Impacts

Potential positive and negative social and economic impacts associated with the Project were identified during the scoping and consultation phase of the EIA. Those social impacts are presented in the following table and form the basis of this SEIA:

Table 6 – Potential Social Impact and the Impacted Group			
Matter	Description of Impact	Group Potentially Impacted	Impact Raised
Amenity	Acoustic, visual, odour, vibration and dust impacts	Amenity impacts are most likely to be experienced by landholders within the Immediate vicinity, particularly those landholders that directly adjoin the Project site. Members of the broader community may also experience amenity impacts at a lower frequency and severity.	• Scoping • SEARs • EIS
Access	Reduction or elimination of landowner or occupiers' ability to access their property, whether that be public and privately owned.	Neighbours that adjoin the Project site are the most sensitive to access impacts.	N/A
Built Environment	Changes in the public domain, public infrastructure and other assets.	Impacts relating to changes in the public domain can potentially impact all stakeholders identified. Impacts relating to changes to public infrastructure can potentially affect infrastructure providers including the Roads and Maritime Services.	• SEARs
Heritage	Loss of natural, cultural, Aboriginal cultural and built heritage.	Those members of the community and stakeholders that value heritage items on the project site and in the surrounding area including, although not limited to: • Aboriginal groups; • Local and broader community; • NSW Office of Heritage and Environment	• SEARs
Community	Impacts that relate to community services, facilities, cohesion, capital and resilience	The local and broader community.	• Scoping • SEARs • EIS
Health & Safety	Health, safety and wellbeing	Those landowners within the immediate vicinity area are most sensitive to health and safety impacts.	• Scoping • SEARs • EIS
Economic	Use of the natural resource, being friable sandstone, livelihood and opportunity cost of the Project.	All stakeholders	N/A
Biodiversity	Loss of native flora and fauna	• The local and broader community	• SEARs

		- Community groups - Government Stakeholders	
Land	Reductions to land capability, stability and/or structure, soil chemistry and topography.	Land impacts are most likely to be experienced by landholders within the Immediate vicinity, particularly those landholders that directly adjoin the Project site.	SEARs
Water	Impacts to water quality and availability and hydrological flows	Water impacts are most likely to be experienced by landholders within the Immediate vicinity, particularly those landholders that directly adjoin the Project site.	SEARs

3.4 Assessment of Social Impacts

Relying on the Social Baseline Study and Scoping Phase, the SEIA predicts, describes and analyses the potential direct, indirect and cumulative social impacts resulting from the Maroota Sand Project. For each potential social impact, this SEIA identifies:

- Affected Receptors – community members or stakeholders affected by a particular social impact;
- Duration – the timeframe during which an impact occurs;
- Severity – scale or degree of change by a particular social impact; and
- Sensitivity – susceptibility or vulnerability of a receiver to a social impact.

Next, the SEIA analyses each social impact's risk using the International Association for Impact Assessment's social risk matrix (see Figure below). The matrix determines a social impact's risk based on the following considerations:

- The **likelihood** of a social impact based on:
 - The findings of the various technical reports; and
 - The social baseline study
- The **Consequence** of a social impact based on the duration, extent, severity and sensitivity of each impact:

Likelihood Level	Descriptor	Consequence Level				
		1	2	3	4	5
		Insignificant	Minor	Moderate	Major	Catastrophic
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

Figure 15: Social Risk Matrix Green — Low Risk; Yellow — Moderate Risk; Amber — High Risk ; Red — Extreme Risk

3.5 Mitigation & Monitoring Measures

The SEIA lists recommended mitigation measures gathered from the consultant reports. Based on the assessment, it is considered that the mitigation measures listed in the various reports are sufficient to mitigate potential adverse impact therefore no further recommendations are required.

The required level of mitigation was determined as follows based on the social risk rating of each social impact.

- Low — No or minimal mitigation required.
- Moderate — Operation management measures required.
- High — Project redesign required.
- Extreme — Project should not proceed.

Mitigation measures were informed by the recommendations of the various technical reports prepared for the Project. These measures are included in the Project's summary of mitigation and monitoring measures (**Annexure 5** of the EIS). The SEIA revaluated each potential social impact's risk with recommended mitigation measures included using the method described in Section 3.4 above.

4. Social Baseline Study

A social baseline study documents the existing social environment, conditions and trends that are relevant to the Project's potential social impacts and area of social influence. This SEIA relies on the following data sources to identify this information.

- Community consultation.
- Australian Bureau of Statistics 2016 Census Data.
- Australian Bureau of Statistics 2016 SEIFA (socio-economic indexes for areas) Data.
- NSW HealthStats Data.
- Government Strategic and Statutory documents.
- Published scientific literature.
- Documents relating to quarrying in the surrounding region.
- Other specialist reports that accompany the EIS for the Maroota Sand Project.

These data sources are used to formulate quantitative indicators and qualitative descriptors relevant to each potential social impact. These indicators provide a point of comparison against which the potential impacts of the Project might be measured.

4.1 Governance

Maroota is located in the Hawkesbury State electorate. Hon. Robyn Anne Preston, member of the Liberal party is the current representative for Hawkesbury, having been elected in 2019. At the Federal level Maroota falls under the Division of Berowra, represented by Hon. Julian Leeser, member for the Liberal government since his election in 2016.

The Project Site is located within the Hill Shire Council. 13 Councillors collate the Hills Shire LGA, including Mayor Dr Michelle Bryne.

4.2 Demographic Profile

The table below sets out pertinent characteristics of the State Suburb of Maroota and provides comparable data for the Hills Shire LGA, Dural–Wisemans Ferry SA3 and New South Wales in 2016.

Table 7 — Demographic Profile (Source: ABS 2016)				
Characteristic	Maroota – Suburb (%)	The Hills Shire – LGA (%)	Dural–Wisemans Ferry – SA3 (%)	New South Wales (%)
People	617	157,243	26,229	4,823,991
Median age	39	38	43	38
Average number of persons/ households	3	3.2	3.1	2.6
Percentage aged under 15	21.9	21.3	18.8	18.5
Percentage ATSI	1.8	0.5	0.8	2.9
Marital Status – Percentage of the population over 15				
Married	52.5	61.6	57.8	48.7
Separated	3.8	1.9	2.2	3.1
Divorced	9.0	5.2	6.4	8.4
Widowed	4.0	3.7	4.7	5.4
Never Married	30.8	27.6	28.9	34.4
Percentage of the population being educated:				
Attending an educational institution	31.3	32.3	31.4	31.1
Primary school	22.5	32.1	28.7	26.1
Secondary school	20.3	25.4	27	20.1
Tertiary or technical institution	8.6	23.1	20.1	22.4
Educational Attainment – percentage of the population over 15:				
University qualification	10	33.5	23.9	23.4
TAFE qualification (Diploma, Certificate Level III and IV)	32.8	23.2	27.7	23.7
Year 12	11.7	17.1	15.1	15.3
Year 10 or below	23	13.4	10.7	19.9
No Education Attainment	0.6	0.4	0.6	0.9
Employment – Percentage of the population aged 15 and over:				
Full-time	62.2	62.3	59.2	59.2
Part-time	28	29.4	33.0	29.7
Unemployed	2	4.6	3.3	6.3
Occupation – Percentage of workforce classified as:				
Managers	22.3	17.6	19.8	13.5

Technicians and Trades Workers	17.2	10.4	14.6	12.7
Clerical and Administrative Workers	12.7	16.2	15.2	13.8
Labourers	11.0	4.7	6.6	8.8
Machinery Operators and Drivers	10.7	3.0	3.7	6.1
Professionals	7.6	29	21.9	23.6
Travel to Work – Percentage of workforce:				
By public transport	0	16.1	7.4	16.0
By car as driver or passenger	66.6	69.3	70.6	64.6
Median weekly incomes (\$):				
Personal	688	827	748	664
Family	1,902	2,464	2,308	1,780
Household	1,761	2,363	2,149	1,486
Household Income – Percentage of households:				
less than \$650 gross weekly income	10.2	9.4	12.8	19.7
more than \$3,000 gross weekly income	22.8	36.6	33.6	18.7
Household Composition – Percentage of households:				
Family	80.2	87.1	84.3	72.0
Single or lone person	14.8	11.3	14.1	23.8
Group	4.9	1.5	1.6	4.2
Family Composition – Percentage of families:				
Couple without children	38.5	28.8	34.6	36.6
Couple with children	45.5	60.4	53.7	45.7
One parent family	16.0	9.9	10.8	16.0
Percentage of households where:				
Rent payments exceed 30% of income	10.0	5.9	4.8	12.9
Mortgage payments exceed 30% of income	7.9	10.5	10.2	7.4

4.2.1 Key Population Demographics

The following key population characteristic are identified from the above data.

- The average age of Maroota (39) and Dural–Wisemans Ferry (43) is higher than the Hills Shire LGA and NSW State average at 38.
- A higher proportion of residents are aged under 15 in the Maroota region (21.9%), Hills Shire (21.4%) and Dural–Wisemans Ferry (18.8%) when compared to NSW (18.5%).

- The proportion of residents who identify as Aboriginal or Torres Strait Islander in Maroota (1.8%), The Hills Shire (0.5%) and Dural–Wisemans Ferry (0.8%) is significantly lower when compared with the State (2.9%).
- 8.6% of the Maroota population attended Tertiary or technical institution when compared to the Hills Shire (23.1%), Dural–Wisemans Ferry SA3 (20.1%) and the State (22.4%).
- There are less professionals in Maroota (7.6%) when compared to the Hills Shire (29%), the State (23.6%) and Dural–Wisemans Ferry SA3 (21.9%).
- There are more labourers in the Suburb (11%), and less labourers in the LGA (7.7%) and the SA3 (6.6%) when compared with the State (8.8%).
- There are more machinery operators and drivers in the Suburb (10.7%) than the State (6.1%), SA3 (3.7%) and the LGA (3%).
- 0% of the population in the Suburb travel to work by public transport compared to the LGA (16.1%), the SA3 (7.4%) and the State (16%).
- 12.8% of the SA3, 10.2% of the Suburb and 9.4% of the LGA earn less than \$650 gross weekly income, compared to 19.7% of the State.
- The unemployment rate in the Suburb (2%), the SA3 (3.3%) and the LGA (4.6%) is significantly lower than the State's 6.3%.

4.3 Health

Health Data in the Hills Shire LGA is primarily found through the Healthstats NSW website, provided by the NSW Government. Data specifically in Maroota is difficult to confine due to the low population of Maroota as well as its regional placement within the Hills Shire LGA. The statistics that follow are the trends for both the Hills Shire LGA and NSW comparatively per rate of 100,000.

- Asthma hospitalisations — Lower rate in the Hills Shire LGA compared to the NSW total average.
- Alcohol related hospitalisations — Lower rate in the Hills Shire LGA compared to the NSW total average.
- Stroke hospitalisation – Lower rate in the Hills Shire LGA compared to the NSW total average.
- Dementia hospitalisations – Lower rate in the Hills Shire LGA compared to the NSW total average.
- Respiratory hospitalisations (chronic obstructive pulmonary disease) – Lower rate in the Hills Shire LGA compared to the NSW total average.
- All circulatory disease hospitalisation – Lower rate in the Hills Shire LGA compared to the NSW total average.

- Obesity-related hospitalisation — Higher rate in the Hills Shire LGA compared to NSW total average.
- Diabetes hospitalisation — Type 1 and type 2 diabetes have a lower rate in the Hills Shire LGA compared to the NSW total average.

4.4 Socio-Economic Indexes for Areas (SEIFA)

The best measures that are available for social status are the Australian Bureau of Statistics' SEIFA (Socio-Economic Indexes for Areas) derived from the 2016 Census.

Guideline 6 explains that the "ABS SEIFA Data" as SEIFA data ranks areas in Australia according to their relative socioeconomic advantage and disadvantage. The indexes are based on information from the five-yearly census including education, occupation, employment, income and housing.

SEIFA scores are ranked, with the national datum, or average, being set at 1000.

The SEIFA data below demonstrates that both the Local and Broader Community are ranked moderate and high, respectively, in terms of NSW social and economic advantage.

4.4.1 Local Community — State Suburb of Maroota

The Local Community is located within the fourth quintile for social and economic advantage. Maroota is an above average suburb that is more advantaged than 65% of all suburbs in NSW with a score of 1017, it is close to average. The neighbouring suburbs includes suburbs in the second lowest quintile to the highest quintile, which indicates a combination of less advantaged to most advantaged suburbs.

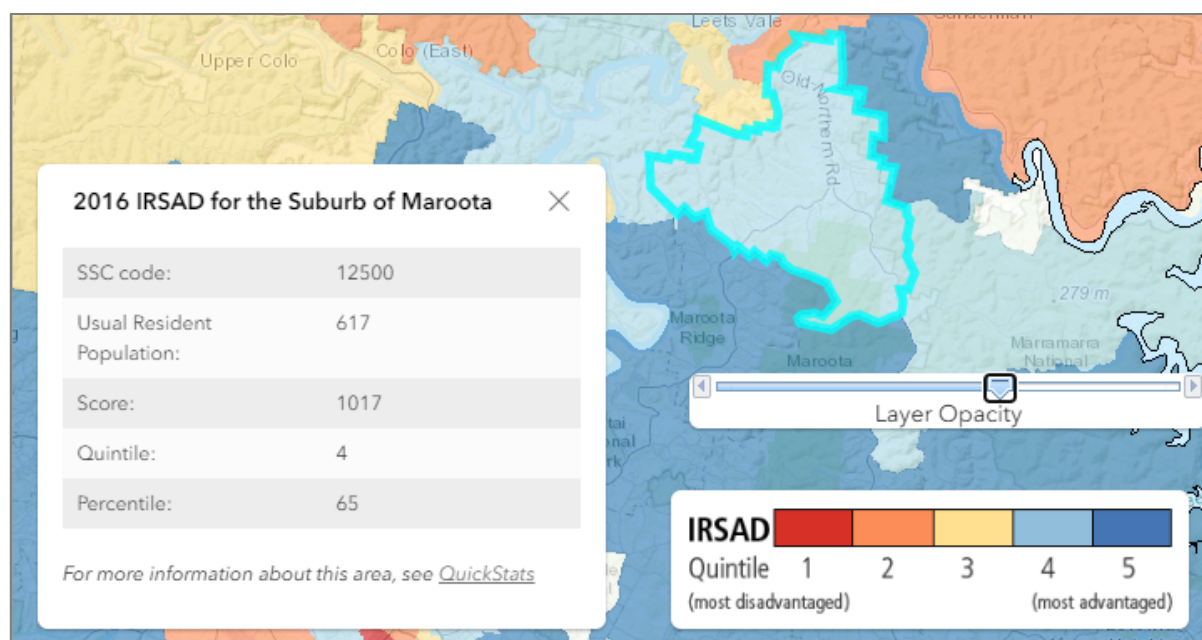


Figure 16: Maroota SEIFA 2016 (Source: Australian Bureau of Statistics)

4.4.2 Broader Community – The Hills Shire LGA

The Broader Community is located within the fifth quintile, being the highest quintile for social and economic advantage. The Hills Shire LGA is more advantaged than 98% of all LGAs within the State, ranked as one of the most advantaged LGAs in NSW. The neighbouring Hawkesbury and Hornsby LGAs are also one of the most advantaged LGAs.

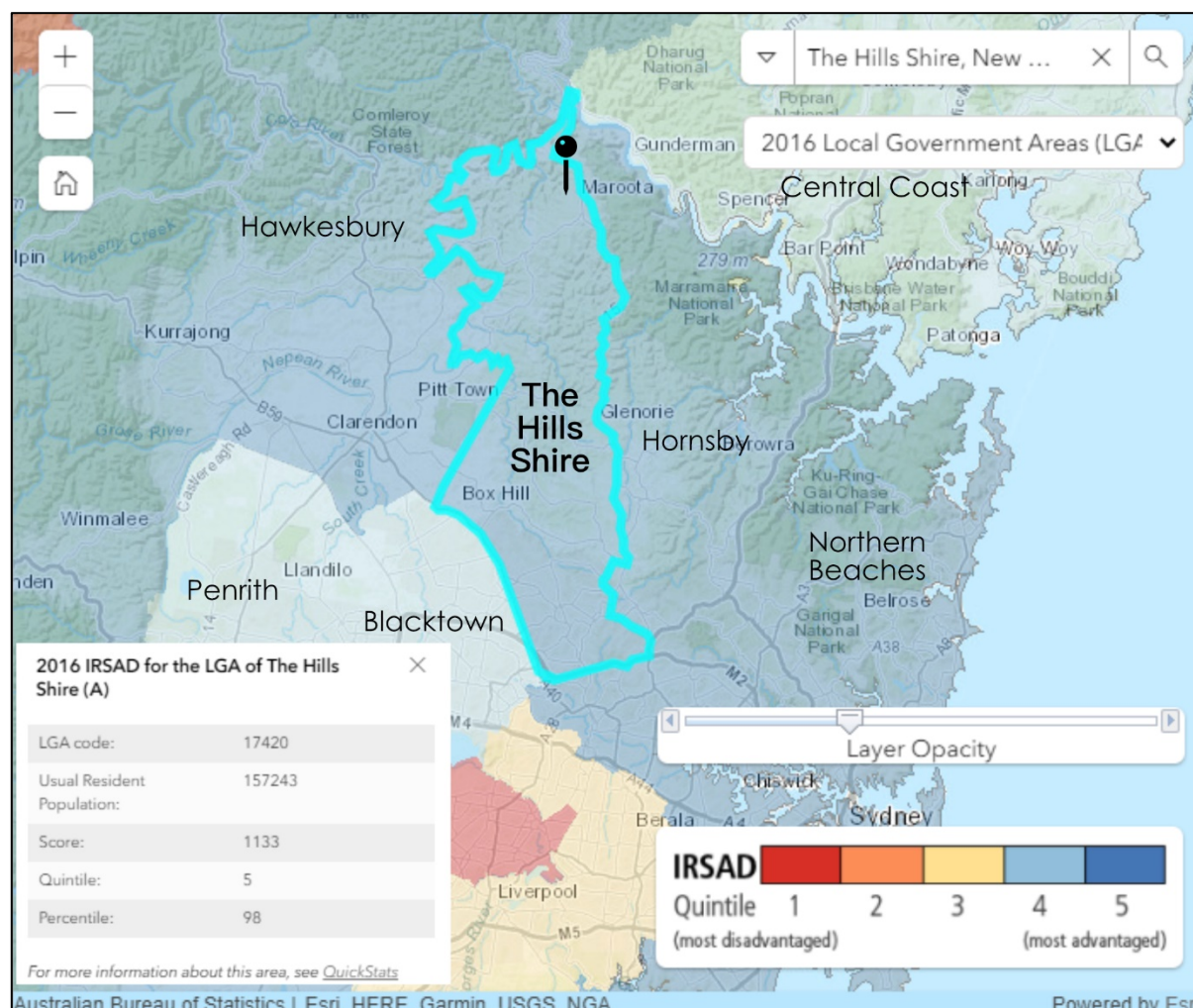


Figure 17: Hill Shire Local Government Area (Source: Australian Bureau of Statistics)

4.5 Local Infrastructure

4.5.1 Schools

There is one public primary school within Maroota. Maroota Public School is a small public school located along Old Northern Road in the centre of Maroota. The School offers primary education from Kindergarten to year six. In the current 2021 school year, 34 students are enrolled with two full time and two part time teachers.¹²

¹² NSW Education School Finder, <https://schoolfinder.education.nsw.gov.au/>

Outside of Maroota, the nearest public primary school is Wisemans Ferry Public School. There is no high school located within Maroota. For education beyond primary school, Maroota is located within the catchment for Windsor High School located 30km south west of Maroota. Hawkesbury High School and Galston High School are of similar distance from Maroota.

4.5.2 Childcare/Preschool Facilities

There is no childcare facility in Maroota. The nearest Preschool is Wisemans Ferry Preschool to the north and South Maroota Preschool to the south west. Both Preschools are approximately 10km from Maroota.

4.5.3 Community Centres

There is no community centre in Maroota. The nearest community centre is found at Wiseman's Ferry approximately 10km to the north.

4.5.4 Health Facilities

There is no health facility in Maroota. The closest medical centre is found in Wiseman's ferry, roughly 10km to the north. The nearest hospital is located in Hornsby, roughly 30 kilometres south of Maroota.

4.5.5 Emergency Services

There is no fire station in Maroota. The nearest Rural Fire Service stations are located within close proximity in South Maroota, Sackville North and Lower Portland. There is no police station in Maroota. The nearest police station is at Wisemans Ferry. There is no ambulance station in Maroota. The nearest station is in Hornsby, roughly 25 kilometres south.

4.6 Growth in the Hills Shire LGA

The Hills Shire is a rapidly growing LGA with population anticipated to increase by 80% between 2016 and 2036, growing by 128,400 people. This will require an additional 38,000 dwellings and 32,200 additional jobs.

The Project is located within an area identified in the Hills Local Strategic Planning Statement (*Hills LSPS*) as an agricultural and extractive cluster, complementing the Hills Shire's strategic vision for Maroota and Hills Shire in general.

4.7 Hills Shire Industry Statistics

In the non-metallic mineral mining and quarrying sector, The Hills Shire contributed 8.3% of New South Wales's employment and 7.2% of its value added¹³ in 2018–2019 financial year. The table below shows the industry statistics¹⁴ for the Hills Shire Council.

¹³ Economic Profile for The Hills Shire Council (2021) <https://economy.id.com.au/the-hills/industry-sector-analysis?IndkeyNieir=23104&sEndYear=2018>

¹⁴ Australian Bureau of Statistics and The Hills Shire Council

Table 8 — Hills Shire Industry Statistics			
	Hills \$ (billion)	Greater Western Sydney	NSW
Regional Import by local industry sectors	4.895	–	–
Regional Export generated	5.424	–	–
Output generated by the Hills	18.154	8.36% of \$217.258b	1.8% of 1.003t
Value Added	8.079	8.59% of 94.086b	1.75% of 460.678b
Gross Regional Product (GRP)	8.824	8.59% of 102.713b	1.79% of 492.478b
Employment	56850	9.24% of 615223	1.9% of 2.9m

4.8 Summary of Social Baseline Data

The following highlights the key information extrapolated from the above data.

- The median age in Maroota is similar to the Hills Shire and NSW average. Dural–Wisemans Ferry has a higher average age at 43.
- There is a higher proportion of the population of under 15 in Maroota, the Hills Shire and Dural–Wisemans Ferry compared to NSW.
- Use of Public Transport is significantly lower in Maroota (0%) and Dural–Wisemans Ferry (7.4%) when compared to the Hills Shire and the State where over 16% use public transport for their daily commute to work.
- Maroota, the Hills Shire and Dural–Wisemans Ferry have a significantly lower unemployment rate than the State.
- Household income in Maroota, the Hills Shire and Dural–Wisemans Ferry is higher than the NSW average.
- The Hills Shire overall has a lower rate of hospitalisation; however this data is not completely reliable when looking at Maroota due to the population difference in Maroota and the Hill Shire.
- The top five occupations in Maroota is a manager (22.3%), technician and trades worker (17.2%), Clerical and Administrative worker (12.7%), Labourers (11%) and Machinery Operators (10.7%).
- The top five occupations in Hills Shire is a Professional (29%), Manager (17.6%), Clerical and Administrative worker (16.2%), Technicians and Trades worker (10.4%) and Sales Worker (9.6%).

- The top five occupations in Dural–Wisemans Ferry is Professional (21.9%), Managers (19.8%), Clerical and Administrative worker (15.2%), Technicians and Trades worker (14.6%) and Sales Worker (8.9%).
- Maroota is home to a higher proportion of blue collar workers (technician and trades, labourers and machinery operators) whilst Hills Shire and Dural–Wisemans Ferry is home to more white collar workers (professionals, managers and clerical and administrative workers).
- The Hills Shire is ranked as being the among the most advantaged LGAs and Maroota is an advantaged suburb.
- The majority of key infrastructure is located outside of Maroota, except for a public primary school.

5. Community & Stakeholder Engagement

A key objective of the SEIA is to ensure that stakeholders are identified and given a sufficient understanding of the project and how it may affect them. Stakeholders are to be provided an opportunity to participate, and continue to be informed and consulted as the Project proceeds.

5.1 SEARs Consultation Requirements

The Project SEARs relating to consultation stated that the EIS must:

- *describe the consultation process used and demonstrate that effective consultation has occurred;*
- *describe the issues raised; and*
- *identify where the design of the development has been amended and/or mitigation proposed to address issues raised; and otherwise demonstrate that issues raised have been appropriately addressed in the assessment*

Each of the above matters is addressed in this section.

5.2 Consultation Process

5.2.1 Identification of Community Members and Stakeholders

A comprehensive list of community members and stakeholders to consult throughout the EIA process was developed through:

- The identification of neighbours who might be impacted by the Project;
- The identification of stakeholders who might have a particular interest in the Project;
- The identification of stakeholders who might have information of value to the Project, for example, Aboriginal groups with cultural knowledge relating to the Project site; and
- Consultation with the DPIE. This included the community members and stakeholders listed in the Project SEARs with whom the Applicant was required to consult.

5.2.2 Consultation Methods

A range of consultation methods were used throughout the EIA process to engage community members and stakeholders. These include face to face meetings, teleconferences, letters, phone conversations and emails.

Scoping Report

Consultation for the Project began with a Scoping meeting between the Proponent's project management team and DPIE to discuss the proposed approach to the EIA. Consultation subsequently occurred with community members and stakeholders during the preparation of the Scoping Report to identify matters to assess in the EIS and SEIA.

Preparation of SEARS

Following receipt of the Project's Scoping Report, DPIE consulted with various regulatory authorities to inform the development of the Project SEARs.

Preparation of EIS

Information letters were distributed to community members and stakeholders during the preparation of the EIS and SEIA. Those letters contained a Google Drive link that provided online access to a document that presented a detailed overview of the Project. Consultation continued with interested parties through letters, emails, and teleconferences as necessary. Shht

All local residents within 1km of the Project Site were notified at the scoping and EIS stage. Further opportunities will be provided for stakeholders to provide a submission once the Application is lodged with DPIE.

5.3 Issues Raised

The following table outlines the key issues/matters raised by community members and stakeholders.

Table 9 – Key issues/matters raised by Stakeholders during various stages		
Issue Raised	Raised by	Phase
Noise		
Noise Impacts on adjoining properties	Residents	Scoping EIS
Preparation of a Noise Impact Assessment	- Hills Council - Department of Primary Industry - NSW EPA - DPIE – Environment, Energy & Science Group	SEARs
Visual		
Visual Impacts on adjoining properties	Residents	Scoping EIS
Preparation of a Visual Impact Assessment	Hills Council	SEARs
Dust		
Dust Impacts on adjoining properties	Residents	EIS

Table 9 — Key issues/matters raised by Stakeholders during various stages		
Issue Raised	Raised by	Phase
		Scoping
Preparation of an Air Quality Assessment	• Hills Council • NSW EPA • DPIE — Environment, Energy & Science Group	SEARs
Traffic		
Road Vehicle Safety	• DPIE — Environment, Energy & Science Group • Residents • Neighbouring quarry	Scoping SEARs EIS
Preparation of a Traffic Impact Assessment	• Hills Council • Transport for NSW	SEARs
Biodiversity		
Preparation of a comprehensive Biodiversity Development Assessment Report	• DPIE — Environment, Energy & Science Group • Hills Council	SEARs
Assessment of Riparian Corridor impacts	• DPIE — Environment, Energy & Science Group	SEARs
Rehabilitation & Staging		
Preparation of a rehabilitation strategy and program	• Hills Council • Department of Primary Industries	SEARs
Preparation of a comprehensive quarry staging plan	• Hills Council	SEARs
Aboriginal Archaeology		
Preparation of an Archaeological Survey / Assessment Report	• DPIE — Environment, Energy & Science Group • Hills Council	SEARs
Water		
Water supply, demand, and availability	• Department of Primary Industries	SEARs
Surface and Groundwater Impacts	• Department of Primary Industries	SEARs
Land Capability		
Impact on agricultural resource and land	• Department of Primary Industries	SEARs
Site suitability and development details	• Department of Primary Industries	SEARs
Bushfire		
Preparation of a Bushfire Impact Report	• Hills Council	SEARs
Other Matters		
Establishment of a complaints register	• Department of Primary Industries • NSW EPA • Residents	SEARs EIS
Identification of maximum yearly extraction rates and timeframe for the completion of rehabilitation works	• Department of Primary Industries • Hills Council	SEARs

Table 9 — Key issues/matters raised by Stakeholders during various stages

Issue Raised	Raised by	Phase
Project's compliance with the Extractive Industries SEPP, Hills Council DCP Section 1 — Rural, SREP No. 09, SREP No. 20 and the Hills LEP	• Hills Council	SEARs

5.4 Aboriginal Community Consultation

Consultation was undertaken with Aboriginal groups during the preparation of the Aboriginal Cultural Heritage Assessment in accordance with the '*Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*'. The Aboriginal consultation process involved the following stages:

- Stage 1 — Notification & Registration of Interest
- Stage 2 — Presentation of Project Information
- Stage 3 — Gathering Information about Cultural Significance
- Stage 4 — Review of Draft Cultural Heritage Assessment

6. Assessment of Social Impacts

This section provides an assessment of the potential social impacts associated with the Project.

Whilst adverse impacts cannot be completely avoided, the following key measures recommended by environmental specialists, derived from various environmental reports, will be implemented to minimise the potential adverse impact and offset environmental impacts from the operation of the Site.

It is derived from the report that the recommendations and mitigation measures provided by various specialists are sufficient to reduce potential adverse impact to the surrounding sensitive land uses. No additional mitigation measures are therefore recommended as a result of the SEIA.

Potential social impacts, including perceived social impacts, identified through the DPIE's scoping tool, community consultation (described in Section 5) and the findings of the various technical reports are presented in the table below.

Table 10 – Potential Social Impact and the Impacted Group		
Matter	Description	Group Potentially Impacted
Social Amenity	Impacts that relate to amenity including acoustic, visual, odour, vibration and dust impacts.	Amenity impacts are most likely to be experienced by landholders within the immediate vicinity, particularly those landholders that directly adjoin the Project site. Members of the broader community may also experience amenity impacts at a lower frequency and severity.
Access	Impacts associated with a landowner or occupiers' ability to access their property, whether that be public and privately owned.	Neighbours that adjoin the Project site are the most sensitive to access impacts.
Built Environment	Built Environment Impacts relate to changes in the public domain, public infrastructure and other assets.	Impacts relating to changes in the public domain can potentially impact all stakeholders identified. Impacts relating to changes to public infrastructure can potentially affect infrastructure providers including the Roads and Maritime Services.
Heritage	Impacts to natural, cultural, Aboriginal cultural and built heritage.	Those members of the community and stakeholders that value heritage items on the project site and in the surrounding area including, although not limited to: - Aboriginal groups. - Local and broader community. - NSW Office of Heritage and Environment.
Community	Impacts that relate to community services, facilities, cohesion, capital and resilience.	The local and broader community.

Health & Safety	Impacts relating to the health, safety and wellbeing.	Those landowners within the immediate vicinity area are most sensitive to health and safety impacts.
Economic	Impacts that relate to the use of the natural resource, being friable sandstone, livelihood and opportunity cost of the Project.	All stakeholders.
Biodiversity	Social impacts resulting from impacts to native fauna and vegetation.	• The local and broader community • Community groups • Government Stakeholders.
Land	Social impacts resulting from impacts to land capability, stability and/or structure, soil chemistry and topography.	Land impacts are most likely to be experienced by landholders within the Immediate vicinity, particularly those landholders that directly adjoin the Project site.
Water	Social impacts resulting from impacts to water quality and availability and hydrological flows.	Water impacts are most likely to be experienced by landholders within the Immediate vicinity, particularly those landholders that directly adjoin the Project site.

For each potential social impact, this SEIA:

- Identifies the affected receptors, duration, severity (*Sev*) and sensitivity (*Sen*) of each impact.
- Analyses each social impact's risk using the International Association for Impact Assessment's social risk matrix. The matrix determines a social impact's risk based on the following considerations:
- The likelihood (*LR*) of a social impact based on:
 - The findings of the various technical reports; and
 - The social baseline study
- The consequence (*C*) of a social impact based on the duration, extent, severity and sensitivity of each impact:

The following sections provide an overview of these assessments.

6.1 Social Amenity

6.1.1 Dust Impacts

An Air Quality Impact Assessment prepared by Todoroski Air Sciences Pty Ltd assessed the potential air quality impact associated with the Project. Air dispersion modelling was used to predict the potential for off-site dust impacts in the surrounding area from the Project. The estimated emissions of dust applied in the modelling are likely to be conservative and would overestimate the actual impacts.

It is predicted that all the assessed air pollutants generated by the operation of the Project would comply with the applicable assessment criteria at the assessed receptors and therefore would not lead to any unacceptable level of environmental harm or adverse impact in the surrounding area. Without mitigation, the social risk of dust impact is moderate.

Without mitigation measures, the social risk of dust impact is low. The Project will apply dust management measures such as establishing an air quality monitoring program that includes predictive meteorological forecasting. **Annexure 5** of the EIS provides the full list of air quality mitigation and monitoring measures.

It is concluded that the Project is capable of operating without having significant impact on the air quality at the residential receptors subject to the imposition of the conditions with respect to air monitoring.

The social risk matrix for dust impact are as follows:

Potential Social Impacts	Social theme	Receptors	Duration	Sev	Sen	LR	C	Social Risk w/o mitigation	Social Risk w/ mitigation
Dust impacts disrupting surrounding residents' way of life.	Way of life, Health & wellbeing Fears and aspirations	Surrounding Residents	Project construction and operation	Low	High	Rare	Moderate	Low	Low

6.1.2 Visual Impacts

A Landscape and Visual Impact Assessment was prepared by SLR Consulting Australia Pty Ltd.

The surrounding area of the Project bound by the Hawkesbury River is heavily incised by creeks and tributaries of the Hawkesbury. Within the Project Site, there are two major ridges defined and pictured below for the purposes of the visual assessment.

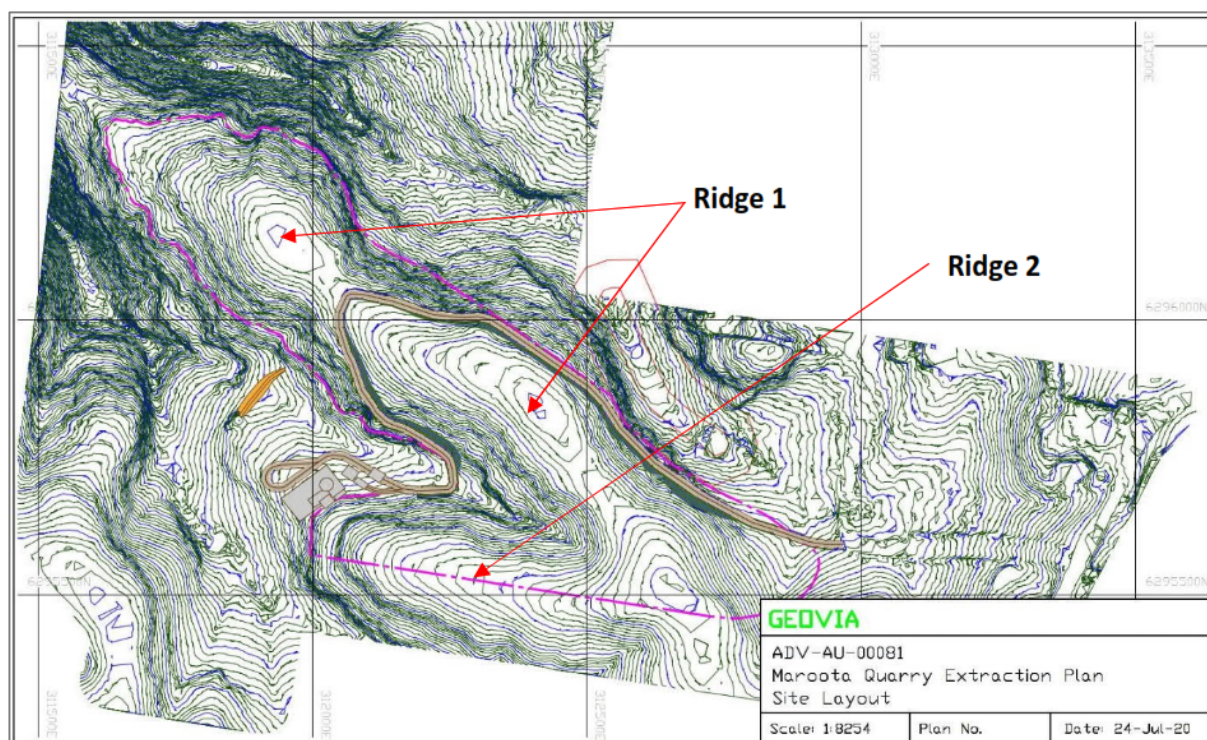


Figure 18: Existing Contours and Landform (Source: SLR Consulting)

The landform and topography on site is accentuated by the existing vegetation cover. With the highest points within the site lower than the surrounding main roads, the vegetation height provides additional height that makes the site more visually prominent and visible from public and private viewpoints.

A Zone of Theoretical Visibility (ZTV) was prepared as part of the Visual Assessment Report. Using that model, five viewpoint reception locations were selected for photomontage analysis to assist in the visual assessment process. The photomontage analysis visualised the appearance of the Project Site before and after works. The analysis determined that the Project would have a minor-moderate to minor impact on the five key identified receptor viewpoints (see below table).

Table 11 — Summary of Visual Impact Ratings for each Receptor			
Matter	Receptor Sensitivity	Magnitude of Change	Effect Significance
VP1	Medium	Low	Minor-Moderate
VP2	Medium	Low	Minor-Moderate
VP3	Low	Low	Minor
VP4	Medium	Negligible	Minor
VP5	Medium	Low	Minor-Negligible

Therefore, the social risk for visual impact is low with and without mitigation. A vegetation buffer will be maintained at the peripheries of the Project Site to provide a visual screen. A 50m native bushland corridor will be rehabilitated at the Project Site to enhance views as pictured below.

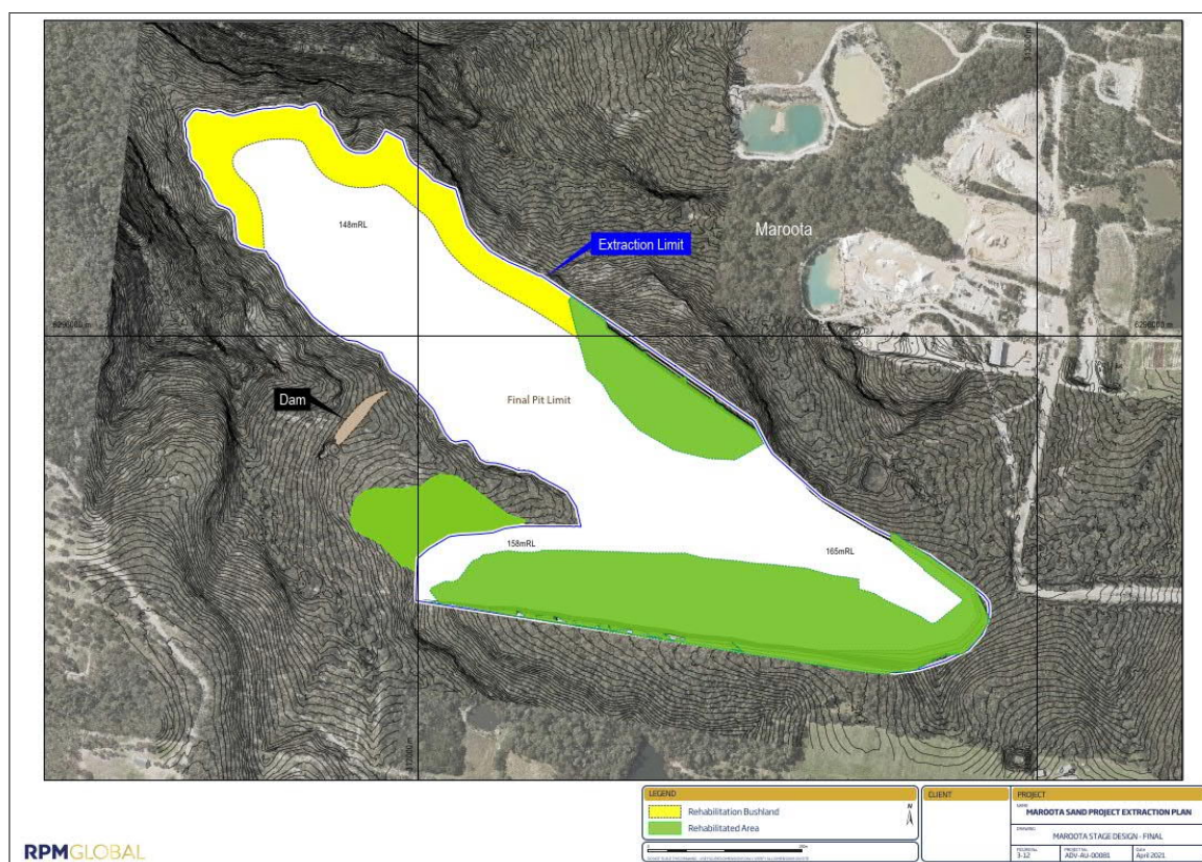


Figure 19: Proposed Final Stage Design and Rehabilitation (Source: RPM Global/SLR Consulting)

The social risk matrix for visual impacts is presented below.

Potential Social Impacts	Social theme	Receptors	Duration	Sev	Sen	LR	C	Social Risk w/o mitigation	Social Risk w/ mitigation
Change to the visual character of the Project Site and surrounds.	Way of life, Community, Surroundings, Fears and aspirations	Surrounding Residents, Tourists, Nearby Road Drivers	Project construction, operation and rehabilitation	Low	Moderate	Possible	Minor	Moderate	Low

6.1.3 Noise Impacts

A Noise and Vibration Impact Assessment was prepared by Muller Acoustic Consulting to assess the noise impact of the Project. The Noise and Vibration Impact Assessment quantified the potential noise impacts associated with the Project's construction, operations and transportation activities on the surrounding environment.

That Assessment found that the Project's operations generally satisfy the Project Noise Trigger Levels during the daytime and morning shoulders at all assessed receivers during calm conditions. Noise emissions from the Project may briefly exceed the Project Noise Trigger Levels by up to 2dB at six receivers. These exceedances are considered 'negligible' Impacts per the *Noise Policy for Industry* methodology. During project Year 10, predicted noise levels may exceed the Project Noise Trigger Levels by 3dB at one receiver (R19) during noise enhancing conditions. This exceedance is described as 'marginal' under the *Noise Policy for Industry*. Therefore, appropriate mitigation rights under Voluntary Land Acquisition and Mitigation Policy are recommended for this receiver. Potential treatment for the above mentioned noise level include providing mechanical ventilation or comfort condition systems to enable windows to be closed without compromising internal air quality or amenity.

Predicted noise levels from construction activities are expected to satisfy the Construction Noise Management Levels at all receivers. Sleep disturbance is not anticipated during the morning shoulder period as emissions from impact noise are predicted to remain below the Environmental Protection Agencies' maximum noise trigger levels. Predicted road traffic noise levels from the Project at receivers adjacent to either Wisemans Ferry Road or Old Northern Road are expected to comply with the relevant RNP criteria.

A noise monitoring program will be developed as part of the Project's Noise Management Plan. The Program will comprise operator attended compliance monitoring, real-time meteorological data and a real-time noise monitoring terminal to allow proactive management of potential noise generated by project activities over the Project's life, particularly during noise enhancing conditions. **Annexure 5** of the EIS provides the full list of noise mitigation and monitoring measures.

The report has identified approximately 40 rural residential receivers in the locality. The predicted noise levels from all operations (includes clearing, extraction, haulage, processing and product transport during calm condition) and typical operations (extraction, haulage, processing and product transport during noise enhancing conditions) generally satisfy the relevant acoustic requirements during daytime and morning shoulder at all receivers. Only one receiver (R19) exceeds the predicted noise levels by 3dB during project Year 10. The high and moderate social risk presented below reflects the most affected receiver as detailed above.

The social risk matrix for noise impacts is presented below.

Potential Social Impacts	Social theme	Receptors	Duration	Sev	Sen	LR	C	Social Risk w/o mitigation	Social Risk w/ mitigation
Noise impacts from the Project's operations disrupting surrounding residents' way of life.	Way of life, fears and aspirations	Surrounding Residents	Project construction and operation	Moderate	High	Possible	Moderate	High	Moderate
Noise impacts from truck movements disrupting surrounding residents' way of life.	Way of life, fears and aspirations	Surrounding Residents, Haul route residents	Project construction and operation	Low	High	Unlikely	Minor	Low	Low

6.1.4 Vibration Impacts

The Noise and Vibration Impact Assessment prepared by Muller Acoustic Consulting assessed the Project's vibrations impacts.

The major potential sources of vibration associated with the Project is the ripping of competent sandstone with a bulldozer. Generally, peak levels of vibration from ripping occur as the dozer takes off to commence the ripping process. The minimum offset distance to the nearest residential receivers is approximately 280m and will approximately occur during Project Year 10 operations. This offset distance is greater than the minimum offset distance provided in the *British Standard BS 7385: Part 2-1993 "Evaluation and measurement for vibration in buildings Part 2"*. Hence, vibration impacts are not expected at any dwelling. The social risk matrix for vibration impact are as follows:

Potential Social Impacts	Social theme	Receptors	Duration	Sev	Sen	LR	C	Social Risk w/o mitigation	Social Risk w/ mitigation
Vibration impacts from the Project's operations disrupting surrounding residents' way of life.	Way of life, Health & wellbeing	Surrounding residents	Project construction and operation	Low	High	Rare	Minor	NIL	NIL

6.1.5 Waste Impacts

The waste section in the EIS provides an estimate of the quantity and nature of waste streams resulting from the Project and outlines mitigation measures.

Without mitigation measures, the social risk is high due to the large amount of waste from construction and daily operation.

A detailed Waste Management Plan will be prepared following a determination of the Application in accordance with the *Protection of the Environment Operations Act 1997* and the *Waste Avoidance and Resource Recovery Act 2001*. The Waste Management Plan will follow the hierarchy of waste management principles in the order of: waste avoidance, waste reuse, waste recycling and disposal.

The hierarchy will inform the procurement of materials and consideration of their waste streams and assist in educating staff on appropriate waste procedures to minimise waste.

Overburden and tailings will be stored and used for rehabilitation fill.

The remaining waste will be separated into domestic waste, recyclable waste (paper, cardboard and glass), and metals, and collected by a licensed contractor. Waste oils will be stored in a self-bunded tank and removed as necessary by a licensed contractor. Sewage will be treated using an enviro-cycle system.

By implementing a Waste Management Plan with measures such as reducing, reusing and recycling waste on site, and all off-site disposal of waste will be carried out licensed contractors, the social risk is reduced to low.

The social risk matrix for waste impacts are as follows:

Potential Social Impacts	Social theme	Receptors	Duration	Sev	Sen	LR	C	Social Risk w/o mitigation	Social Risk w/ mitigation
Increased waste from construction and daily operation	Way of life, Health & wellbeing	Surrounding Residents	Project construction, Operation	Low	Moderate	Almost Certain	High	Low	NIL

6.2 Heritage

An Aboriginal Cultural Heritage Assessment was prepared by Kelleher Nightingale Consulting Pty Ltd.

The assessment identified 24 Aboriginal archaeological sites comprising Aboriginal objects and one Potential Archaeological Deposit (PAD) area along the main ridge spur. The sites comprised 16 rock shelter sites displaying a mixture of art, artefacts and/or PAD, 4 open context artefact sites (three artefact scatters and one isolated find), three grinding groove sites, and one modified (scarred) tree.

As an organisation, DLALC is committed to protecting and preserving Aboriginal heritage. Objective 22 of their Community Land & Business Plan is to promote “*a holistic understanding of the landscape, especially its spiritual and cultural dimensions.*” This philosophy informed the Project’s design, with impact avoidance and appropriate management being fundamental considerations.

The Project’s extraction area is focused on the main ridge spur, which avoids the more archaeologically sensitive slopes and creek gullies below, where significant sites have been identified. The Project’s archaeologist identified and assessed Aboriginal heritage sites early to allow for their avoidance. The Project’s extraction area was amended following the Aboriginal archaeological survey findings to provide

a 35m minimum buffer to recorded shelters within the extraction area's proximity. Thus, this design approach ensures that all identified Aboriginal archaeological sites within the Project Site will be avoided. This represents a strong positive conservation outcome.

The Project will directly impact the Potential Archaeological Deposit area identified along the main ridge. This area does not contain confirmed Aboriginal objects but displays moderate potential for subsurface deposit. Appropriate mitigation measures contained in **Annexure 5** of the EIS have been developed for this area.

Without mitigation measures, the social risk for the loss of Aboriginal cultural heritage is high. By implementing mitigation measures such as the proposed 35m buffer zones and regular monitoring of the Site, the social risk is reduced to low.

No historical heritage items are located within the Project's disturbance area nor within the Project Site. The nearest heritage item is located some 720m from the Project's disturbance area. This provides a sufficient buffer to mitigate potential indirect impacts associated with the Project, including vibration impacts. As such, the Project will not have any impact on heritage item.

The social risk matrix for heritage impact are as follows:

Potential Social Impacts	Social theme	Receptors	Duration	Sev	Sen	LR	C	Social Risk w/o mitigation	Social Risk w/ mitigation
Destruction of European heritage items	Culture	Surrounding Residents, Broader Community, State of NSW	Project construction	Low	Moderate	Rare	Minor	Low	Low
Destruction of Aboriginal cultural heritage items	Culture	Surrounding Residents, Broader Community, State of NSW Aboriginal Groups	Project construction	Moderate	High	Possible	Moderate	High	Low

6.3 Community

Feedback received from community members and stakeholders during the various stages of the Application have been noted and changes to the Project have been made to address the concerns and issues raised during consultation.

DLALC is committed to continuing to engage the community by providing ongoing community consultation with the general public and relevant stakeholders should the Project be approved. Without mitigation measures, the social risk for the Community will maintain low as there are existing sand mines within close proximity and it has low potential to change the character of the locality.

In order to address the potential social impact from lack of participation, DLALC will establish a Community Consultation Committee and commission a website that contains a description of the Project,

environmental monitoring reports, meeting minutes and contact details. In addition to the above, a 24 hour complaint hotline will be established to respond to community concerns relating to the Project operations. Communication will be made via mail, email, teleconference or in person meetings to address concerns as necessary. The social risk will maintain low with the above mitigation measures.

The social risk matrix for community is as follows:

Potential Social Impacts	Social theme	Receptors	Duration	Sev	Sen	LR	C	Social Risk w/o mitigation	Social Risk w/ mitigation
Change to the established character of the Maroota locality.	Way of life, Community, Culture, Surroundings	Surrounding Residents, Broader Community	Project construction, operation and rehabilitation	Low	Moderate	Possible	Minor	Low	Low
Lack of participation in the Project's design and decision making process	Decision-making systems	Surrounding Residents, Broader Community, Other Stakeholders	Project assessment and operation	Low	High	Unlikely	Moderate	Low	Low

6.4 Health & Safety

A Traffic Impact Assessment was prepared by Transport & Urban Planning Pty Ltd to assess the traffic impacts of the Project.

The Project's transport routes will be via Wisemans Ferry Road and Old Northern Road towards Castle Hill and Wisemans Ferry Road/Cattai Road/Pitt Town Road towards Pitt Town. Both Old Northern Road and Wisemans Ferry Road/Cattai Road/Pitt Town Road are approved 25–26m B double routes. Vehicle access to the Quarry will be via Patricia Fay Drive. A new product haul road will be constructed from the quarry site to Patricia Fay Drive creating a T-junction intersection, approximately 400m west of Wisemans Ferry Road.

The quarry will have its highest traffic generation on weekdays. The Project is expected to generate 30 two way light vehicle trips (15 in/15 out), and up to 122 two way heavy vehicle trips (61 in/61 out) on a typical weekday. Hourly volumes associated with product transport are expected to average 10–13 truck movements (5–7 in/5–7 out) with a maximum 30 trucks movements per hour (15 in/15out).

The assessment of the traffic impacts of the Project during the operational phase has found that the impacts on the road network, including the principal intersections will be satisfactory. The assessment of cumulative impacts for the Year 2030, with the Project in place also found that traffic conditions on the road network will remain satisfactory. Site establishment and construction of the quarry is expected to take six to twelve months and the assessment of the construction impacts has found that the impacts will be satisfactory.

A Road Safety Audit Report prepared by Transport & Urban Planning Pty Ltd found that the Wiseman's Ferry Road/Patricia Fay Drive intersection does not meet Austroad Guidelines. Without mitigation measures, this non-compliance poses a risk to public safety. Therefore, the Proponent proposes to upgrade the intersection to meet current standards.

Following approval of the Project, a Construction Traffic Management Plan will be prepared for the upgrades works to the intersection of Wisemans Ferry Road and Patricia Fay Drive to manage the impacts of the upgrade works.

The social risk matrix for traffic impacts is as follows:

Potential Social Impacts	Social theme	Receptors	Duration	Sev	Sen	LR	C	Social Risk w/o mitigation	Social Risk w/ mitigation
Public safety issues associated with increased truck movements Wisemans Ferry Road and Old Northern Road	Access to and use of infrastructure, Health & wellbeing	Surrounding Residents, Broader Community, Haul route users	Project construction, operation and rehabilitation	Moderate	Moderate	Possible	Moderate	Moderate	Low

6.5 Economic

Section 7 of this SEIA assesses the Project's economic impact. That assessment finds that the Project will benefit the local and broader communities by providing access to employment that complements the skillset of the Maroota locality. Furthermore, the Proponent is committed to the ongoing training and certification of its workforce. The implementation of a participation plan will enhance employee progression and training outcomes.

The social risk matrix for economic impacts is as follows:

Potential Social Impacts	Social theme	Receptors	Duration	Sev	Sen	LR	C	Social Risk w/o mitigation	Social Risk w/ mitigation
Access to employment that complements the skillsets of the Maroota community.	- Way of life - Community Fears and aspirations	- Surrounding Residents - Broader Community		–	–	Almost Certain	–	High Positive Social Impact	High Positive Social Impact
On-going training and certification for the Maroota workforce	- Way of life - Fears and aspirations	- Surrounding Residents - Broader Community		–	–	Likely	–	Moderate Positive Social Impact	High Positive Social Impact

6.6 Biodiversity

A Biodiversity Development Assessment Report was prepared by Eco Logical Australia to assess the Project's impact on biodiversity.

Due to the location of Hawkesbury Sandstone at the Project Site, it is not feasible to locate the Project in a location that wholly avoids impacts to vegetation and habitat. However, during the Project design phase, there were a number of footprint iterations which demonstrate that a process of avoiding and minimising impact was implemented. The key amendments to the Project's design to avoid impacts to biodiversity values include:

- Relocating the Project's site infrastructure area from the east to the west of the Project site. This reduced the Project's impact on the threatened *Shale Sandstone Transition Forest of the Sydney Basin Bioregion* (PCT 1081);
- Locating the Project's sales haul road within the extraction footprint to minimise the Project's area of disturbance;
- The provision of a 50m buffer to the endangered *Maroota Sands Swamp Forest*;
- Maintaining a 100m biodiversity corridor along the southern boundary of the Project site;
- Selecting a sand plant that allows the generation of dry cake tailings, thus removing the need for extensive tailings dams that increase the Project's area of disturbance; and
- Relocating the Project's surface water dam from a 3rd order watercourse to a 2nd order watercourse to reduce impacts to riparian corridors.

Following these modifications, the Project will directly remove 51.49 ha of native vegetation within the development footprint. The development will result in removal of 25.79 ha of habitat for the *Hoplocephalus bungaroides* (Broad-headed Snake) that has Serious and Irreversible Impact values. Fourteen Matters of National Environmental Significance have a potential of being adversely impacted by the development, and the report concludes that it would result in a significant impact to Shale Sandstone Transition Forest of the Sydney Basin Bioregion and Dural Land Snail. Without mitigation measures, the social risk for biodiversity will be high.

The number of biodiversity credits required to offset the residual loss of biodiversity are 1,081 ecosystem credits and 6,768 species credits. DLALC will establish a Biodiversity Stewardship Area to conserve, steward and enhance 309 hectares of land to fulfil their biodiversity offset obligations. DLALC has a number of land holdings where appropriate biodiversity credits for both ecosystem and species credits can be generated. The required special species can be offset with like for like species credits from any IBRA region in NSW. If some or all of the species credits are not able to be generated on these sites, DLALC has the option to source all or some of the credits from the market, or make a payment into the Biodiversity Conservation Fund.

The Site will be progressively rehabilitated as the Project progresses including a 50m vegetation buffer. When the Site is decommissioned at the end of the Project, it will be turned into its final land use being a combination of native bushland and improved pasture for a post mining grazing enterprise.

In addition to the above, other mitigation measures includes: a trained ecologist to be present during clearing activities to appropriate relocate fauna, temporary fencing and signage to be installed at the edge of clearance areas to prevent entry into retained vegetation, and artificial habitat to be constructed in retained vegetation to encourage fauna to relocate from the extraction area.

The social risk matrix for biodiversity is as follows:

Potential Social Impacts	Social theme	Receptors	Duration	Sev	Sen	LR	C	Social Risk w/o mitigation	Social Risk w/ mitigation
Removal of bushland and disturbance of flora and fauna	Surrounding	Surrounding Residents, Broader Community, State of NSW	Project Construction	High	High	Almost Certain	High	High	Moderate
Establishment of a 309ha Biodiversity Stewardship Site	Surroundings	Surrounding Residents, Broader Community, State of NSW	In perpetuity	–	–	Almost Certain	–	High Positive Social Impact	High Positive Social Impact

6.7 Land

A Land Capability Assessment was prepared by SLR consulting to assess the Project's impact on the land capability of surrounding land. That Assessment found that as the Project is separated from adjoining land-uses by a 100 metre buffer of native bushland, it is unlikely to impact the capability of surrounding land. Furthermore, a Water Assessment prepared by EMM Consulting Pty Ltd confirms that the Project is unlikely to result in surface water run-off that will adversely impact surrounding land uses.

Potential Social Impacts	Social theme	Receptors	Duration	Sev	Sen	LR	C	Social Risk w/o mitigation	Social Risk w/ mitigation
Impacts to the land capability of surrounding land	- Way of life - Surroundings Personal and property rights	Surrounding Residents	Project construction, operation and rehabilitation	Low	High	Rare	Moderate	Moderate	Low

6.8 Water

The Water Assessment prepared by EMM Consulting Pty Ltd to address the SEARs that relate to both surface and groundwater management. The following water management objectives were incorporated into the Project's design and considered in the Water Assessment.

Table 12 — Water Management Objectives

Action No.	Action
Objective 1: Avoid Aquifer Interception	
Action 1	The pit floor will maintain a 2 m buffer above the wet-weather high regional water table.
Objective 2: Provide surface water controls that are consistent with industry best practice.	
Action 2	Where practical, clean water will be diverted around disturbed areas.
Action 3	Dirty water runoff will be managed by erosion and sediment controls that will be designed, constructed and maintained in accordance with the methods recommended in <i>Managing Urban Stormwater: Volume 1</i> (Landcom 2004) and <i>Volume 2E</i> (Department of Environment and Climate Change 2008).
Action 4	Water used in the sand processing plant will be managed in a closed loop system that will not discharge into either the dirty water system or offsite.
Action 5	Water captured in the water management dam will be used for sand processing and dust suppression to reduce overflow volumes.
Action 6	Chemical and hydrocarbon products will be stored in bunded areas in accordance with relevant Australian Standard AS1940:2004 and guidelines in Section 2.3.5.
Objective 3: Apply water efficiency measures to minimise water use	
Action 7	The sand processing plant will include a filter and plate press system to maximise water recovery and minimise system losses.
Action 8	Groundwater will be extracted as needed to minimise losses associated with storage.
Objective 4: Establish a secure non-rainfall dependant source of water	
Action 9	A groundwater supply system that can meet the full project water demand will be established as a non-rainfall dependant water source.

Without these mitigation measures, the Project would have the potentially to adversely impact surrounding water uses. The Project's water impacts with these measures included are described in the table below.

Table 13 — Residual Impacts Summary

Activity	Summary of Residual Impacts
Abstraction of groundwater for quarry water supply	- Drawdown impacts at nearby groundwater works will be less than 2m - No impacts to the Maroota Sands Swamp Forest Groundwater Dependent Ecosystem (GDE) are expected.
Excavation of the Quarry Pit	No impact expected as aquifer interception will be avoided.
Changes to hydrologic regimes in downstream watercourses due to changes in catchment areas and the capture of	- Some changes to streamflow regimes in immediate receiving waters is expected - No material impacts to third party surface water users is expected.

water in the water
management system.

- Overflow events are expected to occur three times per year.
- The water quality of water management system overflows will be progressively monitored. Further measures, such as water treatment could be implemented if monitoring indicates that overflows are resulting in non-trivial degradation of receiving water quality.

The social risk matrix for water impact is as follows:

Potential Social Impacts	Social theme	Receptors	Duration	Sev	Sen	LR	C	Social Risk w/o mitigation	Social Risk w/ mitigation
Reduction in groundwater and surface water available for surrounding users	Personal and property rights	Surrounding Residents	Project operations	Low	Moderate	Unlikely	Minor	Moderate	Low

7. Assessment of Economic Impacts

The economic section of the SEIA has been prepared to satisfy the Project's SEARs economic requirements and the requirements of Clause 1(b) and (e) of s4.15 of the EP&A Act. The Project's SEARs require the preparation of:

- *a detailed assessment of the likely economic impacts of the development, paying particular attention to;*
 - *the significance of the resource;*
 - *the costs and benefits of the project; identifying whether the development as a whole would result in a net benefit to NSW, including consideration of fluctuation in commodity markets and exchange rates; and*
 - *the demand on local infrastructure and services.*

This section has been prepared in accordance with the *Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposal* dated December 2015, and the supporting document titled *Technical Notes supporting the Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposal*.

The NSW Guidelines and the supporting technical document focuses on the public interest and the likely impacts of the Project that the consent authority must take into consideration when determining an application. This is consistent with the approach to evaluations of State Government decision making.

The Cost Benefit Analysis (CBA) methodology is used to assess the public interest by estimating the net present value of the Project to the NSW Community. All calculations in the CBA is based on the assumption that the Project will commence operations in 2023 (Year 1) and cease operations in 2050 (Year 28), prior to the DA approval lapse in 2052 (Year 30). This assessment assumes that the Project will be wholly owned and operated by DLALC.

7.1 Cost Benefit Analysis (CBA)

A Cost Benefit Analysis (CBA) estimates and compares the total benefits and costs of a project to a particular community, in this case, the NSW community. The CBA methodology involves quantifying the Project's potential positive and negative economic, social or environmental impacts as Australian dollars in current day prices, referred to as the Net Present Value (NPV). Benefits are then compared against costs to provide the Project's net benefit to the State of NSW.

7.1.1 Establishing the Base Case

Identification of the costs and benefits of the 'base case', whereby the Project does not proceed, provides a baseline against which the Project's economic, social and environmental costs and benefits can be compared.

7.1.1.1 Existing Use of the Project Site

The Project Site currently comprises undeveloped bushland. It is highly likely to remain as undeveloped bushland should a sand quarry not be developed. Due to the nature of site of the Project site, it is unsuitable to be used as an agricultural site. The Project site will require substantial amount of land clearing before it can be utilised for agricultural purposes. The low return from agricultural use and high upfront costs of land clearing renders the Project Site unsuitable for any other purpose as it is not economically viable for the operators.

The Project Site's estimated land and property price without development approval for an extractive industry is \$6.273 million (based on an average of \$34,716 per hectare x 180.7 hectare). This is an appropriate indicator of the present value of future output, housing and lifestyle uses associated with land and properties in their current use.

7.1.1.2 Interactions with Surrounding Projects

Under the base case, seven existing quarries will continue to operate within the State Suburb of Maroota. The estimated annual output of each quarry and their approvals details as of March 2021 are listed in the table below. **Figure 15** further below compares the combined output of these existing quarries with and without the Project.

Table 14 — Existing Quarries in Maroota		
Quarry	Approval Until	Estimated output (per annum)
Haerses Road Quarry	14-02-46	250,000
Hithcock Road Quarry	30-11-28	400,000
Maroota Lodge Quarry (Telegraph Road)	2037	100,000
Roberts Road Quarry	31-05-25	350,000
Old Northern Road Quarry	24-05-42	495,000

Old Telegraph Road Quarry	2031	250,000
Old Northern Road Quarry – Pit 5 Quarry	03–11–36	195,000
Haerses Road Quarry	14–02–46	250,000

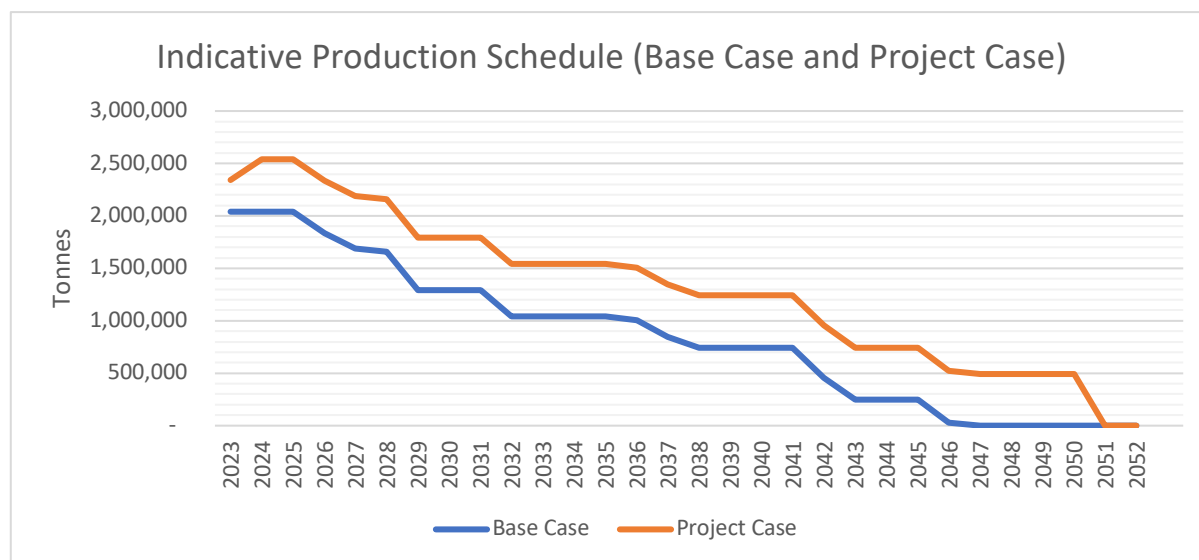


Figure 20: Indicative Production Schedule (Base Case and Project Case)

Under the base case scenario, the existing Maroota quarries will produce an anticipated combined output of 2.04 million tonnes of saleable product in Year 1 (2023). This total output will gradually decrease as licences lapse, or resource deposits are exhausted. By 2032, the combined total output of saleable product in Maroota will halve compared to the year 1 production rate. The total output of the Maroota locality will reduce to 0 at Year 24 (2047) based on current approvals.

In the Project Case Scenario, the eight quarries will produce an anticipated combined output of 2.54 million tonnes by Year 2 (2024). The Project will be the only operational quarry post-2047 based on current approvals. It is not anticipated that the Project will adversely impact surrounding quarry operations due to the high demand for construction sand within the Sydney construction market and the shortfall of locally supplied construction sand.

7.1.2 Project's Inputs

The following presents all significant inputs required to realise the Project's objectives. These inputs are later quantified as part of the CBA.

- The progressive pre-clearing of fauna and flora to expose working services and the construction of site infrastructure, including the access road, surface water dam, processing plant and administration building. It is estimated that 15 full-time positions jobs will be created during this site establishment and construction phase.

- The extraction of 15.200 million tonnes of sandstone, that once processed will produce 13.680 million tonnes of saleable product across the Project's life. The Project's production schedule is presented in **Figure 16**.

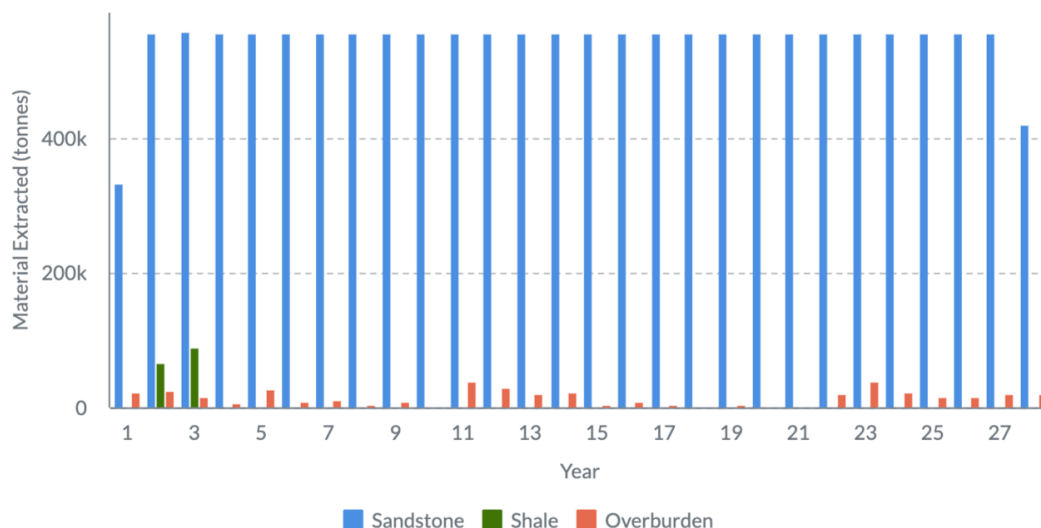


Figure 21: Annual Extraction Figures (Data Source: RPM Global, 2020)

- Employment of eight full-time and four part-time staff to manage the operations of the Project and the engagement of between 15 and 20 full-time privately contracted truck drivers to deliver product from the site to the customer.
- Implementation of a comprehensive environmental management strategy that includes measures to mitigate and avoid adverse biodiversity, noise, bushfire, water, construction, waste, air quality, soils, hazard and Aboriginal Archaeological impacts.
- Implementation of a progressive rehabilitation strategy that enables the Project Site to be used for a post-mining grazing enterprise.
- Decommissioning of quarry infrastructure following the closure of operations.

7.1.3 Significance of the Resource

The *Sydney Regional Environmental Plan No 9 – Extractive Industry (No 2 – 1995)* identifies the resource that the Project seeks to extract as a 'material of regional significance'. As construction sand is a high-bulk low-unit cost commodity that is highly sensitive to transport costs, it is important to provide local sources of construction sand for the Sydney construction market.

The NSW Offshore Sand Review 2016 identified a shortage of local construction sand for the Sydney market. The Report notes that the Sydney region consumed approximately 7 million tonnes of construction sand in 2016, of which 1 million tonnes was imported from outside Greater Sydney. This figure is anticipated to grow given the significant infrastructure projects laid out in the State's Infrastructure Strategy and imminent closure of one of Sydney's most significant sources of construction

sand at Kurnell Peninsula. The Penrith Lakes Quarry, one of the largest sand quarry in Sydney, closed in September 2020 after being in use for more than 130 years, extracting over 160 million tonnes of aggregate that supplied 80% of the sand and gravel used in Sydney construction industry.

The anticipated transport costs from Maroota are approximately \$14 per tonne compared with \$28 per tonne from Stockton (**Figure 18**).¹⁵ With the Project potentially meeting half of the 1 million tonnes of construction sand presently delivered from outside the Greater Sydney Region (see **Figure 17**), that is a potential saving of \$7m per year – some \$190m across the Project's life.

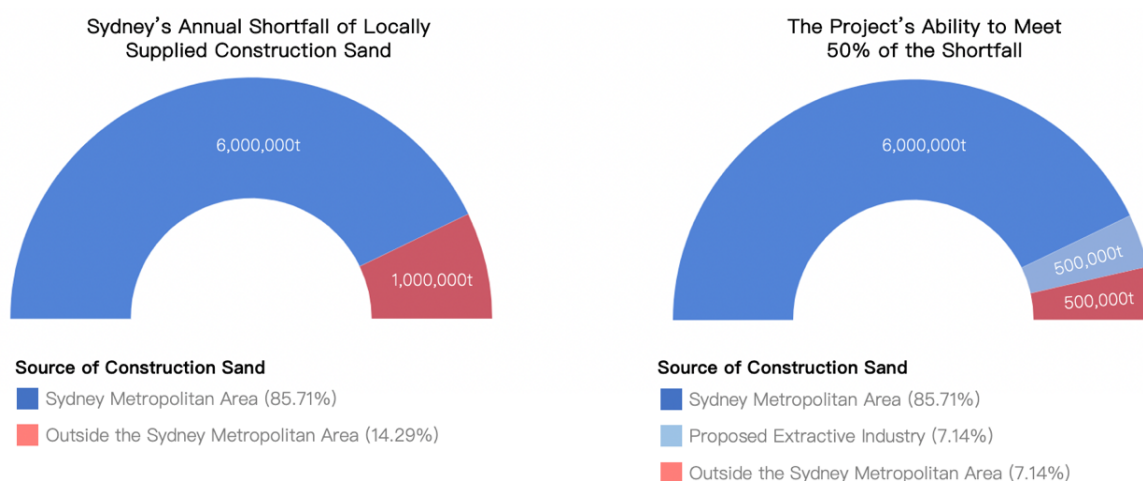


Figure 22: The Project's Potential Impact on Sydney's Sources of Construction Sand

The resource also provides a significant opportunity to enhance the NSW Government's Aboriginal Procurement Policy. That Policy seeks to increase Aboriginal economic participation in the development of NSW by leveraging the NSW Governments procurement capacity to support Aboriginal-owned businesses. The Policy aims to award 3% of total domestic contracts for goods and services issued by NSW Government agencies to Aboriginal-owned business by 2021.¹⁶ In 2019, the percentage of government contracts awarded to Aboriginal-owned business fell from 0.44% the previous year to 0.43%. This represents a shortfall of 2.57%.¹⁷ The Project help address this shortfall by providing an Aboriginal-owned source of construction sand that can be procured as part of the NSW Government's planned \$107.1 billion worth of State infrastructure projects to 2022–23.¹⁸ Thus, the subject resource is significant to the NSW community. This conclusion is confirmed in the CBA results presented in Section 7.2 below.

¹⁵ NSW Government Department of Trade and Investment, (2016), *NSW Offshore Sand Review*, NSW Government, pg. 5.

¹⁶ NSW Government, (2018), *Aboriginal Procurement Policy*, NSW Government, <https://buy.nsw.gov.au/policy-library/policies/aboriginal-procurement-policy>

¹⁷ NSW Treasury, (2019), *Aboriginal Procurement Policy & Aboriginal Participation in Construction Policy 2019 Review*, NSW Government, https://buy.nsw.gov.au/_data/assets/pdf_file/0006/607821/app_apic_policy_2019_review_accessible_pdf_1.pdf

¹⁸ NSW Treasury, (2021), *NSW Budget 2020–21: Building a Better NSW*, NSW Government <https://www.budget.nsw.gov.au/budget-detail/building-better-nsw>

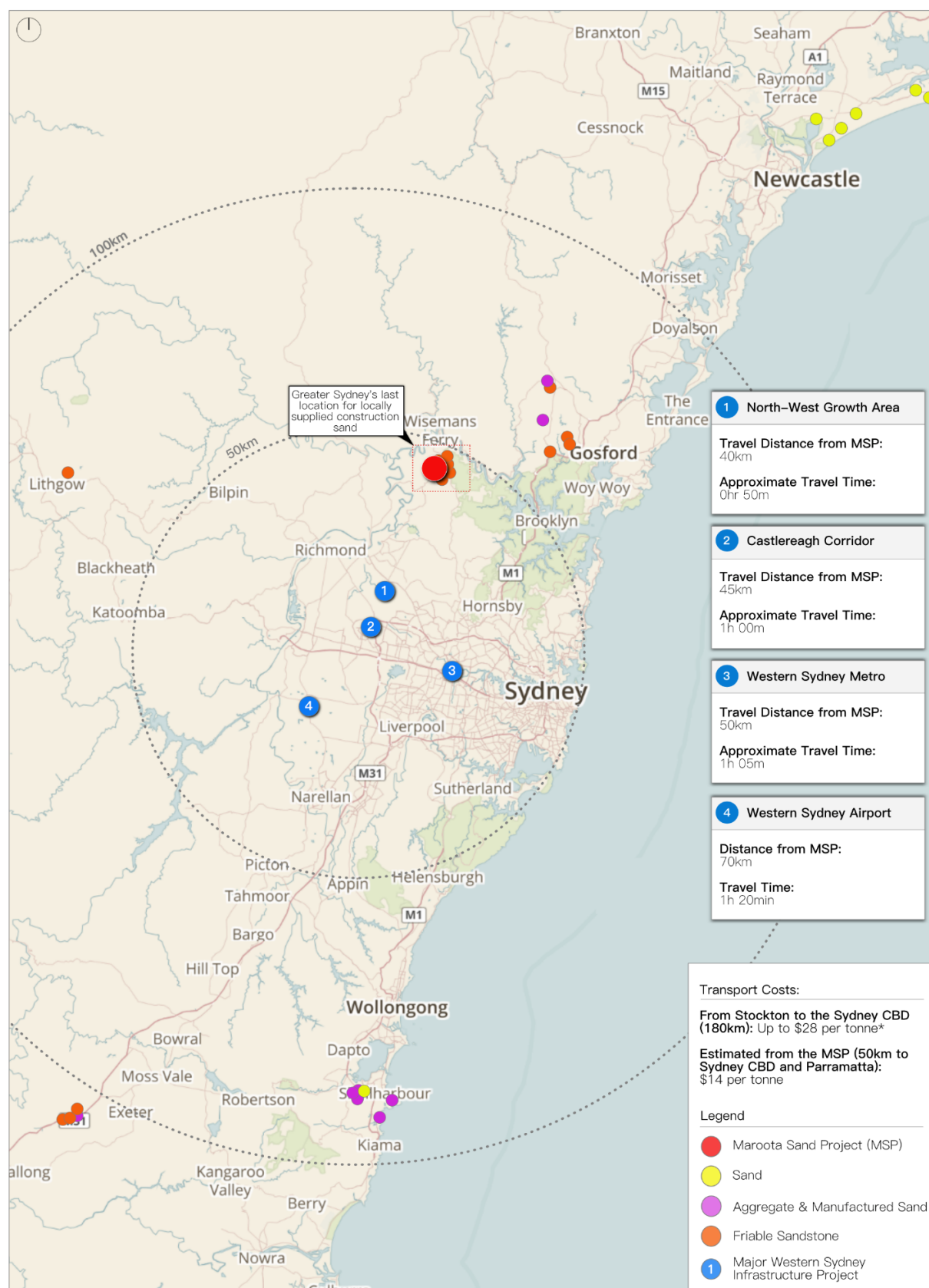


Figure 23: Proximity of the Project to Western Sydney Infrastructure Projects Compared to Sydney's Other Sources of Construction Sand (Source: Maphub, 2021) (*Information Source: NSW Governments Offshore Sand Review)

7.2 Net Benefit to NSW

This section presents the process and results of the cost benefit analysis for the NSW community. This includes the identification of the Project's benefits and costs, the quantification of those benefits and costs in present value terms, and the overall net benefit of the Project.

7.2.1 Identification of Benefits and Costs

The following table presents the Project's potential benefits and costs. Potential economic benefits include the producer surplus (net production benefits) generated by the Project, increased temporary and permanent job opportunities, non-market benefits to employment, economic benefits to landholders and suppliers. Potential costs include environmental, social and cultural costs and any net public infrastructure costs. The quantification of these costs and benefits is presented in the table below.

Table 15 — Potential economic costs and benefits		
Matter	Costs	Benefits
Net Production Benefits	• Opportunity cost of land • Capital equipment • Establishment cost including labour, capital equipment and biodiversity offsets/credits • Operating costs including labour and environmental management measures • Rehabilitation Costs	• Increased supply of construction sand in Sydney • Gross revenue
Potential environmental, social and cultural costs	• Noise Impacts • Air quality Impacts • Traffic Impacts • Visual Impacts • Water impacts • Ecological Impacts	• Economic and social benefits of DLALC reinvesting revenue into community housing, education, employment, health, land management cultural project and programs. • Economic benefit to suppliers and builders • Increased employment opportunities • Training opportunities.

7.2.2 Components of Net Benefits Attributable to NSW

The following table lists the key aspects of a project that comprise net benefits attributable to NSW as outlined in the *NSW Government Guidelines for the economic assessment of mining and coal seam gas proposal*. The below table outlines the relevance of each aspect to the Project.

Table 16 — Components of Net Benefits Attributable to NSW	
Item	Cost Benefit Analysis for NSW
Royalties	No
Company Income Tax	No**
Net Producer Surplus	Yes
Economic Benefit to Existing Landholder	No***
Economic Benefit to Workers	Yes
Economic Benefit to Existing Supplier	No
Net environmental, social and transport-related costs	Yes
Net public infrastructure cost	Yes

* Royalties are not payable for the extraction of sandstone.

** DLALC is a non-profit organisation and is exempt from income tax

*** The surplus of land price and access fee is an economic benefit to existing landholders. The land is already 100% DLALC owned.

The following sections quantifies the Project's economic benefits and costs for each aspect listed in **Table 16**. This analysis was undertaken in 2021 real values, with a 7% discount rate. The analysis period is for 30 years, with an expected 28 operating years and the remaining year(s) used solely for rehabilitation. If competitive market prices are available, they are used as an indicator of economic values. Unquantifiable factors such as environmental and social impacts are assessed using qualitative assessment techniques.

7.2.2.1 Royalties

Royalties are not payable for the extraction of sandstone. Therefore, the economic benefit to NSW arising royalties is **\$0**.

7.2.2.2 Company Income Tax

As an Aboriginal Land Council, DLALC is a not-for-profit that is exempt from Company Income Tax. Instead, they are required to reinvest any profit to realise their mission and commitment to strengthen the confidence and self-reliance of Aboriginal people and families and to provide them with greater opportunities. DLALC's functions include acquiring and managing land and providing community benefit schemes, including community housing, employment assistance, education and training, scholarships, cultural activities, funeral funds, child-care, and aged care services.

7.2.2.3 Net Producer Surplus

The Project's net producer surplus is the difference between the direct benefits and costs to the Proponent for delivering the Project. It is calculated according to the following formula.

$$\text{Revenue} - \text{Costs} + \text{Tax} + \text{Royalties}.$$

Costs include contributions to public infrastructure and environmental management costs. A portion of the Project's net producer surplus is attributable to the NSW community according to the following formula.

$$\text{Net Producer Surplus} \times \text{Australian Share of Project's Ownership} \times 32\% = \text{Value of Net Producer Surplus Attributable to NSW}$$

The Project's anticipated gross revenue and development/establishment, operating and rehabilitation/decommissioning costs are presented below.

Development/Operation Costs

The Site is owned and will be operated by DLALC. The capital investment value for the Project is **\$20.90m** (excluding GST), according to the Quantity Surveyors Certificate of Cost prepared by APLAS Group.

The capital investment value includes general site preparation and excavation, purchasing of plant equipment, outbuildings, civil works and infrastructure costs, preliminaries, operational equipment, professional, consulting and design fees and project contingencies. The figure above does not include landscaping, development application and construction certificate fees, other authority fees and charges, finance costs, works subject to a separate development application, land cost, contingencies, loose FF & E items, specialised fitout, site rehabilitation works, staging or relocating operational/processing plant, biodiversity offset works, and good and services tax.

Annual Operating Costs

The Project's annual operating costs include power, water, wages and ongoing environmental management. Depreciation has been excluded from annual operating costs, and royalty rates do not apply to sandstone. The Project's operational costs throughout its life are anticipated to be approximately **\$182.18m**.

Rehabilitation and Decommissioning Costs

The Project Site will be progressively rehabilitated so that it is suitable for use as a post-mining grazing enterprise. The cost for rehabilitation is estimated to be **\$1.42m** (47.2ha to rehabilitate at \$30,000 per hectare).

Gross Revenue

The main economic benefit of the Project is the gross revenue earned through the sale of quarry products. The Project is expected to process 13.680 million tonnes of saleable product by the end of the Project Life. At the current price of \$30 per tonne, it is expected to generate gross revenue of **\$410.40m** from sandstone sales.

Net Producer Surplus Attributable to NSW

Using the formulas described above, the following tables present the Project's Net Producer Surplus and Net Producer Surplus Attributable to NSW.

Table 17 — Net Producer Surplus	
Revenue	
Gross Mining Revenue	\$410.40m
Costs	
Operating Cost	\$182.18m
Capital/Establishment Cost	\$20.90m
Decommissioning/Rehabilitation Costs	\$1.42m
Net Producer Surplus	\$205.90m

Table 18 — Net Producer Surplus Attributable to NSW	
Net Producer Surplus	\$205.90m
Australian Share of Project's Ownership	100%, fully owned and operated by DLALC
NSW Share of Australia	32%
Value of Net Producer Surplus attributable to NSW (without tax)	\$65.89m

7.2.2.4 Indirect Benefits to NSW

The indirect benefits to NSW include economic benefit to existing landholders, workers and suppliers are estimated in the table below.

Table 19 — Indirect Benefits to NSW	
Benefit Category	Attribution to NSW
Economic benefit to existing landholders	As the land is currently being transferred to DLALC via the <i>Aboriginal Land Rights Act 1983</i> , there is no economic benefit to the existing landholder.
Economic benefit to workers	Full attribution to NSW, assuming all jobs are filled by NSW residents. Economic benefits for workers are discussed below.
Economic benefit to suppliers	No economic benefit is anticipated for suppliers.

The Project's economic benefit to workers is the difference between the wage paid in the extraction project and the minimum. Maroota is located in an accessible area, being one hour drive from the Parramatta and Sydney CBD. Therefore the Project is more likely to attract workers already working within the Metropolitan Sydney area, whether or not they are working in the extraction industry. Due to the accessible location and expected average extraction salary, it is less likely to attract workers to relocate to fill the positions in Maroota. Therefore it is assumed that 100% of the potential wages benefits are attributable to NSW as all positions will be filled by NSW residents.

The average wage of quarry staff for the Project is \$98,350, calculated based on the average of extracting advertisements within Sydney. As shown in the below figure, this salary exceeds the minimum wage for both the non-mining and mining sectors. This wage surplus equates to **\$2.62m** across the Project's life.

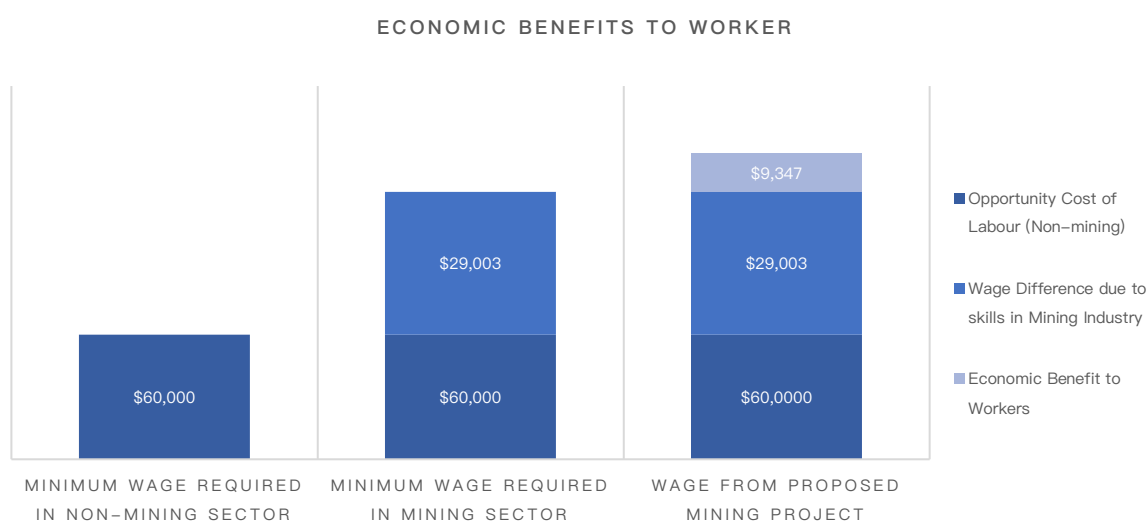


Figure 24: Economic Benefits to Workers

7.2.2.5 Potential Environmental, Social and Transport–Related Costs

The following sections quantify the cost of the Project's environmental, social and transport–related costs.

Noise Impacts

The Acoustic Report accompanying the EIS assessed potential noise and vibration impacts arising from the Project's construction and operations. Those results demonstrate that noise emissions during the Project's construction phase satisfy the relevant construction noise criteria. The Report found that the Project's operations may result in marginal impacts at one receiver when noise–enhancing winds are present. These costs are quantified as **\$0.1m**.

Air Quality Impacts

The Air Quality Impact Assessment accompanying the EIS assessed the Project's potential air quality impacts. The Assessment predicted that all assessed air pollutants generated by the Project's operation would comply with the applicable assessment criteria at all surrounding receptors. Therefore, the Project will not lead to an unacceptable level of environmental harm or adverse impact. Appropriate dust management measures will be implemented to mitigate the potential occurrence of excessive air emissions. As the Project can operate without significant impact on the surrounding environment's air quality, the cost for air quality impacts is quantified as zero.

Traffic Impacts

The Traffic Report accompanying the EIS concluded that the Project's traffic impacts during both the construction and operational phase on the road network, including principal intersections, will be satisfactory. As part of the Project, it is proposed to upgrade the intersection of Wisemans Ferry Road and Patricia Fay Drive to current Austroad Guidelines. The cost of the intersection upgrade and internal roads are included in the Project's development/establishment costs.

Visual Impacts

The Landscape and Visual Impact Assessment Report accompanying the EIS concludes there are very few viable public receptors that would be impacted by the proposed works. Where the Project Site is visible, it has been determined that the Project will have a minor–moderate impact on the existing landscape character and values. The Project involves rehabilitating a native biodiversity corridor along the northwest boundary of the extraction pit to mitigate visual impacts. The cost of this mitigation measure is included in the Project's rehabilitation costs.

Water Impacts

The Water Assessment accompanying the EIS concludes that Project's drawdown impacts during the abstraction of groundwater for quarry water supply and changes to streamflow regimes will not have an adverse impact on nearby water users. Overflows will occur occasionally for short periods and are not expected to have elevated nutrients or concentrations of coliforms, enterococci or protozoans. Therefore, no material impacts the potential for secondary and primary contact recreation in receiving waters is expected. Furthermore, the water quality of these overflows is expected to be suitable for both

livestock consumption and irrigation. The Project will implement a water management plan to monitor and mitigate adverse water impacts. The cost for the implementation of this plan is included in the Project's operating costs. The construction costs for the Project's surface water dam and external stormwater services is included in the Project's development/establishment costs.

Biodiversity Impacts

The Biodiversity Development Assessment Report accompanying the EIS concludes that a total of 1081 ecosystem credits and 6768 species credits will be required to offset the Project's biodiversity impacts. The cost of these credits, if purchased, is approximately **\$11.64m** as of 2 March 2020. This figure is included in the CBA analysis. DLALC will establish a Biodiversity Stewardship Area to conserve, steward and enhance 309 ha of land to fulfil their biodiversity offset obligations. This is determined by using an average of 3.5 credits per hectare generated at the Biodiversity Stewardship Site.

Heritage Impacts

The assessment identified 24 Aboriginal archaeological sites comprising Aboriginal objects and one Potential Archaeological Deposit area within the study area. In order to protect and preserve the Aboriginal heritage, identified archaeological sites within the study area will be avoided. 35m radius buffer zones will be applied to recorded shelter sites located near the impact area boundary to ensure preservation of the sites. Ongoing regular monitoring of the Project Site within the property during the lifetime of the Project will ensure these archaeological sites remain unaffected by the Application.

The Project will directly impact the Potential Archaeological Deposit area identified along the main ridge. This area does not contain confirmed Aboriginal objects but displays moderate potential for subsurface deposit. A staged excavation program will be undertaken within the Potential Archaeological Deposit area) to determine the presence/absence, nature and extent of any associated archaeological material. Initial test excavations will occur before any impact from the Project. The cost of this testing program is estimated at **\$0.2m**. This figure is included in the CBA analysis.

7.2.2.6 Net Public Infrastructure Costs

All proposed infrastructure, including the Wisemans Ferry Road/Patricia Fay Drive intersection will be paid for by the Proponent. These costs are included in the Project's development/establishment costs.

7.2.3 Net Present Value Attributable to NSW

The Project's Net Present Value to the NSW community accounts for costs and benefits attributable to NSW (outlined in Section 7.2.2). It is the total direct net benefits (royalties, company tax and net producer surplus), plus the indirect benefits minus the net environmental, social and transport related costs and the net public infrastructure costs. **Table 20** present a summary of benefits and costs attributable to NSW, while **Table 21** presents the Net Present Value to the NSW community.

Table 20 — Benefits and Costs to NSW (NPV)				
Item	Total Value	Proportion Attributable to NSW	Value for NSW (Undiscounted)	Value for NSW (Present Value) 7% Discount Rate
Benefit				
Economic Benefit to NSW workers (10 Fulltime Workers)	\$2.62 million	100%	\$2.62m	\$1.09m
Net Producer Surplus to NSW	\$205.9 million	32%	\$65.89m	\$27.34m
Total			\$68.51m	\$28.43m
Cost				
Noise Impact	\$100,000	100%	\$0.1m	\$0.09m
Biodiversity	\$11.6 million	100%	\$11.6m	\$10.84m
Heritage and Archaeology	\$200,000	100%	\$0.2m	\$0.12m
Total			\$11.9m	\$11.05m

Table 21 — Net Present Value of Project Attributable to NSW		
Net Benefits	Net Cost	Net Present Value
\$30.41m	\$11.12m	\$19.29m

The above results demonstrate the Project is anticipated to result in a net benefit of \$19.29m for the NSW community.

7.2.4 Sensitivity Analysis

The CBA results presented in **Table 21** are subject to the estimates for each cost and benefit variable described in Section 7.2.2 including establishment costs, operating costs, the value of the saleable product and company tax payable. Sensitivity analysis is a standard practice to account for the uncertainty surrounding the estimates of costs and benefits, particularly values inferred from market behaviour to the true value of non-market goods and services. A sensitivity analysis involves testing different scenarios in which:

- A discount rate of 4%, 7% & 10% is applied; and
- The cost and benefit inputs are varied to account for potential risk and market behaviour.

The variations used for this SEIA's sensitivity analysis include:

- Company tax payable — Increase and decrease 50%
- Value of saleable product — Increase and decrease 20%
- Development costs — Increase and decrease 20%
- Environmental costs — Increase and decrease 20%
- Operating costs — Increase and decrease 20%
- Production levels & operating costs — decrease 20%

These variations incorporate the default parameters provided in the NSW Government Guidelines for the economic assessment of mining and coal seam gas proposal. They also provide a conservative estimate on the potential decreased value of construction sand. However, this decrease is unlikely given the shortage of locally supplied construction sand to the Sydney market and the closure of sand extraction operations at Penrith Lakes. The Project's development costs are established in the Capital Investment Value Report that accompanies the main EIS. As the anticipated construction date for the Project is in 2023 (in 2 years), it is unlikely that development costs would increase by more than 20% as a result of market change. The results of the sensitivity analysis are presented in the table below. They demonstrate that Project will continue to provide a net benefit to the NSW community, despite commodity fluctuations.

Table 22 — Sensitivity Analysis (Net Present Value Attributable to NSW Under Different scenarios)			
Parameters	4% Discount Rate	7% Discount Rate	10% Discount Rate
Anticipated Scenario	\$28.44m	\$17.38m	\$10.58m
Increased Costs & Benefits			
Value of Saleable Product — Increase 20%	\$43.73m	\$28.28m	\$18.74m
Development Costs — Increase 20%	\$27.68m	\$16.82m	\$10.15m
Environmental Costs — Increase 20%	\$26.23m	\$15.24m	\$8.51m
Operating Costs — Increase 20%	\$21.68m	\$12.54m	\$6.94m
Decreased Costs & Benefits			
No benefit to workers	\$26.92m	\$16.29m	\$9.76m
Value of Saleable Product — decrease 20%	\$13.18m	\$6.48m	\$2.40m
Development Costs — decrease 20%	\$29.24m	\$17.93m	\$10.99m
Environmental Costs — decrease 20%	\$30.78m	\$19.66m	\$12.81m
Operating Costs — decrease 20%	\$35.24m	\$22.22m	\$14.20m
Production levels & operating costs — decrease 20%	\$19.96m	\$11.32m	\$6.03m

7.3 Local Effects Analysis (LEA)

The role of a Cost Benefit Analysis (CBA) is to estimate and compare the total benefits and costs of a project to the members of the NSW community. While the CBA focuses on the NSW community, the LEA focuses on the changes that the local community will experience during the duration of the Project, with priority given to effects that are perceived to be material at the local level.

The LEA provides additional information to describe changes that are anticipated to occur within the local community, intending to inform the scale of change rather than being a cost or benefit to the local community.

Under the NSW Guidelines, the locality is defined by the Statistical Area Level 3 (SA3) of the Project. Maroota is located within the SA3 of Dural–Wisemans Ferry which is across Hills Shire LGA and Hornsby LGA.

7.3.1 Local Economic Effects

7.3.1.1 Local Employment

The community will benefit from an increase of employment opportunities, and the flow on effect that is created as employees spend their income.

During construction, the Project will employ 15 full time positions during the site establishment and construction phase of the Project.

During the operational phase, the Project will employ 8 full time and 4 part time staff (equivalent to 10 full time) to manage the operation of the project.

A portion of the workers will reside within the locality and experience an increase in labour earnings. The remainder of the workers residing outside the community are more likely to increase spending within the community during work hours, which would contribute to the flow on employment in the local economy.

Table 23 — Analysis of Direct Labour Inputs			
	Workers Residing in Locality	Not residing in Locality	Total
Direct Employment	3.5	6.5	10

It is estimated that approximately 35% of the work force live and work locally within the Dural–Wisemans Ferry SA3. This is derived from the population that has reported their place of usual residence and place of work within the Dural–Wisemans Ferry SA3 on the 2016 census day.

7.3.1.2 Net Income Increase for the Local Community

The Project will provide direct employment for 3.5 quarry workers, based on 35% of workers residing within locality. With average income calculated at \$98,350, the increase in net income per year due to direct employment is \$32,714.5, equivalent to an increase of 0.33 full time employment within the local community.

Table 24 — Analysis of Net Income Increase

Item	Workers residing in locality
A) Direct Employment during operation phase	3.5
B) Average net income in mining industry (\$ per year)	\$98,350
C) Average net income in other industries (\$ per year)	\$89,003
D) Average increase in net income per employee (b–c)	\$9,347
E) Increase in net income per year due to direct employment (a*d)	\$32,714.5
F) Full Time Employment Equivalent (e/b)	0.33

7.3.1.3 Second Round/Flow on Effects

Second round effects are important for local communities and therefore assessed as part of the LEA. The multiplier analysis is used to calculate the economic benefit of the flow on effects from direct employment.

The anticipated flow-on effect generated by wage expenditure at the local level is expected to be between \$1.945 million per year.

7.3.1.4 Estimating Effects Related to Non-Labour Project Expenditure

In addition to employment, the other major economic effect of the proposal will be expenditure on other non-labour inputs that contribute to the local economy.

The estimation of effects related to other, non-labour expenditure in the LEA is restricted to the direct expenditure made by the Project in the local area.

Excluding human resources, the direct expenditure per year includes power, water, extraction cost, sales, plant maintenance and road levy. All utilities will be supplied by national companies outside the locality whilst all fuel, plant and machinery maintenance will be spent within the locality.

The table below quantifies the expenditure for all of the construction and operations activity.

Table 25 — Analysis of Direct Expenditure Per Year (excluding labour)

	In locality	Outside locality	Total
Total direct expenditure	\$0.9 million	\$2.9 million	\$3.8 million

7.3.1.5 Effects on other Local Industries

It is expected that there would be limited effects to other local industries.

There will be no displacement of a specific land use. Due to the location, geography and nature of the Site, should the Site not be used as a sand quarry, it would remain as undeveloped bushland.

The Project is unlikely to impact on choices by external parties such as tourism and business travel. Maroota is a rural suburb with a population of 617 and very limited local community infrastructure. There is no local shopping strip, one standalone cafe and two service stations on the two main roads. The only tourist attraction within Maroota is a working sheep station with a licensed restaurant that can cater for functions.

There are seven existing quarries within Maroota and the Site has been identified as a site suitable for mining in the Hills LSPS; the District Plan, and Sydney Regional Environmental Plan No. 9 – Extractive Industry (No. 2 – 1995) as being suitable for an extractive industry. The businesses have been operating in Maroota for an extended period of time with existing quarries in operation therefore it is highly unlikely that an additional quarry within Maroota will impact on existing tourism or business travel.

It is also unlikely for the Project to create temporary effect on other industries such as creating shortages for the food and housing market. The Project is not a large scale project. At peak operation, the Project will employ 8 full time and 4 part time quarry workers, and 15 to 20 contracted drivers.

It must also be noted that Maroota is not located within a remote area. The Project is within a 40 minutes drive to Richmond, and a one hour drive to the Parramatta CBD and Sydney CBD. The Project is easily accessible by workers should they prefer to stay at their existing residences within Metropolitan Sydney. Therefore the Project is unlikely to have any significant adverse impact on the availability of food and housing.

Based on the foregoing, the effects on other local industries are unlikely as a result of the Project.

7.3.1.6 Environmental and Social Impact on the Local Community (Externalities')

As stated in the CBA, the majority of the adverse impacts will not have significant impact to the local community after the implementation of the proposed mitigation measures. With the majority of the impacts being considered to be of negligible to minor impact, it is considered that that the majority of the impacts are at no cost to the local community.

The local community would benefit from increase in employment opportunities and the flow-on effect from direct employment, and the upgraded works at Wisemans Ferry Road as part of the Application.

Table 26 – Analysis of Externalities			
Externality Benefit (Cost)	In locality	Outside locality	Total
Noise	(\$100,000)	\$0	(\$100,000)
Air Quality	\$0	\$0	\$0
Transport	(\$1.5 million)	\$0	(\$1.5 million)
Views	\$0	\$0	\$0
Water Impact	\$0	\$0	\$0
Ecology Impact	(\$11.6 million)	\$0	(\$11.6 million)

7.3.2 Summary of Local Economic Effects

The Local Effects Analysis demonstrates that the community will benefit from an increase of employment opportunities, and the flow-on effect created by employees when they spend their income. With 35% of the workers expected to reside locally, the net income increase for the local community is equivalent to an increase of 0.33 full time employment. The locality is expected to benefit from \$0.9 million of direct expenditure per year from the operational cost of the Project. It is expected to have limited effect on other local industries due to the location, geography and nature of the Site.

The table below is an indicated timeline of when the costs and benefits are likely to occur. The green indicates a benefit, yellow indicates a low cost, red indicates a moderate cost, and blue indicates no impact.

Table 27 — Indicated Timeline of Costs and Benefits									
Cost and Benefits	Construction	Year 1	Year 5	Year 10	Year 15	Year 20	Year 25	Year 28	Year 30
Employment									
Traffic Impact									
Acoustic Impact									
Visual Impact									
Air Quality									
Water Impact									
Ecology Impact									

It is demonstrated in the table that there will be benefits to employment throughout the Project, and no adverse impact after Year 28.

It is expected that during the construction phase, there would be a moderate level of acoustic, visual and ecology impact, which gradually reduces as the Project proceeds.

However, as quantified in detail in the CBA, the locality will not have significant adverse impact on the local community in terms of noise, air quality, views and water and will benefit from the upgrade works at Wisemans Ferry Road as part of the Project.

The table below summarises the Local Environment Effects.

Table 28 — Summary Table			
	Project Direct (Total)	Project Direct (Local)	Net Effect (Local)
Employment Related			
Full Time Equivalent	10	3.5	0.33
Income		\$32,713	
Other Non-Labour Expenditure	\$3,800,000	\$900,000	

Table 28 — Summary Table

	Project Direct (Total)	Project Direct (Local)	Net Effect (Local)
Externality Benefit (Cost)			
Noise	(\$100,000)	\$0	(\$100,000)
Air Quality	\$0	\$0	\$0
Transport	(\$1.5 million)	\$0	(\$1.5 million)
Views	\$0	\$0	\$0
Water Impact	\$0	\$0	\$0
Ecology Impact	(\$11.6 million)	\$0	(\$11.6 million)

8 Conclusion

The Social and Economic Impact Assessment has been prepared to support the Environmental Impact Statement and to address the social and economic components of the Project's Secretaries Environmental Assessment Requirements.

The SEIA predict, analyse, manage and monitor the positive and negative social and economic impacts of the Project.

The Project will have the most adverse impact on the immediate vicinity, being occupiers and landowners within 1km of the Project site. Potential adverse impacts to the residents within close proximity includes impacts on their way of life, such as noise, vibration and dust.

Other potential impacts such as economic, heritage and biodiversity have a potential adverse impact on a much broader community being aboriginal groups, residents and workers of LGA or SA3 or NSW State as a whole. Details of the adverse impacts are listed in Table 2.

Amongst the potential adverse impacts, the highest risk lies in operational noise and biodiversity impacts.

The operational noise will be mitigated and monitored by a real-time noise monitoring network for the duration of the Project to ensure operational noise is acceptable at the receivers. In instances when relevant noise criteria is exceeded, compliance reports will be required to be submitted to relevant authorities and additional noise mitigation measures will be imposed on the Project.

In addition to the above, a website and a 24-hour complaints hotline will be established to ensure communication is adequate between the operator and community.

The removal of 50ha of bushland will have unavoidable disturbance to flora and fauna. To compensate for the loss of bushland, DLALC will establish a 309ha Biodiversity Stewardship Site to generate sufficient offset credits. A Biodiversity Management Plan will be prepared to guide the management of the Project Site throughout the Project. A 50m native bushland corridor will be rehabilitated along the northwest boundary of the extraction area. The risk for biodiversity impacts will be reduced to moderate with the proposed mitigation measures implemented.

The positive impact for the Project includes:

- Provide Steady Revenue Stream to Enable Housing, Employment, Health, Education, Land Management and Cultural Programs and Projects by DLALC;
- Enhance Post-Covid 19 and Long-Term Employment;
- Protect, Management and Enhance 309ha of High-Quality Biodiversity Lands;
- Rehabilitation of the Project Site; and
- Ongoing Training and Certification especially for Aboriginal People and Families.

DLALC as a non-profit organisation, will be reinvesting any profits from the Project to fulfil its mission and functions. The organisation's functions include acquiring and managing land and providing community benefit schemes, including community housing, employment assistance, education and training, scholarships, cultural activities, funeral funds, child-care, and aged care services.

The development of a sand extractive industry at the Project Site is a priority project due to the presence of a State significant sandstone deposit which presents an unparalleled opportunity for a revenue stream to fund DLALC's programs and projects.

The Project represents additional long-term employment opportunities and economic activity for the NSW State as it recovers from economic impacts of Covid-19. By approving a non-profit organisation owned and operated Quarry Project, it is capable of taking a substantial amount off the welfare budget and reduce financial burden on the Government. With the less privileged offered education and permanent training at different facilities owned by DLALC, they are given a better chance to learn, work and live, therefore improving their chances of overcoming poverty in the long run.

The Cost Benefit Analyses found that the Project's benefits, including economic benefits to NSW workers, and Net Producers Surplus attributable to NSW, equates to \$30.41m in present day value with a 7% discount rate. Meanwhile, the Project's costs, including environment, social and transport-related costs, equates to \$11.12m in present day value. Overall, the Project is expected to result in a net benefit of \$19.29m for the NSW Community.

The locality is expected to benefit from \$0.9 million of direct expenditure per year from the operational cost of the Project. It is expected to have limited effect on other local industries due to the location, geography and nature of the Site.

The Project's positive social impacts include both its immediate and direct benefits as well as the longer-term indirect economic, social and environmental benefits provided by the projects and programs that it will enable.

Based on the foregoing, the potential positive impacts outweigh the potential negative impacts therefore the Project will be beneficial to NSW and should be supported.