



Executive Summary

Maroota Friable Sandstone Extraction Project

MAY 2021 | 099278.10EIS



Deerubbin LALC

DESIGN
COLLABORATIVE



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1. Introduction

Design Collaborative Pty Ltd has prepared an Environmental Impact Assessment (*EIS*) on behalf of the Deerubbin Local Aboriginal Land Council (*DLALC – the Applicant*) to accompany a State Significant Development Application. This executive summary provides a high-level overview of the EIS, including the Project's Site and the surrounding area, proposed operations, strategic and statutory context, community consultation, environmental assessment and justification. References to annexures are found in the EIS.

The Development Application seeks consent for a proposed friable sandstone extraction industry (*the Project*) located at Wiseman's Ferry Road, Maroota (*the Project Site*). The Project is declared a State Significant Development as it involves extracting more than 5 million tonnes of resource across the Project's life.

Project Site

The Project Site (**Figure 1**) 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 heathland covering the majority of the site. Development is 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 quarry to the north. A powerline and slurry pipeline run alongside Patricia Fay Drive.

Drilling and studies examining the potential sand resource on the Project Site were supervised by Grahame Lee & Associates in 2008, 2009 and April 2017 (**Annexure 7**). Those investigations uncovered two sand bearing deposits on the Project Site. These being:

- Maroota Sand in a small area in the eastern part of the site containing in the order of 30,000 tonnes; and
- Hawkesbury Sandstone occurring over the whole of the site, underlying the Maroota Sand in the order of 20 million tonnes.

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.

The character of the local landscape is predominantly natural bushland, existing sand extraction sites and open to semi-open rural lands for pastoral and agricultural activities.

Project Objectives

The Project's objectives are:

1. Secure access to an extensive Hawkesbury Sandstone deposit that has the potential to provide a long-term source of construction sand to the Sydney market and fund DLALC's projects and programs.
2. Mitigate potential adverse impacts through the implementation of recommended mitigation and monitoring measures.
3. Produce and process up to 500,000 tonne per annum of saleable product for distribution.
4. Progressively rehabilitate the Project Site for use as productive agricultural lands following the life of the quarry.



Figure 1: Project Site (Source: Nearmaps, 2021)

Proponent

The Project's Proponent and Applicant is Deerubbin Local Aboriginal Land Council (*DLALC*). DLALC is a not-for-profit Aboriginal Land Council constituted under the *Aboriginal Land Rights Act 1983 (the ALR Act)*. The organisation is governed by a Board that is elected by local Aboriginal community members every two years. DLALC was established as the Local Aboriginal Land Council for a large part of Greater Western Sydney and the Blue Mountains.

The purpose of the ALR Act is to provide land rights for Aboriginal persons through the transfer of unused Crown land to Land Councils. The land can be used to support Aboriginal social, economic and cultural development.

DLALC's mission and commitment is to strengthen the confidence and self-reliance of Aboriginal people and families and to provide them with greater opportunities. Its 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.

Over time, DLALC have become the largest private landholder in the Penrith, Blue Mountains, Hills and Hawkesbury Shire LGAs. They also possess significant assets in Parramatta and Blacktown.

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 Plan 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 2**). 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.

Therefore, the Project's benefits are not only restricted to the immediate jobs and public benefit that it provides, but also the longer-term economic, social and environmental benefits provided by the projects and programs that it will enable.



Projects Enabled by the Maroota Sand Project

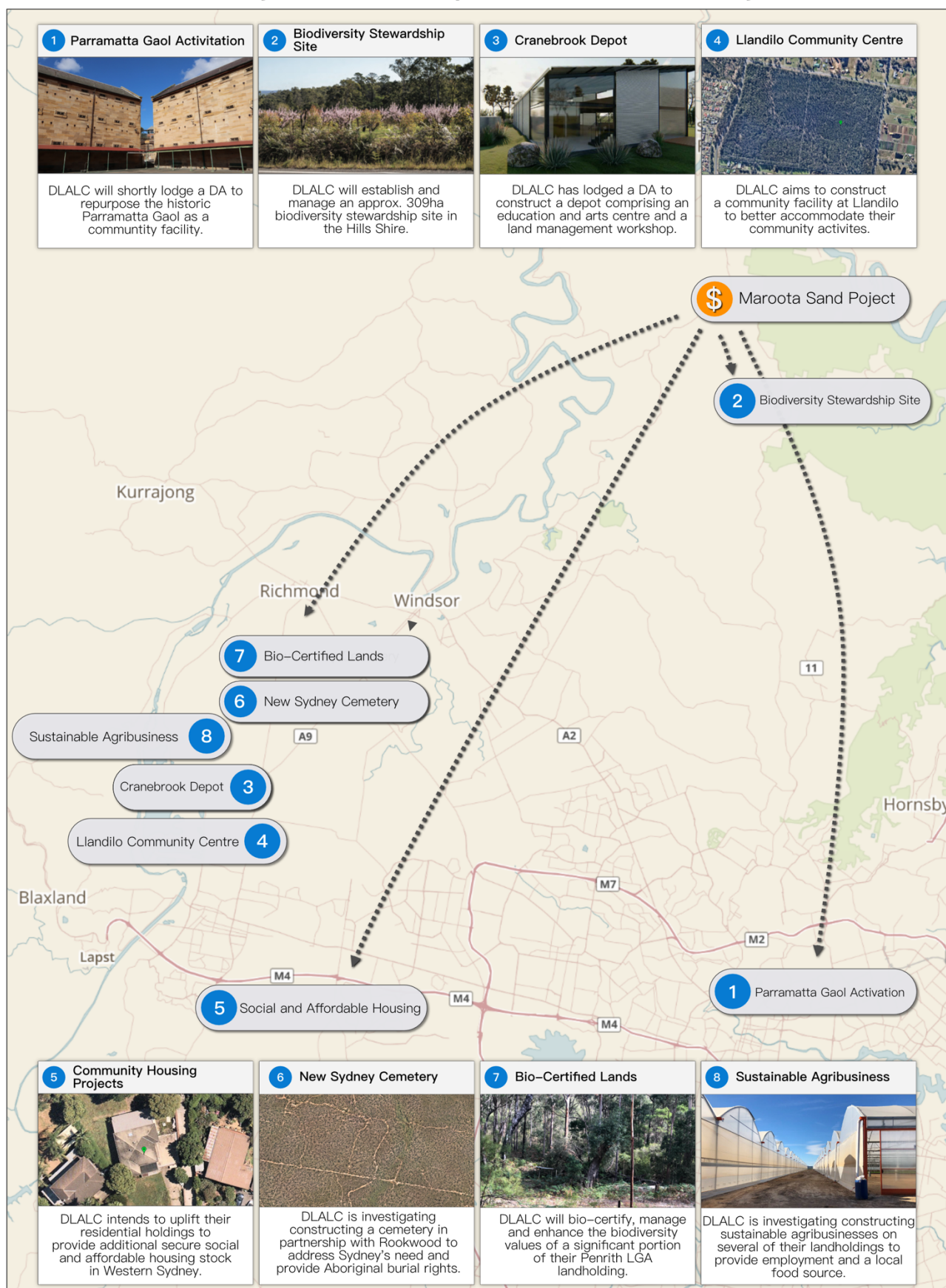


Figure 2: Projects & Programs Enabled by the Project (Source: Maphub 2021; Nearmap 2021; SLR Consulting 2020)

2. The Project

The Application seeks consent for the use of approximately 50ha of the Project Site for the extraction, processing and delivery of up to 500,000 tonnes of sand per annum over a period of 28 years to meet the increasing demands of the Sydney construction and building market. **Figure 3** below shows the proposed site layout of the Project. **Table 1** provides a summary of the Project

Access

Access to the Project Site is proposed via the construction of a haul road from Patricia Fay Drive to the site infrastructure area. Its proposed location is shown in **Figure 3** below. The Proponent also proposes to upgrade the intersection of Wisemans Ferry Road/Patricia Fay Drive to current Austroad guidelines to improve the left and right turn lanes from Wisemans Ferry Road into Patricia Fay Drive. That works is not shown below.

Extraction

The proposed extraction area occupies approximately 43.98 ha of the Subject Site. The extraction area will be excavated to a floor elevation ranging between 148 AHD and 165 AHD. No extraction will occur within two metres of the wet-weather high groundwater levels or outside the proposed extraction area. Extraction will be undertaken in six main stages over a 28-year period.

The quarry operation will utilise conventional extraction methods. An excavator will be used to remove friable sandstone and load the raw material into an articulated truck. Where necessary, a bulldozer equipped with ripper bars will be used to rip stronger material before an excavator picks it up and transfers the material. No blasting is proposed as part of the Application.

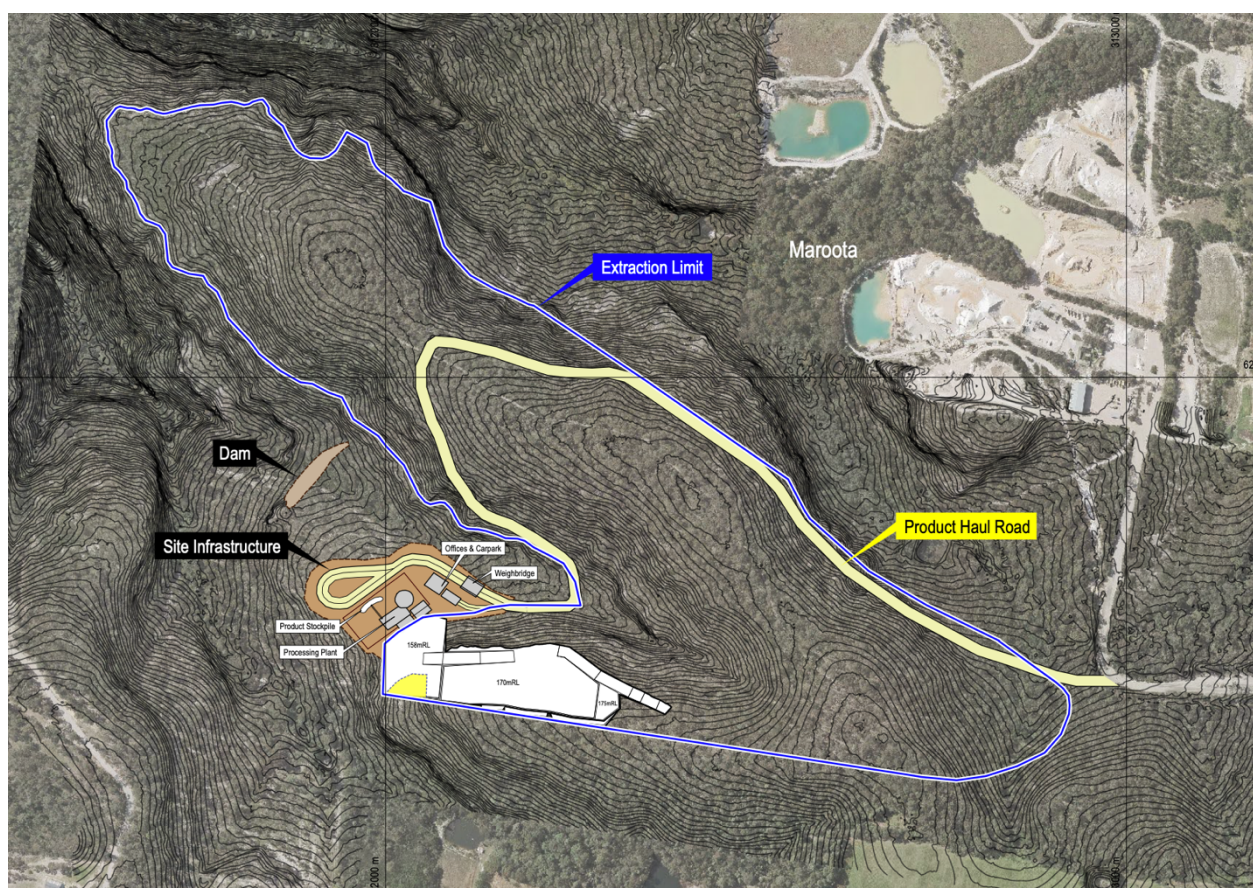


Figure 3: Project Site Layout (Source: RPM Global 2021)

Table 1 — Project Description

Key Element	Detail
Proposed Land Use	<i>Extractive Industry</i>
Extraction Method	Overburden Stripping & Raw Feed Extraction
Resource	Hawkesbury and Maroota 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

Water Supply

Water will be required for the processing plant, dust suppression, rehabilitation, human consumption and amenities. The proposed sand plant incorporates a plate and frame filter press that compresses tailings and negates the need for tailings dams.

The Project's water requirements will primarily be supplied by rainfall and runoff captured and stored in a surface water dam and supplemented by a groundwater bore. Groundwater will provide between 31% to 43% of the Project's annual water requirements. The surface water dam will provide between 57% and 69% of the Project's annual water requirements.

Truck Movements

The following breakdown of truck movements is anticipated.

Table 2 — Sales Truck Movements		
Time	Monday–Friday	Saturday
6am — 8am	20	20
8am — 10am	25	15
10am — 12pm	25	15
12pm– 2pm	20	10
2pm — 4pm	16	–
4pm — 6pm	14	–
Total per day	120	60

Hours of Operation

The following sales and quarry operational hours are proposed:

- Sales — 6am to 6pm, Monday to Saturday.
- Quarry operations — 7am to 6pm, Monday to Saturday. The filter press will operate overnight to de-water tailings but will not be audible beyond the plant area boundaries.

Rehabilitation

A rehabilitation strategy have been prepared for the Project. The Project Site will be progressively rehabilitated in accordance with that strategy.

The proposed final land use will be a combination of native bushland and improved pasture for a post-mining grazing enterprise. A native bushland corridor, approximately 50m wide, will be incorporated around the reshaped landform's perimeter to assist in the integration of the impacts of the tree removal from the Project's viewpoints and from the west.

Biodiversity Offsets

To fulfil their biodiversity offset requirements, the Proponent intends to deliver a viable and ecological function offset by establishing a Biodiversity Stewardship Site on land that they currently hold. The Biodiversity Development Assessment Report prepared by Eco Logical Australia estimates that 309ha of land is required to generate the credits needed to fulfil the Project's offset requirements.

Mitigation and Monitoring Measures

An 'avoid, mitigate and compensate' strategy was adopted throughout the Environmental Impact Assessment (EIA) process to address the Project's potential environmental impacts. Where achievable, design amendments informed by community consultation and technical expertise were implemented to avoid impact. These are described in Section 3.6 of the EIS.

Where it was unfeasible to avoid impacts through design modifications, the various technical reports prepared during the EIA process recommended management and monitoring measures to mitigate those impacts. **Annexure 5** provides a summary of the Project's proposed mitigation and monitoring measures.

3. Project Justification

The following section outlines the strategic need and justification for the Project.

Reduce the Cost of Private and State infrastructure Projects

The NSW Offshore Sand Review, undertaken in 2016, identified a shortage of local construction sand for the Sydney market. The Review 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.¹ This figure is anticipated to have grown given the significant infrastructure projects laid out in the State's Infrastructure Strategy and (the then) expected closure of Sydney's two most significant sources of construction sand at Kurnell and Penrith Lakes. Penrith Lake sand extraction ceased in 2015.²

Construction sand is a high-bulk low-unit cost commodity and is therefore highly sensitive to transport costs. The transport costs for sand sourced outside the Greater Sydney region can cost up to an additional \$14 per tonne compared to sand sourced from Maroota (see **Figure 4**).³ With the Project potentially meeting half of the 1 million tonnes of construction sand delivered from outside the Greater Sydney region in 2016, that represents a potential saving of up to \$7m per year – some \$190m across the Project's life.

Therefore, the Project's cost-efficient construction sand will reduce the cost of private and State infrastructure Projects within Sydney. In particular, the Project is well-positioned to provide construction sand to Western Sydney infrastructure projects, including the Western Sydney Airport and Metro line (see **Figure 4**). Access to affordable construction materials provides investment certainty for these projects and support jobs.

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 realise the objectives in their *Community Land & Business Plan* (**Annexure 2**). Their objectives include the employment of a Family and Community Coordinator to promote community cohesion and interaction (Objective 8); cultural development programs (Objective 2); delivering social & community housing (Objective 12 & 28); and developing a scholarship fund to support primary, secondary, and tertiary Aboriginal students (Objective 15). Each project and program represents additional social, environmental and economic benefits, including post-Covid-19 and long-term employment opportunities (see **Figure 2**).

Suitable Location for an Extractive Industry

Since 1995, under *Sydney Regional Environmental Plan No.9 – Extractive Industry*, the Project Site has been identified as a location suitable for an extractive industry. The Hills Local Strategic Plan, released in 2020, further confirmed this point by identifying the Project Site as being located within an agricultural/extractive industry cluster. Therefore, the Project realises both the State and Local Government's economic vision for the currently unutilised Project Site and provides a local source of cost-sensitive construction sand to the Sydney market. Notably, the NSW Offshore Sand Review identifies Maroota as the last major source for construction within the Greater Sydney Region.

Post-Covid-19 & Long Term Employment

The Project will provide 16 full-time jobs operational jobs as well as 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.

¹ NSW Government Department of Trade and Investment, (2010), *NSW Offshore Sand Review*, NSW Government

² Ibid, pg. 5

³ Ibid, pg. 5

Leverage and Develop the Established Mining Skillset of the Hills Shire Economy

Extractive Industries are important employers and economic contributors to the Hills Shire economy. Mining, including extractive industries, contributed \$70.1M to the Hills economy in 2018.⁴ 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 nearing closure. Three nearby operations with a combined extraction output of 1 million tonnes per year are anticipated to close within ten years.

Appropriate Environmental Management

An 'avoid, mitigate and compensate' strategy was adopted throughout the EIA process to address the Project's potential environmental impacts. Where achievable, design amendments informed by community consultation and technical expertise have been implemented to avoid impact. These amendments are detailed in Section 3.6 of the EIS. The Project's various technical reports recommended management measures to mitigate impacts that could not be feasibly addressed through design modifications. **Annexure 5** outlines the Project's proposed management and monitoring measures and commitments. The Project's residual impacts are proposed to be compensated through established offsetting frameworks.

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 Development Control Plan 2012⁵ and *Sydney Regional*

Environmental Plan No.9 – Extractive Industry that rehabilitated extractive industry sites at Maroota be used as productive agricultural lands.⁶ Like extractive industries, agricultural lands are compatible with the established character and the landscape and natural quality of the Maroota locality. Furthermore, the proposed final land use will continue to provide employment opportunities at the Project Site.

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.

Enhance the NSW Governments Aboriginal Procurement Policy

The Aboriginal Procurement Policy aims to award 3% of total domestic contracts for goods and services issued by NSW Government agencies to Aboriginal-owned business by 2021.⁷ 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 86%.⁸ 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 The Hills Shire Council, (2019), *Rural Strategy*, The Hills Shire Council

⁵ Hills Shire Council (2012), *Hills Development Control Plan 2012 Part B: Section 1–Rural*, Hills Shire Council, p.g. 28

⁶ *Sydney Regional Environmental Plan No 9—Extractive Industry (No 2—1995)* (NSW) S.11 Cl. 2(a) (Austli.).

⁷ NSW Government, (2018), *Aboriginal Procurement Policy*, NSW Government, <https://buy.nsw.gov.au/policy-library/policies/aboriginal-procurement-policy>

⁸ 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

Proximity of the Maroota Sand Project to Western Sydney Infrastructure Projects Compared to Sydney's other sources of Construction Sand

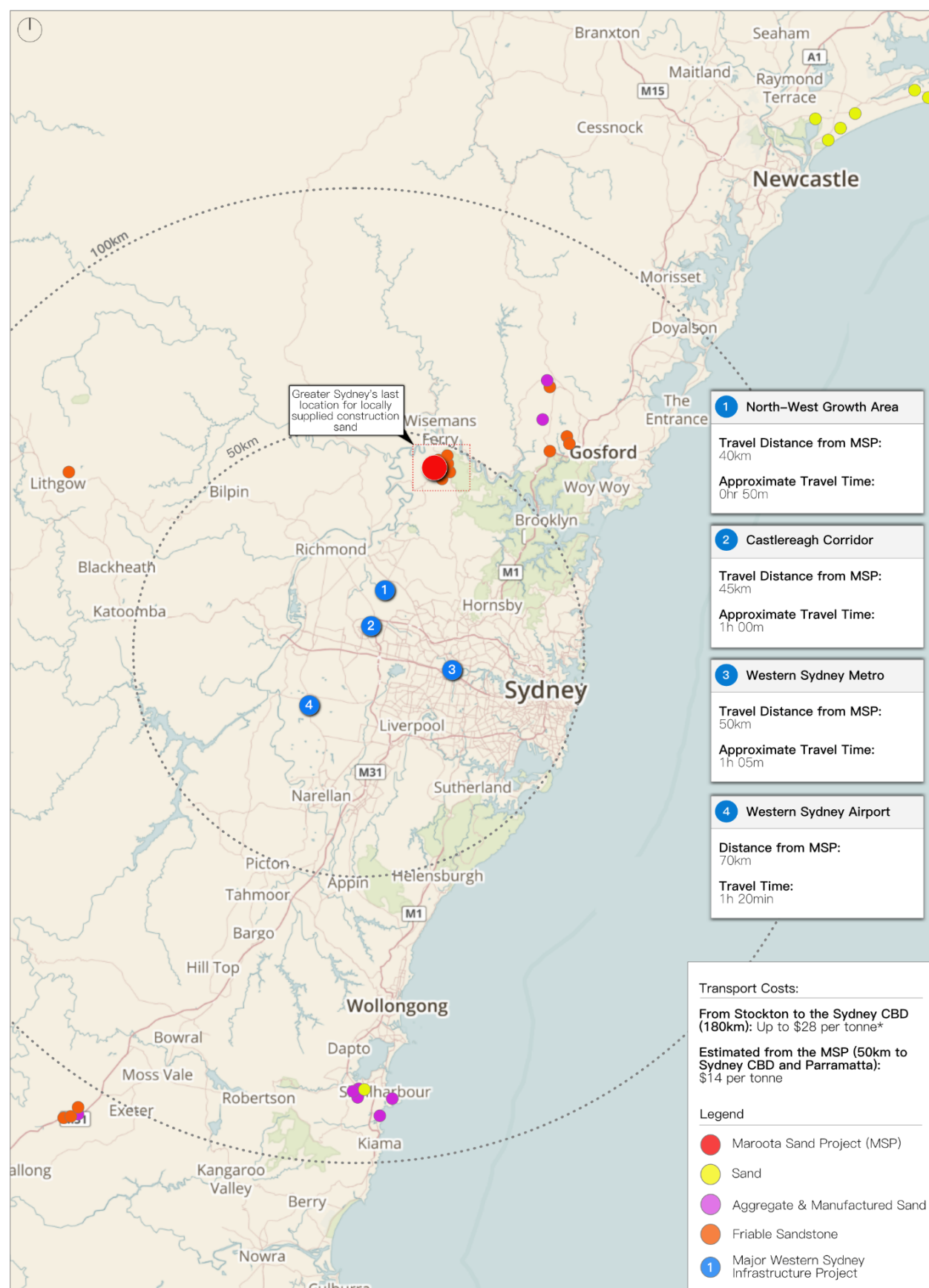


Figure 4: Sydney Sources of Construction Sand (*Information Source: NSW Governments Offshore Sand Review)

4. Strategic Context

The following section summarises the Project's compliance with relevant State and local strategic documents.

NSW Premiers Objectives

The Project will contribute to the strengthening and post-COVID-19 recovery of the NSW economy through the provision of employment and cost-efficient construction sand to the Sydney market to assist with the delivery of State infrastructure. The Project will also provide and enable training and education opportunities that allow Aboriginal people to reach their learning potential.

Greater Sydney Region Plan

The Project Site is located within the Metropolitan Rural Area of Greater Sydney. Extractive Industries are identified as a primary industry for this area. The Project meets the Greater Sydney Commission's intention to protect and support Sydney's agricultural and mineral resources. It proposes an extractive industry in a location that is identified in the *Hills LSPS*; the *District Plan*; and *Sydney Regional Environmental Plan No. 9 – Extractive Industry (No. 2 – 1995) (SREP No.9)* as being suitable for an extractive industry.

Central City District Plan

The District Plan highlights the importance of maintaining local supplies of construction materials to support the Greater Sydney construction industry. The Project provides an opportunity to address the current and anticipated shortages of local construction sand for the Greater Sydney construction industry.

Hills Future 2036

The Project Site is located within an agricultural/mineral extraction cluster. Therefore, the site's proposed use as an extractive industry, and later, as agricultural lands highly complements the *Hills LSPS* vision for the Maroota locality.

The Project will contribute post-COVID 19 and long-term local employment and build upon the significant contribution that the mining/extractive industry makes to the Hills Shire economy (70.1M in 2018).

Future Transport 2036

A motorway and freight rail connection known as the 'Outer Sydney Orbital' is identified in the Future Transport Strategy 2056 as a corridor to be investigated in the long-term. The Project is well positioned to utilise the Outer Sydney Orbital to provide cost-efficient construction sand to the north-west and south-west growth areas of Sydney.

NSW Offshore Sand Review 2016

The Review notes that the Sydney Region consumes approximately 7 million tonnes of construction sand annually, an increasing portion of which is imported at a greater expense from outside the Sydney Region. The Review identifies Maroota as a strategic location for the provision of construction sand within the Sydney Region. The Project addresses Sydney's construction sand shortfall by providing 500,000 tonnes of locally sourced construction sand per year. This equates to approximately 7% of the market and 50% of sand imported from outside the Sydney region in 2016.

NSW Aboriginal Procurement Policy

The NSW Aboriginal Procurement Policy outlines a Government target for 3% of domestic goods and services contracts to be awarded to Government-owned business. 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%. 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.

5. Statutory Context

The following section provides a summary of the Project's statutory context.

Definition

The Project is defined under the Standard Instrument as an **extractive industry**.

Declaration of State Significance

Section 4.36(2) of the *EP&A Act* states that:

(2) *A State environmental planning policy may declare any development, or any class or description of development, to be State significant development.*

Schedule 1 of the *State and Regional SEPP* identifies development for the purposes of an extractive industry that extract more than a total resource of 5 million tonnes to be State Significant Development. As the Project relates to a total resource of greater than 5 million tonnes, it is declared State Significant Development.

Approval and Assessment Pathway

Part 4, Division 4.7 of the *Environmental Planning & Assessment Act 1979* provides the State Significant Development approval and assessment pathway.

Environmental Impact Assessment (EIA) is the process by which the environmental impacts of a State Significant Development are assessed before a decision is made by the Minister for Planning or their delegate on

whether to approve the application. This process is displayed in **Figure 5** below.

Permissibility

The Project Site is zoned RU1 and RU2 under the *Hills Local Environmental Plan 2019*. **Extractive Industries** are permitted with consent in both these zones.

Approvals Required

The following approvals are required for the Project.

- Development Consent under the *Environmental Planning & Assessment Act 1979*.
- Controlled action approval under the *Environmental Protection and Biodiversity Conservation Act 1999*.
- Environmental Protection Licence under the *Protection of the Environment Operations Act 1997*.
- Water access licence under the *Water Management Act 2000*.
- Section 138 Approval under the *Roads Acts 1993*.



Figure 5: EIA Process (Source: DPIE 2019)

6. Engagement

Community and stakeholder engagement undertaken throughout the EIA was informed by ‘*Guideline 6 – Community and Stakeholder Engagement Guidelines*’ and ‘*Social Impact Assessment Guidelines*’ prepared by DPIE.

Consultation was carried out with nearby land occupiers, Government agencies, Aboriginal groups and other non-government stakeholders.

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.

Consultation for the Project began with a Scoping meeting between the Proponent’s project management team and the Department of Planning, Industry and Environment (DPIE) to discuss the proposed approach to the EIA. Consultation subsequently occurred with community members and stakeholders to identify matters to assess in the EIS via a notification letter.

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

The Proponent distributed Information letters to community members and stakeholders during the preparation of the EIS. 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.

Issues Raised

The key issues raised by community members and stakeholders included, noise impacts, visual impacts, dust and air quality impacts, increased traffic and safety concerns.

Section 6.3 of the EIS provides a detailed summary of the key issues raised during the preparation of the Scoping Report, SEARs and EIS. Section 6.3 also outlines where those issues are addressed in the EIS and provides comment on amendments made to the project design to address those issues raised, where relevant.

Response to Community Concerns

The following key operational and design mitigation measures were implemented to address concerns raised by the community.

- During the Scoping Report consultation phase, neighbours to the south of the Project Site raised concerns due to the Project’s infrastructure area’s close proximity. Therefore, the proposed sand plant, weighbridge and office area was relocated to the rear of the site to mitigate noise, dust and visual impacts for those neighbours.
- The sales haul road was relocated from the south to the north of the Project Site. This design provided a significant buffer between the road and neighbouring residences to the south of the Project.
- Despite the Project’s Air Quality Report demonstrating compliance with the relevant air quality goals, a range of dust mitigation measures are included in **Annexure 5**.
- The Proponent will establish a 24-hour complaints hotline to respond to community concerns relating to the Project’s operations. Where necessary, communication via letter, email, teleconference or face-to-face meetings will be undertaken to address community concerns

7. Environmental Assessment

The following section provides a summary of the various environmental assessments undertaken for the Project. Section 7 of the EIS provides a detail summary of each assessment.

Biodiversity

Eco Logical Australia was engaged to prepare a Biodiversity Development Assessment Report for the Project (**Annexure 8**).

Due to the location of Hawkesbury Sandstone at the Project Site, it is not possible to locate the Project in a location that avoids impacts to vegetation and habitat.

During the Project design phase, there were several disturbance area reduction design iterations that demonstrate that a process of avoiding and minimising impact was implemented (Section 3.6 of the EIS). These modifications reduced the Project's disturbance area from 78ha to 51.49ha.

Mitigation and monitoring measures contained in **Annexure 5** will be implemented to contain direct biodiversity impacts within the Project's development footprint. The following table outlines the Project's impacts on native vegetation and threatened ecological communities, species, and species habitat.

Table 3 — Biodiversity Impacts	
Native Vegetation	
Plant Community Type ID	Direct impact
1081	25.71ha
1083	3.27ha
1328	14.34ha
1181	8.17ha
Threatened Ecological Communities	
1081	25.71ha
Threatened Species & Habitat	
Bynoe's Wattle	1.64ha
Glossy Black Cockatoo	49.59ha
Eastern Pygmy-Possum	51.49ha
Giant Burrowing Frog	6.66ha

Broad-headed Snake	25.78ha
<i>Kunzea rupestris</i>	0.81ha
Southern Myotis	7.08ha
Squirrel Glider	51.49ha
<i>Pimelea curviflora</i> var. <i>curviflora</i>	0.91ha
Dural Land Snail	25.71ha
Red-crowned Toadlet	6.94ha
<i>Tetratheca glandulosa</i>	4.21ha

The *Biodiversity Conservation Act 2016* provides an offsetting scheme to compensate for unavoidable biodiversity impacts. Under that scheme, the Proponent proposes to offset approximately 309ha of 'like-for-like' high-quality biodiversity lands in a Biodiversity Stewardship Agreement. 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 Project has a candidate for Serious and Irreversible Impacts. That being the Broad-headed Snake. 25.78ha of potential habitat for the Broad-headed Snake was surveyed across the development footprint. It is noted that this species was not observed during surveys, and no record exists for the species within 5km of the Project Site.

A Groundwater Dependent Ecosystem known as the *Maroota Sands Swamp Forest*, is present on the site. The Project design includes a 50m buffer from the edge of the extraction area to the Groundwater Dependent Ecosystem's southern edge. The Project's quarry depth is set to 2m above the observed wet weather high groundwater elevations. These measures will ameliorate potential adverse impacts to the Groundwater Dependent Ecosystem.

The Proponent will develop a Biodiversity Management Plan to guide biodiversity management during the Project's operations. That Plan will include a Weed Management Plan, a Vegetation Management Plan and an Adaptive Management Strategy to monitor potential impacts to the Maroota Sands Swamp Forest.

Noise & Vibration

Muller Acoustic Consulting was engaged to prepare a Noise and Vibration Impact Assessment for the Project (**Annexure 9**).

Generally, the Project's operations satisfy the Project Noise Trigger Levels during the daytime and morning shoulder at all assessed receivers during calm conditions. Noise emissions from the Project can exceed the Project Noise Trigger Levels by up to 2dB at several receivers during noise enhancing conditions. These exceedances are considered 'negligible' under the *Noise Policy for Industry*.

During project Year 10, predicted noise levels might exceed the Project Noise Trigger Levels by 3dB at one receiver (R19) during noise enhancing conditions. This exceedance is considered 'marginal under the *Noise Policy for Industry*. Appropriate mitigation rights under Voluntary Land Acquisition and Mitigation Policy will be made available to this receiver.

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 Road Noise Policy 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.

The Noise and Vibration Impact Assessment concludes that with the implementation of noise mitigation and

management measures, there are no noise-related issues preventing the Project's approval.

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 during Project Year 10 operations. As the 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"* for even the largest item of plant equipment, vibration impacts are not expected at any dwelling.

Hazard

The Project Site is identified as 'bushfire prone land'. Potential ignition sources associated with the Project include:

- Sparks caused from machinery, vehicles, and handheld equipment such as chainsaws.
- Electrical faults and power failure.
- Inappropriate disposal of cigarettes.
- Inappropriate storage of batteries or hazardous material.
- Hot works, including the soldering of equipment for repairs.

The following management and design measures will be implemented to mitigate the risk of bushfire ignition and impacts.

- A minimum Asset Protection Zone of 10m will be provided to all Project infrastructure.
- An Inner Protection Area will be managed and maintained around the Project's site infrastructure area.
- Site access will be constructed and maintained in accordance with the design requirements of the Planning for Bushfire 2019 guideline.

- Water supply utilities will be provided to emergency services to assist with fire suppression.
- The Proponent will develop a comprehensive Bushfire Emergency and Management and Operations Plan that includes a Bush Fire Emergency Management and Evacuation Plan.

The Department of Planning, Industry and Environment provides a checklist and a risk screening procedure in their guideline Applying SEPP 33 to help determine whether a development proposal falls within the definition of potentially hazardous industry.

The screening procedure is based on the quantity of dangerous goods involved in the proposal and, in some cases, the distance of these materials from the site boundary.

Section 7.3.1 of the EIS provides the risk screening assessment for the Project and concludes that it is not classified as a potentially hazardous industry. Transportation, storage and handling of all chemical products will be undertaken in accordance with the relevant codes of practice, including *the Storage and Handling of Dangerous Goods Code of Practice 2005* and *National Work Health and Safety Act 2011*.

Water

EMM Australia was engaged to prepare a Water Assessment for the Project (**Annexure 10**).

The NSW Department of Primary Industries' *Aquifer Interference Policy* provides a minimal impact criteria of a 2m groundwater drawdown for surrounding 3rd party groundwater users. Modelling shows that groundwater abstraction at the Project's expected rate of 20ML/per year will not result in drawdown impacts of more than 2m at nearby groundwater works.

During operations (from year 5), the Project will reduce the contributing catchment area to an existing dam at the site by 13.7ha. PF Formation Sand and Concrete hold a surface water entitlement to extract up to 32 ML/year from this dam. However, this dam is a small storage dam, and its level is maintained by baseflow that is interpreted to discharge from the shallow aquifer, which would not

be impacted by the Project. Therefore, the reduction in runoff volume to the dam is not expected to reduce its water availability.

The Project's proposed erosion and sediment controls will effectively manage coarse and fine sediment entrained in dirty water runoff (**Annexure 5**). Hence, sedimentation impacts in downstream watercourses are not expected.

Overflows from the water management system will typically occur intermittently over several days during wet weather periods. On average, overflow events (i.e. overflows that occur for several days) will occur three times per year. Overflows are expected to cease shortly after the wet weather conditions end and runoff subsides. Overflows are only expected to occur when streamflow in receiving watercourses is naturally elevated.

Section 6.4 of the Water Assessment provides a detailed assessment of the Project against the typical water quality and river flow objectives for uncontrolled streams in other catchments in NSW.

Section 7.4.6 of the EIS provides the Project's proposed Water Management System. In addition, the Proponent will develop a Water Management Plan that will:

- Include a Water Monitoring and Response Plan that establishes an on-going groundwater and surface monitoring program and a trigger action framework to identify and rectify issues.
- Outline how water will be managed to achieve compliance with the Project's Development Consent and Environmental Protection Licence conditions; and establishes responsibilities and reporting requirements.

Traffic, Transport and Access

Transport & Urban Planning PTY LTD was engaged to prepare a Traffic Impact Assessment (**Annexure 11**).

The Project will result in the following increases in traffic using the road network on weekdays.

- 76 two-way vehicle movements per day including 60 heavy vehicle movements on Wisemans Ferry Road north of Patricia Fay Drive and on Old Northern Road south east of Wisemans Ferry Road; and
- 76 two-way vehicle movements per day including 62 heavy vehicle movements on Wisemans Ferry Road south of Patricia Fay Drive

Both Old Northern Road and Wisemans Ferry Road at Maroota carry relatively low traffic volumes. The Project's additional traffic will be easily accommodated on the road network with no change to the level of service.

Modelling undertaken by Transport & Urban Planning PTY LTD also demonstrates that:

- The intersection of Old Northern Road/Wisemans Ferry Road will continue to operate at a level of 'Service A' operation in the weekday AM and PM peak hours with minimal changes to delay at the intersection with the additional traffic from the Project; and
- The intersection of Wisemans Ferry Road/Patricia Fay Drive will operate at a level of 'Service B' operation with a small increase in vehicle delay. This represents a satisfactory to good operation.

SIDRA modelling was undertaken to determine cumulative 2030 traffic conditions. The results showed that both intersections will retain a good to a satisfactory level of operation in 2030.

A 'Stage 5 Road Safety Audit' was undertaken for the Project (**Annexure 23**). The audit findings identified that the existing right and left turning lanes from Wisemans Ferry Road do not meet the current Austroad Guidelines for the 80km/h speed limit and should be upgraded.

The Proponent, therefore, proposes to upgrade the intersection of Wisemans Ferry Road/Patricia Fay Drive to current Austroad guidelines to improve the left and right turn lanes from Wisemans Ferry Road into Patricia Fay Drive.

Visual

SLR Consulting was engaged to prepare a Landscape and Visual Impact Assessment for the Project (**Annexure 12**)

The Assessment determined that the Project would have a minor-moderate to minor impact on five key identified receptor viewpoints. Receptors located closer to the Project Site, particular those residents located immediately south of the Project Site, will have their views maintained due to the retention of 100m vegetation buffer along the Project's southern boundary.

There are very few viable public receptors that the proposed works would impact. 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 Visual Assessment recommended the following mitigation measures, which have been incorporated into the design of the Project.

- Retain vegetation along the periphery of the site, particularly at its southern and eastern boundaries.
- Rehabilitate a native biodiversity corridor along the north-west boundary of the extraction pit.

Waste

The Project is anticipated to generate the following waste streams.

- Liquid waste.
- Hazardous waste.
- General Waste (putrescible).
- General Waste (non-putrescible).

An enviro-cycle sewerage system will be installed to recycle sewerage. This system diverts and treats wastewater in an underground unit before dispersing water to a prescribed vegetated area. Stormwater will be managed per the Water Management Strategy outlined in Section 7.4.6 of the EIS.

Greases and oils will be stored in a self-bunded tank and removed as necessary by a licensed contractor. Batteries will be stored in a designated space and disposed of by a licensed contractor and taken to a licensed waste management facility.

Food scraps will be stored in general waste bins at the site and disposed by a licensed contractor.

Scrap metal will be segregated and stored in metal bins to be collected and recycled offsite by a licensed contractor. Recyclable general waste will be separated from non-recyclable general waste, stored onsite in recycling bins, collected, and recycled offsite by a licensed contractor. Excess construction and demolition waste will be segregated and disposed of by a licensed contractor. Wooden pallets and other wood waste will be stored and disposed of by a local contractor.

Air Quality

Todoroski Air Science was engaged to prepare an Air Quality Impact Assessment for the Project (**Annexure 13**).

A dispersion model was used to predict emission levels at identified sensitive receivers resulting from the Project's operations in isolation (incremental impact) and when combined with the existing ambient background levels (cumulative impacts) for the following potential emissions.

- Maximum 24-hours average PM_{2.5} and PM₁₀ concentrations.
- Annual average PM_{2.5}, PM₁₀ and Total Suspended Particulate concentrations.
- Annual average dust deposition rates.

The relevant air quality goals for each potential emission are displayed below.

Table 4 — NSW EPA Air Quality Impact Assessment Criteria

Pollutant	Averaging Period	Impact	Criterion
Total Suspended Particulate	Annual	Total	90µm/m ³
PM ₁₀	Annual	Total	25µm/m ³
	24 hour	Total	50µm/m ³
PM _{2.5}	Annual	Total	8µm/m ³
	24 hour	Total	25µm/m ³
Deposited Dust	Annual	Incremental	2g/m ² /month
		Total	4g/m ² /month

The air dispersion modelling demonstrates that all sensitive receivers are predicted to experience particulate matter and dust deposition levels below the relevant criteria for each metric. The Air Quality Impact Assessment also concludes that the Project is anticipated not to increase the number of days above the 24-hour average PM_{2.5} and PM₁₀ criterion at any of the receptor locations surrounding the Project Site.

The Proponent will develop an Air Quality Management Plan that:

- Establishes an air quality monitoring program, including predictive metrological forecasting to guide operations.
- Outlines how air quality will be managed during the Project's operations to comply with the Project's Development Consent and Environmental Protection Licence. This includes the proposed management measures listed in **Annexure 5**.

Aboriginal Archaeology & Heritage

Kelleher Nightingale Consulting Pty Ltd was engaged to prepare an Aboriginal Cultural Heritage Assessment Report (**Annexure 14**) and undertake community consultation in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.

A comprehensive field inspection of the Project Site was undertaken to record any Aboriginal archaeological sites or areas with the potential to contain Aboriginal objects.

24 Aboriginal archaeological sites and two potential archaeological deposit areas were identified within the Project Site. Most of these sites are closed context rock shelter sites featuring art, artefacts and/or potential archaeological deposit. The survey team identified a smaller number of open context artefact sites, grinding grooves and one modified 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 potential archaeological deposit areas did not contain confirmed Aboriginal objects but display moderate potential for subsurface deposit. A staged excavation and testing program will be undertaken within the potential archaeological deposit areas to determine the presence/absence, nature and extent of any associated archaeological material. Initial test excavations will occur before any impact from the Project. If the testing determines that the Potential Archaeological Deposit is an archaeological site, any subsequent mitigation requirements and methodology will be determined based on archaeological significance and in consultation with DLALC.

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. This design approach ensures that all identified Aboriginal archaeological sites within the Project Site will be avoided, representing a strong positive conservation outcome.

Land Resource

SLR Consulting was engaged to prepare a Land Capability Assessment for the Project (**Annexure 15**).

One Soil Unit was identified during soil surveys, a Grey–Brown Kurosol with a subdominant soil type comprising a Yellow Kandosol.

The Land and Social Capability classes of the Project Site is presented below.

Table 5 — Land Capability Assessment

Class	Capability Description	Area
Moderate – Low Capability		24ha
Class 5	Land has high limitations for high–impact uses. Land use restricted to low–impact land uses such as grazing, some horticulture (orchards), forestry and nature conservation.	53% of the study area
Low Land Capability		22ha
Class 6	Land has very high limitations for high–impact land uses. Land use restricted to low–impact land uses such as grazing, forestry and nature conservation.	47% of the study area

The Proponent will develop a Soil Management Plan and implement the Project’s Rehabilitation Strategy to guide management measures that mitigate soil erosion and protect and enhance land capability.

The Project is located entirely within native bushland and will not directly or indirectly impact land currently used for agricultural production. There are existing sand quarries located directly to the south, east and north of the proposed quarry. There are orchards and other small–scale horticulture to the south of the proposed quarry, which are separated by a minimum 100 metre buffer of native bushland.

Social & Economic

Design Collaborative prepared a Social and Economic Assessment for the Project (**Annexure 16**).

The Department of Planning, Industry and Environment’s scoping tool was used during the Project’s scoping phase to identify potential social impacts and receptors. This process and engagement with community members and stakeholders also assisted in identifying the Project’s area of social influence and potential impacts.

The Project's Social and Economic Assessment analysed 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** 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.

The Social and Economic Assessment demonstrates that the risk of adverse social impacts is low to moderate provided the mitigation measures outlined in **Annexure 5** are implemented.

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 raft of DLALC projects and programs that it will enable (see **Figure 2**). Immediate positive social impacts include:

- The employment of approximately 8 full-time and 4 part-time staff to run the extractive industry's operations and the creation of approximately ten construction jobs. This provides post-Covid 19 and long-term employment for the local community. Importantly, these jobs build upon the established mining and extractive industry skillset within the Hills Shire economy.
- Ongoing training and certification for members of the local community and Aboriginal persons.
- Approximately 309ha hectares of bushland will be protected, managed and enhanced under a Biodiversity Stewardship Agreement for the benefit of future generations.

The Project's positive indirect social impacts will arise from the housing, education, employment, health and cultural programs and projects that it enables. Other DLALC projects and programs include:

- 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.

The Social and Economic Assessment also conducted a Cost Benefit Analysis to estimate and compare the total benefits and costs of the Project to the NSW community. The analysis found the Project is expected to result in a net benefit of \$19.29m for the NSW Community in present day value with a 7% discount rate. A sensitivity analysis was conducted, which confirmed that Project would continue to provide a net benefit to the NSW community, despite commodity fluctuations.