W.A. LIMESTONE

EXCAVATION & ENVIRONMENTAL MANAGEMENT PLAN

Indian Ocean Drive, Jurien Bay Quarry

Lot 290 Indian Ocean Drive, Jurien Bay

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Compliance Australia Certification Services ISO 9001 QUALITY ISO 45001 SAFETY ISO 14001 ENVIRONMENT

January 2026

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Prepared By:

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1.0 INTRODUCTION

1.1 Purpose and Scope

The Jurien Bay Quarry (the Quarry) is a limestone quarry, which has been out of operation for several years. The Quarry previously produced a range of limestone aggregate products for construction materials supply.

Approvals are being sought to recommence operations and for a minor expansion to the existing quarry to extract further resource. The extracted limestone is expected to supply the Jurien Bay Boat Harbour Entrance Reconfiguration project.

Dependent on market demand and regulatory approvals, the project has an expected lifespan of 10 years at anticipated excavation rates.

This management plan outlines the continued excavation of sand and limestone within Lot 290, Indian Ocean Drive, Jurien Bay and provides a summary of:

- The existing environment and surrounding land uses;
- Relevant regulatory framework;
- Project description and operational management; and
- Environmental management.

1.2 Ownership and Project Operator

LOT	PLAN / DIAGRAM	VOLUME	FOLIO	OWNER(S)	AREA (ha)
290	031863	2503	694	Ardross Estates Pty Ltd	1926.02 Ha

Table 1: Land Ownership

Proponent: PMR Quarries Pty Ltd T/A WA Limestone
Street Address: 401 Spearwood Avenue BIBRA LAKE WA 6163
Postal Address: PO Box 1404 BIBRA LAKE DC WA 6965
Phone: 08 9434 7777
Email: reception@walimestone.com

1.3 Requested Approval

This report is supporting a development application seeking a new planning approval at the subject site to extract limestone. The subject site has an existing pit which is not currently in operation.

An approval term of 10 years is sought to align with the timeframe required to excavate the resource. This term is necessary to provide certainty to the project operators, avoid the duplication of assessments and avoid further regulatory delays to the project.

1.4 Justification

Basic Raw Materials (BRM) such as the limestone produced by the Jurien Bay Quarry are critical construction materials to assist the major infrastructure projects of the surrounding region. This quarry is expected to be a primary supplier of limestone to the Jurien Bay Boat Harbour Entrance Reconfiguration.

Transport is the most significant cost component to basic raw materials supply and basic raw materials are one of the most significant costs for development of infrastructure. It is imperative that basic raw material supply sources be located as close to the point of demand as possible to minimise costs to

development and the community. This is particularly pertinent in the current economic climate of affordable housing and cost of living pressures.

1.5 Stakeholder Consultation

WA Limestone has formal communication strategy in place for the project with the Department of Local Government, Industry Regulation and Safety (LGRIS), Department of Water and Environmental Regulation (DWER) and the Shire of Dandaragan through the various statutory approvals and legislative requirements.

WA Limestone additionally maintains a community feedback and complaints management system for all sites and projects.

The development proposal subject of this quarry is required to be publicly advertised by the Shire of Dandaragan, with due regard given to the submissions on the advertised proposal.

1.5.1 Stakeholder Identification

The following relevant stakeholders have been identified:

Internal Stakeholders

- WA Limestone Board of Directors and Senior Management
- Jurien Bay Quarry Manager & operations personnel
- WA Limestone environment staff

External Stakeholders

- Department of Local Government, Industry Regulation and Safety (LGIRS)
- Department of Water and Environmental Regulation (DWER)
- Department of Climate Change, Energy, the Environment and Water (DCCEEW) (Commonwealth)
- Shire of Dandaragan
- Traditional landowners

1.5.2 Stakeholder engagement strategy

The stakeholder engagement strategy is based on a combination of regular reporting to relevant stakeholders and inspections of the mining operations by stakeholders. The frequency of inspections is at the discretion of the stakeholder.

In the event that any significant changes occur or are proposed to occur to the project, relevant stakeholders will be separately notified and consulted with as required.

Stakeholder	Description of Consultation	Consultation Frequency
Department of Local Government, Industry Regulation and Safety (LGIRS)	• Mines safety • Resource information	• As required
Department of Water and Environmental Regulation (DWER)	• Processing plant licensing • Clearing of native vegetation • Noise • Dust • Groundwater • Waste	• As required
Department of Climate Change, Energy, the Environment and Water (DCCEEW) (Commonwealth)	• Clearing of native vegetation	• As required
Shire of Dandaragan	• Development Approval • Traffic	• As required
Traditional landowners	• Heritage	• As required
Local community & general public	• Complaints management	• As required

Table 2: Consultation Schedule

2.0 EXISTING ENVIRONMENT

2.1 Location

The subject site is located at Lot 290 Indian Ocean Drive, Jurien Bay, approximately 5 kilometres south-east of the Jurien Bay townsite. See Figure 1.

The site is vacant, except for an existing limestone pit located a minimum of 520m from the northern boundary and 1,200m from the western boundary, accessed via a 1.6km unsealed track connecting to Indian Ocean Drive at the north-western corner of the subject site.

The remainder of the site consists of remnant vegetation and directly fronts onto Indian Ocean Drive. The site has a general eastward upslope, ranging from a low point of 10m AHD at the western boundary to 50m AHD at the eastern boundary. The existing pit is situated between 30m and 40m AHD.

2.2 Surrounding Landscape

The project is relatively small and isolated. The site is surrounded by native vegetation, with Hill River to the east and Indian Ocean Drive / Bashford Street to the west. See Figure 2.

The nearest sensitive residence is located over 2km from the existing pit.

EPA Guidance Statement No.3 (Separation Distances between Industrial and Sensitive Land Uses) (2005) defines the level of assessment required for industrial uses based on their separation to sensitive receptors (EPA (WA), 2005). For industrial uses with lesser separation distances than specified, site specific investigations for identified potential impacts are required to demonstrate that sensitive receptors will not be adversely affected. Beyond the separation distance defined the EPA considers the industrial use to be unlikely to adversely affect sensitive receptors and a lesser level of assessment is required.

For sand and limestone extraction, EPA Guidance No. 3 defines an assessment separation distance of 300-500 metres (dependant on the size of the operation).

The project exceeds EPA Guidance Statement No.3 recommendations for separation distances to sensitive receptors and the level of assessment undertaken.

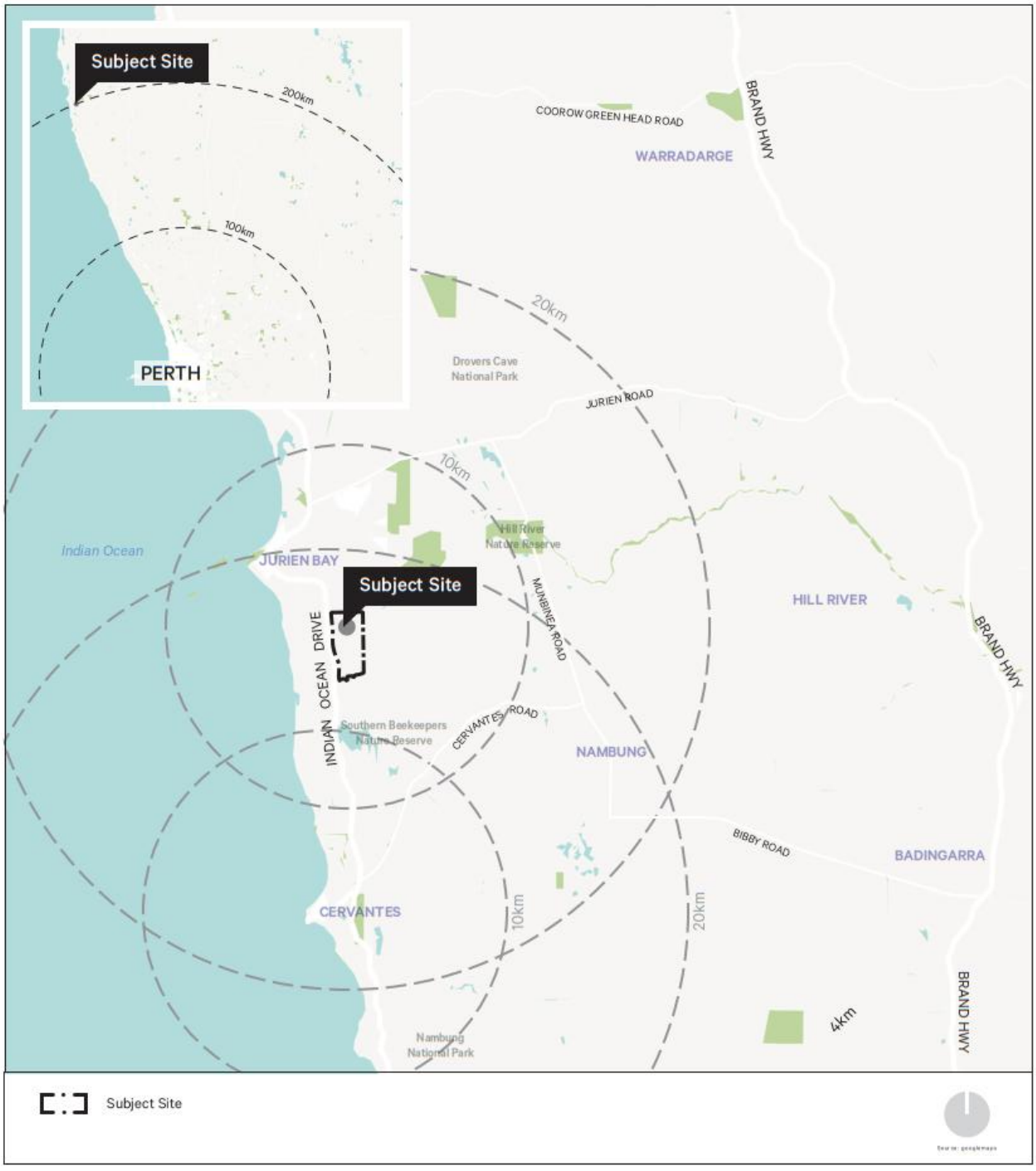

Figure 1: Project location

Figure 2: Surrounding landscape and buffers

2.3 Climate

The climate of the area is warm Mediterranean with cool wet winters and hot dry summers. The closest long-term Bureau of Meterology (BoM) weather station with a complete data set is the Jurien Bay weather station (Station 009131), located approximately 5.3km east-southeast.

The long-term mean minimum temperature for the Jurien Bay weather station ranges from 9.5℃ (July/August) to 18℃ (February) and the long-term mean maximum temperature ranges from 19.6℃ (July) to 30.8℃ (February) (BoM, 2025). Rain falls mainly in winter with 80% falling between April to September inclusive. The long-term average annual rainfall of the area is 531mm.

In summer the prevailing winds are easterly in the morning and south-westerly in the afternoon. In winter prevailing winds are lighter and more variable in direction.

Statistic	**Jurien Bay** BOM Station Number: 009131 (5.3km ESE)
Mean annual max. temp. (°C)	25.0
Highest max. temp. recorded (°C)	46.0 (25 December 2021)
Mean annual min. temp. (°C)	13.2
Lowest min. temp. (°C)	-1.0 (28 June 1990)
Mean annual rainfall (mm)	545

Table 3: Climate Statistics

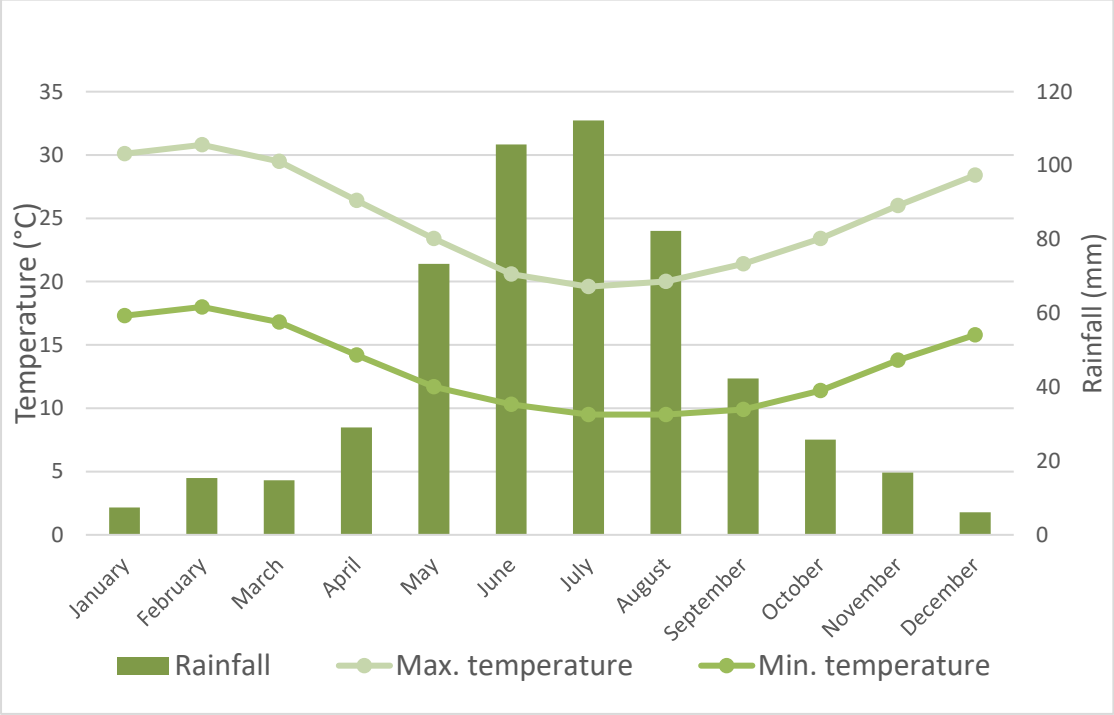

Figure 3: Climate Statistics
Source: (Bureau of Meterology, 2025)

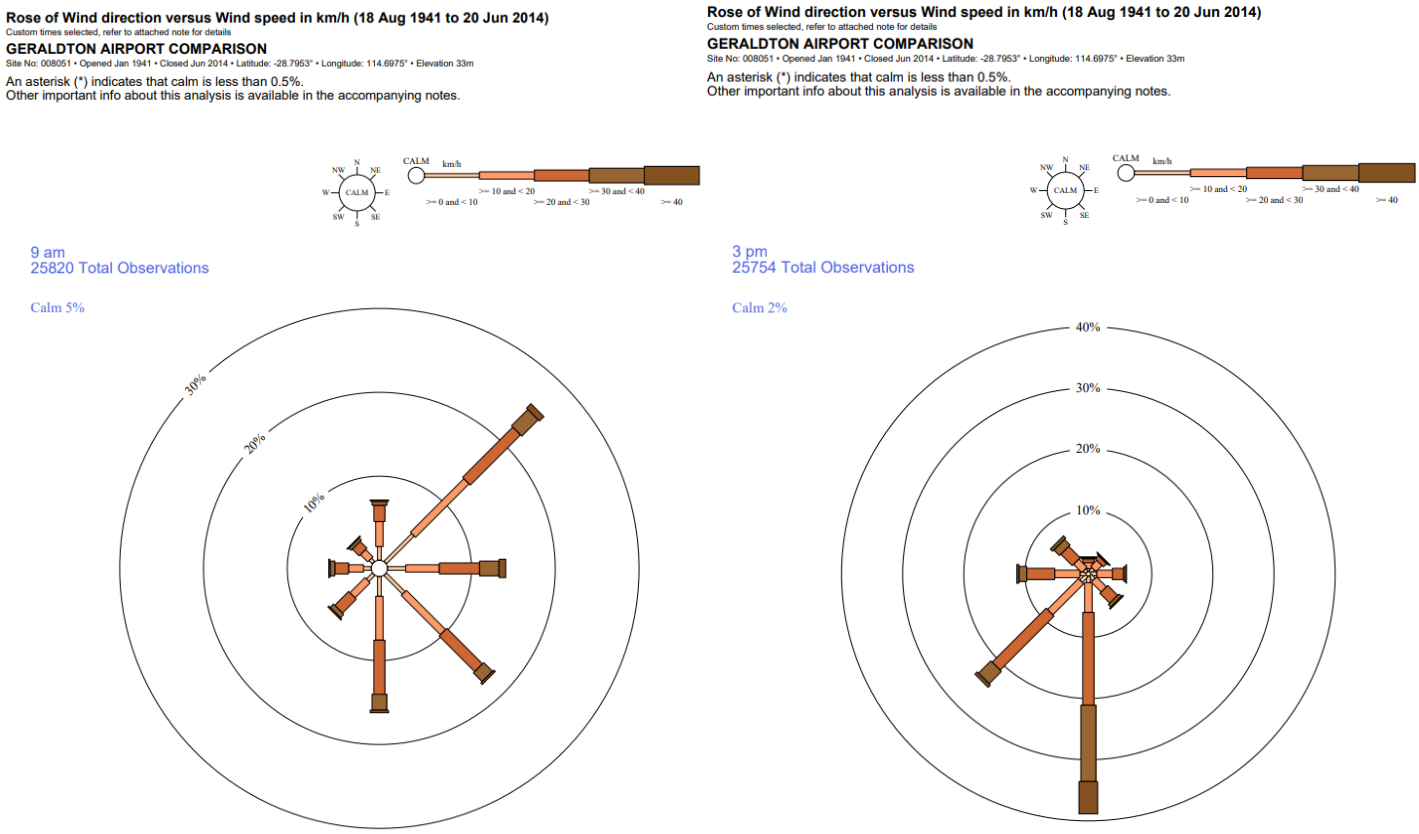

Figure 4: Wind Rose Plots
Source: (Bureau of Meteorology, 2025)

2.4 Geology and Soils

Soil landscapes and land system mapping of Western Australia describes broad soil and landscape characteristics from regional to local scales, and he been captured at scales ranging from 1:20,000 to 1:250,000 (DPIRD, 2018). The proposed development occurs on the Swan Coastal Plain, which consists of sand underlain by Quaternary limestone and calcrete.

A search of the Department of Water and Environmental Regulation's (DWER) database for Acid Sulfate Soil risk indicated the site is not within an area considered to be of risk of intercepting Acid Sulfate Soils (ASS) (DWER, 2017). Furthermore, a search of DWER's Contaminated Sites Database did not show the site, or areas in immediate proximity to the site to contain any current or historical evidence of contamination (DWER, 2018).

2.4.1 Problematic Materials

No problematic materials have been encountered by WA Limestone's existing operations within the subject site. Based on the soils and geology of the site, site history, proposed pit design and excavation methods employed, there is no potential for problematic materials to be encountered by the operation.

Type	Comment	Treatment
Acidic materials and drainage	Not present	N/A
Sodic or dispersive materials	Not present	N/A
Asbestos – asbestiform minerals	Not present	N/A
Radioactive materials	Not present	N/A
Metallic or chemical materials	Not present	N/A

Table 4: Materials Characterisation Inventory

2.5 Flora and Vegetation

Native vegetation currently occurs over the majority of the property, being coastal dune and shrubland vegetation typical of the Jurien Bay region. Within the property, the proposed quarry site has been partially cleared due to the previous quarry operations.

A flora and vegetation survey of the proposed quarry area and wider site has been conducted by SLR Consulting which found the following:

- No Threatened flora species pursuant to the EPBC Act 1999 and/or gazetted as Threatened/Declared Rare Flora pursuant to the BC Act 2016 were recorded during the survey.
- One Priority species, *Beyeria cinerea subsp. cinerea* (P3) was recorded from flora sites JBQ01 and JBQ0808 in vegetation type MhMs, while *Acacia lasiocarpa var. lasiocarpa* Cockleshell variant (E.A. Griffin 2039) (P2) was recorded in seven of the eight quadrats across both vegetation types. A third Priority species, *Dampiera tephrea* (P3) was recorded just outside the Survey Area.
- Ten weed species were recorded, none of which are listed as Declared Pests by the State Department of Primary Industries and Regional Development or as WoNS under the BAM Act.
- Vegetation condition was either Very Good or Excellent in vegetation types BlHh and MhMs. Areas associated with previous clearing were in various stages of native regrowth and were in Degraded to Good condition.
- Vegetation type MhMs was determined by the FCT analysis to be analogous to FCT26a, the State-listed '*Melaleuca huegelii - M. systena shrublands of limestone ridge'* (Swan Coastal Plain Community type 26a – Gibson et al. 1994)'. FCT26a is also a component of the critically endangered, Federally-listed '*Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion*' TEC. Vegetation type BlHh could not be conclusively assigned an FCT.
- Three patches of MhMs, comprising 2.68 ha, were assessed against the key diagnostic criteria in the Approved Conservation advice for the Federal '*Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion*' TEC. Each patch was considered representative of the TEC.

One Priority species, *Acacia lasiocarpa var. lasiocarpa* Cockleshell variant (E.A. Griffin 2039) (P2), was identified within the proposed extraction area. An appropriate buffer will be maintained around this species.

The proposed extraction area contains vegetation type BIHh in excellent condition, with Regrowth in good and degraded condition where the previous quarry was undertaken. Clearing of vegetation in excellent condition will be minimised to less than 1ha.

2.6 Fauna

A Fauna and Black Cockatoo Assessment of the proposed quarry area and wider site has been conducted by SLR Consulting which found the following:

- Three fauna habitats were mapped within the Survey Area. Of these habitats, Proteaceae Shrubland is widespread and abundant both within the Survey Area and at a regional scale, while Melaleuca Shrubland on Limestone Ridge occurs in previously cleared areas within the Survey Area.
- A total of 16 native fauna taxa from 11 families were recorded, comprising 16 bird species.
- One significant taxon was recorded during the fauna survey, Carnaby's Cockatoo (EN).
- One introduced fauna taxon was recorded during the survey, Rabbit.
- Although not recorded during the field survey, one significant fauna taxon was assessed as having a medium likelihood of occurring within the Survey Area, the Western Brush Wallaby (P4). A further 70 significant fauna taxa were assessed as having a low likelihood of occurring within the Survey Area.
- According to the DAWE (2022) Foraging Habitat Scoring Tool, the Survey Area contains 28.59ha of High-quality foraging habitat for Carnaby's Cockatoo.

- According to the DCCEEW (2023) scoring system for the assessment of foraging value of vegetation, the Survey Area contains 25.11 ha of Moderate to High, 0.92 ha of Low to Moderate, and 2.56 ha of Low foraging habitat for Carnaby's Cockatoo.

The proposed extraction area largely contains vegetation of low value foraging habitat for Carnaby's Cockatoo (DCCEW scoring system) associated with regrowth from previous extraction activities. The remainder of the extraction area (approximately 1ha) is moderate to high value foraging habitat (DCCEW scoring system).

One significant fauna species was observed within the proposed extraction area – *Zanda latirostris* / Carbany's Cockatoo (Endangered).

2.7 Hydrology

2.7.1 Surface Water

There are no streams, creeks or major drains within the subject site. The nearest surface water feature is Hill River, situated approximately 1km upslope from the quarry site, and runs adjacent to the eastern and southern property boundaries. The site is located within the Eneabba Coastal Tributaries Surface Water Area (DWER, 2025). The site is located within a proclaimed Rights in Water and Irrigation District governed under the RIWI Act 1914 (DWER, 2018).

2.7.2 Wetlands

There are no RAMSAR wetlands within 1,000 metres of the project site.

Hill River and adjacent playa area are identified by the DBCA as Geomorphic Wetlands – Cervantes Coastal (DBCA-014). The excavation site is located approximately 1km from the identified wetlands.

2.7.3 Groundwater

The subject site is located within the Jurien proclaimed groundwater area and the Cervantes groundwater subarea (DWER, 2019). The site overlies the Perth – Superficial Swan aquifer and Perth – Lesueur Sandstone North aquifer (DWER, 2025). Groundwater recharge into the superficial aquifer is mainly by direct infiltration from rainfall over permeable sand and limestone, predominantly over winter and early spring. Recharge into the Eneabba-Lesueur aquifer is from infiltration of rainfall and surface runoff over the outcrop area across the Arrowsmith region (DWER, 2017).

Ground elevations within the subject site range from RL 10m to RL 50m AHD. Previous quarry operations have extracted material down to 30m AHD and have not encountered groundwater.

The subject site is not located within a Public Drinking Water Source Area (DWER-033) or a groundwater protection area (DPLH-050 or DPLH-051).

2.8 Cultural Heritage

2.8.1 Aboriginal Cultural Heritage

The DPLH Aboriginal Cultural Heritage Inquiry System (ACHIS) shows that the site is not within an Aboriginal Cultural Heritage Survey Area and contains no records of heritage sites intersecting the project site (DPLH, 2025).

2.8.2 European Heritage

There are no registered sites of European heritage within the project area. There are no existing structures or significant evidence of historical European occupation of the site therefore the likelihood of any significant unidentified European heritage sites is remote.

3.0 REGULATORY FRAMEWORK

3.1 Shire of Dandaragan Local Planning Strategy

The subject site is zoned “Rural” under the Shire of Dandaragan’s 2020 Local Planning Strategy with the strategic directions of the Rural Zone defined as:

- Retain rural land for agricultural production and the protection of biodiversity.
- Support subdivision only where it provides for improved agricultural outcomes and land management, such as boundary realignments, homestead lots, environmental and landscape enhancement.
- Facilitate more intensive and diverse use of rural land for higher value agricultural products which are compatible with land capability attributes and surrounding farming practices, subject to availability of adequate water supply.
- Support non-rural uses that are compatible with, and complement, the primary use of land.
- Commercial and manufacturing activities will not be supported on Rural zoned land unless specifically permitted in the Scheme.
- The existence of more than one dwelling on a rural property cannot be used as justification for subdivision.

The Rural zone aims to prevent land use conflicts between rural activities and basic raw materials. The Shire considers these materials vital and seeks to protect them. The proposed development will extract lime sand and limestone – regionally significant resources - for urban and infrastructure projects. Providing this resource will help meet demand for basic raw materials (BRM) and directly influence the current costs experienced in agriculture and land development by reducing haulage distances.

The location of the proposed Quarry is relatively remote, reducing the likelihood and severity of potential social or amenity impacts on surrounding land uses.

3.2 Shire of Dandaragan Local Planning Scheme No. 7

The subject site is zoned “Rural” under the Shire of Dandaragan Local Planning Scheme No.7 (LPS7). The objective of the Rural zone is as follows:

> *To provide for a range of rural activities such as broadacre and diversified farming so as to retain the rural character and amenity of the locality, in such a way as to prevent land degradation and further loss of biodiversity.*

An ‘Industry – Extractive’ land use is defined under LPS.7 as:

> *Means an industry which involves the extraction, quarrying or removal of sand, gravel, clay, hard rock, stone or similar material from the land and includes the treatment and storage of those materials, or the manufacture of products from those materials on, or adjacent to, the land from which the materials are extracted, but does not include industry – mining.*

As the proposed development seeks approval for the extraction of limestone, the ‘Industry-Extractive’ land use definition is deemed the most appropriate land use. The application does not propose any manufacturing activities onsite.

Within the Rural Zone, under LPS1, Industry-Extractive is considered an ‘A’ use. Clause 3.3.2 of LPS1 defines the following interpretation of ‘A’ uses:

> *Means that the use is not permitted unless the local government has exercised its discretion by granting development approval after giving special notice in accordance with clause 64 of the Deemed Provisions.*

Therefore, the proposed development is capable of approval by the Shire, subject to a period of public advertising.

3.3 State Planning Policy 2.4 Basic Raw Materials

The availability and supply of BRM have been identified by the state as a finite resource essential for the construction of buildings, roads, infrastructure and agricultural production.

State Planning Policy 2.4 – Basic Raw Materials (SPP2.4) seeks to enable the responsible extraction of BRM while ensuring the protection of people and the environment. The application of this Policy provides the foundation for land use planning to address the sustainable management of BRM in Western Australia.

The development application prepared by Element Advisory conducts a detailed assessment of the proposed quarry against the provisions of SPP 2.4.

3.4 State Planning Policy 3.7 Planning in Bushfire Prone Areas

The subject site is within a Designated Bushfire Prone Area. The provisions of SPP 3.7 and associated guidelines for Planning in Bushfire Prone Areas (V1.4) apply to the proposal.

Section 2.6 – Discretionary Decision-Making states the following applicable to this application:

> *Decision-makers can apply exemptions from the requirements of SPP 3.7 and these Guidelines where there is no intensification of land-use, and/or the proposal is not increasing the bushfire threat. Intensification of land use and/or development may include planning proposals that:*
> *a) result in an increase of visitors, residents or employees; or*
> *b) involve the occupation of employees on site for more than three hours at a time for multiple periods during a week.*

An Extractive Industry is listed as a land use which may be considered exempt from compliance with the guidelines where no habitable buildings are proposed and where the proposal does not propose an intensification of land use. Since the proposal does not contain any habitable buildings, and employees onsite are to be onsite for periods of haulage and loading only, the application is considered exempt from requiring a bushfire assessment at this stage.

3.5 Other Approvals

3.5.1 Environmental Protection Act 1986 – Part V (Prescribed Premises)

The operation of crushing and screening plant is regulated by the Department of Water and Environmental Regulation (DWER) under *Part V (Prescribed Premises) Environmental Protection Act 1986*. Under this framework a Category 12 (Screening, etc. of material) Works Approval and Licence is required.

As a “Prescribed Premises” the principal regulator of environmental matters (e.g. noise, dust, water management, etc.) for the project is DWER.

3.5.2 Environmental Protection Act 1986 – Part V (Clearing of Native Vegetation)

The clearing of native vegetation within Western Australia is regulated by the Department of Water and Environmental Regulation (DWER) under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*. A clearing permit is required to authorise removal of native vegetation.

3.5.3 Environmental Protection and Biodiversity Conservation Act (1999) (Commonwealth)

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) may apply if quarrying activities are likely to have a significant impact on Matters of National Environmental Significance (MNES), such as listed threatened species, ecological communities, or heritage values.

The project may require referral to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) for assessment and approval under the EPBC Act. This ensures that nationally significant environmental values are considered and protected before quarry operations proceed.

3.5.4 Rights in Water and Irrigation Act 1914

The abstraction of groundwater is regulated by the Department of Water and Environmental Regulation (DWER) under the *Rights in Water and Irrigation Act 1914*.

Groundwater abstraction does not currently occur within the subject site, with water currently being sourced from offsite sources. Should it become necessary to source groundwater from within the subject site, a groundwater licence will be obtained by the project.

3.5.5 Aboriginal Heritage Act 1972

There are no registered or identified sites of aboriginal heritage within the project area.

WA Limestone recognises that it has obligations under Section 15 of the *Aboriginal Heritage Act 1972* to inform the Department of Aboriginal Affairs should any archaeological material be encountered during ground disturbance.

4.0 PROJECT DETAILS AND OPERATIONAL MANAGEMENT

The Jurien Bay Quarry is a lime sand and limestone quarry. The existing quarry is to be expanded to 3.3088ha of the subject site, with operations resuming to supply limestone to the Jurien Bay Boat Harbour Entrance Reconfiguration project.

Dependent on regulatory approvals and timeframes of the Jurien Bay Boat Harbour Entrance Reconfiguration project, the resumed project has a remaining life of mine 10 years at anticipated excavation rates. Rehabilitation is to be completed immediately following the completion of extraction.

No waste rock is produced by the operation, only overburden which will be used for safety bunds and stockpiled for later use in rehabilitation.

4.1 Project Description

The Quarry produces a variety of sand and limestone products with the method of mining varying depending on the product(s) being produced. Not all products require processing by crushing and screening plant. Armour stone, which are large boulders of varying size used in coastal construction works. Market for armour stone is limited and intermittent however this product is critical for the construction and maintenance of seawalls and breakwaters.

Up to 259,200 tonnes of sand and limestone products are estimated to be excavated from the proposed quarry. It is proposed to excavate approximately 25,920 tonnes of material per year.

Machinery used by the quarry operations consists of front-end loader, D9 dozer, excavator, service/fuel truck, water truck and associated light vehicles. Mobile crushing and screening plant is used to process the excavated sand and limestone.

All plant and equipment are maintained to a high quality to ensure efficient, safe and environmentally conscious operation of the site.

4.2 Staging and Timing

Extraction is planned to progress gradually across the site, with no more than 2 ha open to excavation at any one time. Excavation will progressively move from south to north across the site over a period of approximately 10 years (subject to regulatory approvals and timeframes of the Jurien Bay Boat Harbour Entrance Reconfiguration project).

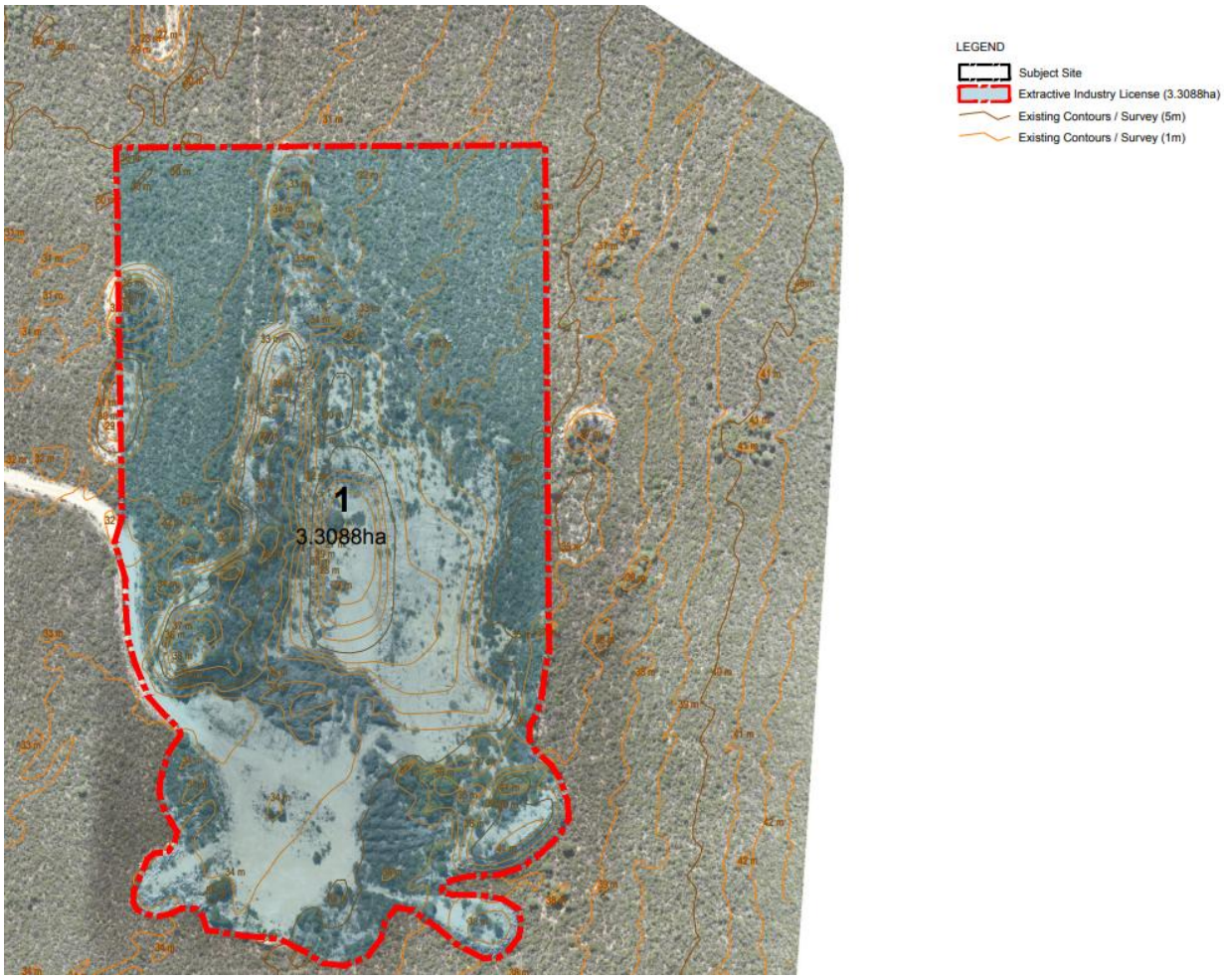

Figure 5: Excavation boundary

4.3 Operating Hours

Operating hours are;

- Monday to Friday: 7:00am –5:00pm
- Saturday: 7:00am – 1:00pm
- Sundays & Public Holidays: No works to occur

No heavy vehicle access to the site is permitted before 7:00am Monday to Saturdays. Operations outside of these hours will be subject to prior approval by the Shire of Dandaragan.
The site operating hours will sign-posted at the site entrance, similar to Figure 6.

Figure 6: Site Operating Hours

4.4 Quarry Design

Current and indicative quarry design levels are provided at Appendix 2.

Maximum excavation depth is limited to 26m AHD.

The excavation levels are designed to maximise the recoverable resource, minimise impact to environmental values, and be compatible for the post-quarrying land use (to be determined). Given these design constraints and the significant remaining life of the project, the design levels should be considered indicative at this time.

4.5 Extraction methods

Extraction activities will typically occur in the following sequence:

a) **Vegetation clearing (where required)** - A bulldozer is used to remove any vegetation cover by pushing it into windrows. Where practicable this material is used to minimise soil erosion or preserved for future rehabilitation. If possible it is preferable to directly transfer the cleared vegetation to an area being rehabilitated.

b) **Removal and stockpiling of topsoil** - The top 100mm of topsoil from the active extraction stage is to be removed and stockpiled. Stockpiles are to be located where convenient within each extraction stage for operations with a batter no greater than 1:3 to ensure minimal erosion of the stockpile during winter periods and a height no greater than 2m to reduce wind erosion and reduce compaction impacts on soil structure and soil biota.

c) **Overburden removal -** Overburden as yellow and brown sand and low grade limestone is pushed to the edge of the excavation area to expose the underlying limestone. Surplus overburden not required for future rehabilitation may be sold as fill. Any deposits of higher-grade sand may be screened and sold for higher value sand products.

d) **Material excavation** - Limestone is excavated by deep ripping with a bulldozer, which is pushed down sloping faces to the floor of the pit. In this process the bulldozer moving over the limestone

"track rolls" the material which crushes the limestone into rubble. Limestone rubble may be sold 'as is' or stockpiled for crushing and screening.

e) **Screening and crushing** - A front-end loader takes the raw feed from the stockpile and loads it into mobile crushing and screening plant which reduces the material to smaller sized rocks, and sorts by screens into various sized aggregate product.

f) **Final contouring and topsoil respread** – The pit will be shaped as defined in Post Extraction Contour Plan. Stockpiled topsoil will be respread to provide a growth medium for establishment of vegetation.

g) **Site rehabilitation** – Rehabilitation is to be completed in stages, following each stage of extraction. Details of site rehabilitation will be documented in a site closure plan.

4.6 Material Processing

Processing is limited to crushing and screening of the raw excavated limestone through a mobile plant, to separate the limestone rock into various size classes. No waste rock or tailings are produced by the operation

The mobile crushing and screening equipment used is modular and interchangeable. Production of different quarry products requires different configurations of the crusher and screens. Similarly geological variation in the sand and limestone resource requires different equipment configurations.

4.7 Access and Transport

Peak truck movements are expected to be 8 laden (in/out) movements per hour. This is graded as a 'low-impact' development.

The pit will be accessed via the existing internal unsealed track extending approximately 1.6km from the entrance at Indian Ocean Drive. Indian Ocean Drive is identified as a RAV network road capable of accommodating up to 27.5m B-Double trucks as proposed. The proposed RAV vehicles are to operate in accordance with the conditions of the RAV network.

The site will be fenced and signposted to prevent inadvertent and unauthorised entry. Locked gates, large boulders and logs will be used to discourage four-wheel drive and motorbike access. Surveillance cameras will also be installed across the site to monitor access.

4.8 Facilities

Relocatable office and ablutions facilities will be installed on the site. General rubbish and waste water from these facilities will be contained and trucked offsite to be disposed of at appropriately licenced facilities.

4.9 Resource Requirements and Regional Infrastructure

4.9.1 Water

Project water requirements are principally for dust suppression. The volume of water required is highly dependent on the level of activity occurring and meteorological conditions.

Groundwater abstraction from the project site does not currently occur or is proposed. Water for the project is to be imported by tanker from offsite licensed bores or commercial standpipe.

4.9.2 Energy

There is no current connection to the Western Power electricity grid. All power requirements within the subject site are serviced with on-site portable generators.

Power requirements will vary depending on the rate of excavation and machinery in-use at any point in time. All generators used are maintained in good working condition by WA Limestone's in-house maintenance staff.

4.9.3 Machinery and Equipment

The following equipment is likely to be used by the mining operation.

Item	Description
Bulldozer	• Bulldozer (D9 or equivalent) • Used for pushing and movement of overburden and limestone, track rolling, and land clearing and reinstatement.
Loader	• Rubber-tyred wheel front end loader (CAT 980 or equivalent) • Used for movement of sand and limestone, feeding of crushing and screening plant and loading of trucks. • At times 2 or more loaders may operate within the site.
Excavator	• An excavator is used from time to time to move sand and limestone, particularly limestone armour rock.
Dump Truck	• CAT 740 or 777 or equivalent • Used to move material within the site.
Water Cart	• A water cart of 10,000-14,000L capacity will be used for dust suppression on the access road and active working area.
Service Truck	• For refuelling, servicing and light mechanical repairs of site machinery.
Light Vehicles	• 4WD Utilities and wagons for site personnel, management and visitors.
Mobile Generator	• Mobile generators are required for the site office and weighbridge and for the operation of electric screening plant.
Mobile crushing and screening plant	• Mobile jaw crusher and electric screens are used for the preparation of various sized limestone aggregate products. The screens may also be used to separate sand from limestone.

Table 5: Plant and Equipment Requirements

4.10 Project Closure and Post-Quarrying Land Use

The quarrying operations have an estimated life of 10 years. Detailed planning for the post-quarrying land use is anticipated to commence approximately 5 years from the completion of excavation, with separate applications and approvals to be obtained for the post-quarrying use, if required.

A Mine Development and Closure Proposal is not required to be submitted and approved by DMPE as the quarry is operating on freehold land.

At present, the intention is to keep the quarry available for future use following the estimated 10-year lifespan. Therefore, rehabilitation will ensure that the site is made safe, stable and non-polluting. This approach is consistent with the previous quarry operations. All mine safety requirements of the Department of Local Government, Industry Regulation and Safety will be adhered to.

It is anticipated that further development approvals will be sought by the landowner for the post-mining land use, once that use has been determined.

4.11 Complaints Management

WA Limestone maintains an ISO 14001:2015 compliant complaints register for all sites and operations. Contact details will be sign posted at the entrance to the site.

All complaints are to be investigated immediately upon receipt of a complaint. If the complaint is substantiated, WA Limestone will undertake measures as necessary to ensure compliance with relevant statutory requirements. Details of complaints received, and actions taken will be provided to relevant authorities upon request.

5.0 ENVIRONMENTAL MANAGEMENT

The identification of significant environmental aspects and risks associated with the project has been completed in accordance with the principles of AS/NZS ISO 31009:2018 Risk Management – Principles and Guidelines (Appendix 1).

Project environmental risks are to be reduced to As Low As Reasonably Practicable (ALARP) by working through the control methodologies defined in the Hierarchy of Control (Figure 7).

The appropriateness and effectiveness of management controls shall be periodically reviewed and revised as necessary.

Compliance with management controls requires the effective awareness and compliance by all WA Limestone personnel and subcontractors for the environmental operating requirements relevant to their role and/or tasks performed. This shall be conducted and managed in accordance with the management controls set out in this section.

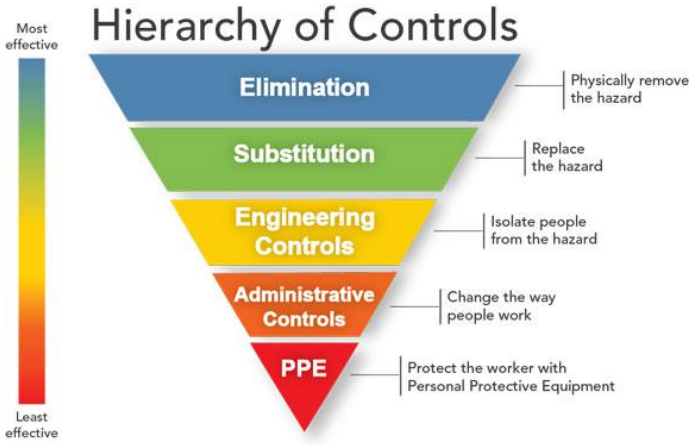

Figure 7: Hierarchy of Control

5.1 Visual

5.1.1 Assessment

Visual impacts are influenced by the size and elevation of a development, the surrounding environment and the proximity to neighbours and other sensitive locations. Perception of a visual feature and its impact to the observer is highly individualistic and difficult to quantify. A feature may appear visually appealing to one person and offensive to another.

The project site is isolated and surrounded by native vegetation. The project is not visible from any publicly accessible vantage point. Visual impacts will be negligible.

5.1.2 Objectives and Targets

Objective	Target	Performance Indicator
Minimise the visibility of the project from publicly accessible vantage points	Project not visible from publicly accessible vantage points	• Visibility of the project from nearby public vantage points (e.g. Indian Ocean Drive / Bashford Street). • Number of substantiated complaints relating to visual impact.

5.1.3 Management controls

Aspect	Management Control
Quarry Operation	Limit operations to daytime hours to minimise light spill
	Security lighting (if used) to be located and directed away from sensitive receptors
	Location and height of stockpiles to be managed such as they are not visible from publicly accessible vantage points.

5.1.4 Monitoring

- Annual survey of the project to monitor ground disturbance and height of features

5.1.5 Reporting and Records

- Routine reporting of monitoring results to regulators, in accordance with statutory requirements
- Complaints recorded, investigated, and outcomes recorded. Substantiated complaints and provided to regulators as required.

5.2 Flora and vegetation

5.2.1 Assessment

The clearing of native vegetation and impacts to flora and fauna are regulated by the Department of Water and Environmental Regulation (DWER) under the Envir*onmental Protection Act 1986*, and the commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the *Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)*.

The operation of the project requires the disturbance of native vegetation. The extraction boundary has been informed by the Flora, Vegetation, Fauna and Black Cockatoo Assessment conducted by SLR Consulting.

Prior to any disturbance, WA Limestone will obtain any necessary permits. This is likely to include a native vegetation clearing permit (NVCP) from DWER. It is also possible that an assessment under the EPBC Act will be required.

Provisional management actions are outlined at Section 5.2.3.

5.2.2 Objectives and Targets

Objective	Target	Performance Indicator
Limit the clearing of native vegetation	Clearing of native vegetation limited to the minimum necessary to sustain the project.	• Approval of native vegetation clearing by State and Commonwealth regulators.
Where the clearing of native vegetation cannot be avoided, mitigate and/or offset impacts to significant flora and fauna.	No residual impact to the environment as a result of project clearing activities.	• Approval of native vegetation clearing by State and Commonwealth regulators.
Comply with state and commonwealth legislation for the clearing of native vegetation.	Zero incidents of clearing outside of approved areas by project activities.	• Results of regular aerial survey of the project site. • Number of incidents of clearing outside of approved areas by project activities.
Limit impacts to adjacent native vegetation as a result of project activities.	Zero disturbance / degradation of adjacent native vegetation.	• Results of regular aerial survey of the project site. • Periodic inspection of adjacent native vegetation to review species abundance, density, and weed levels.

5.2.3 Management controls

Aspect	Management Control
Management	• Referral of proposed clearing to DWER and DCCEEW for assessment, and approvals obtained (if required) prior to clearing occurring. • Physical demarcation of clearing areas by surveyor prior to clearing occurring. • Regular aerial survey of project area to monitor for disturbance outside of approved areas.
Quarry Operations	• Limiting the clearing of native vegetation to areas which do not contain flora species or vegetation communities of conservation significance.

5.2.4 Monitoring

- Regular aerial survey of the project to identify disturbance to native vegetation.
- Regular site inspection by WA Limestone environmental personnel to monitor for vegetation degradation by project activities, weed levels, etc.
- Periodic assessment of native vegetation within the project site.
- Post-clearing survey to confirm extent of clearing and compliance.

5.2.5 Reporting and Records

- Disturbance of native vegetation outside of approved areas to be reported as an environmental incident.
- Statutory reporting obligations in accordance with DWER and DCCEEW approvals.

5.3 Fauna

5.3.1 Assessment

The extraction boundary has been informed by the Flora, Vegetation, Fauna and Black Cockatoo Assessment conducted by SLR Consulting.
Prior to any habitat disturbance, WA Limestone will obtain any necessary permits. This is likely to include a native vegetation clearing permit (NVCP) from DWER. It is also possible that an assessment under the EPBC Act will be required.

The quarry operations present a risk of injury to native fauna through vegetation clearing, vehicle movements and fauna becoming trapped in trenches and pits.

5.3.2 Objectives and Targets

Objective	Target	Performance Indicator
Limit accidental or intentional impacts to terrestrial fauna and their habitat	Zero incidents of injury or death to significant native fauna as a result of project activities.	• Number of reported incidents of injury or death of significant native fauna.
	Zero incidents of unauthorised clearing of significant fauna habitat.	• Results of regular aerial survey of the project site. • Number of incidents of clearing outside of approved areas by project activities.
	Zero disturbance / degradation of adjacent significant fauna habitat.	• Results of regular aerial survey of the project site. • Periodic inspection of adjacent native vegetation to review species abundance, density, and weed levels.

5.3.3 Management Controls

Aspect	Management Control
Clearing of native vegetation	• Referral of proposed clearing to DWER and DCCEEW for assessment, and approvals obtained (if required) prior to clearing occurring. • Pre-clearing fauna relocation by qualified and licensed contractor. • Clearing of native vegetation to be staged to allow any remaining fauna to self-relocate to surrounding native vegetation. • Machine operators to monitor for distressed or injured fauna and to stop activity if found and report to the Quarry Manager. • Demarcation of approved clearing areas by surveyor prior to clearing.
Quarry Operations	• Prohibit the feeding, harming or disturbance of native fauna by site personnel. • Construction of fauna egress points from trenches, pits and deep excavations (where required). • Enforcement of 20 km/hour speed limit on internal roads.

5.3.4 Monitoring

- Regular aerial survey of project to inspect for disturbance outside of approved areas.
- Daily inspection of open trenches and pits for trapped fauna.
- Post-clearing survey to confirm extent of clearing and compliance.

5.3.5 Reporting and Records

- Sightings of feral animals within the project area to be reported to WA Limestone environmental personnel.
- Injury of native fauna to be recorded as an environmental incident.

5.4 Erosion

5.4.1 Assessment

The risk of water erosion is low given the porosity of the soil and underlying geology, and managed through the appropriate design of operating surfaces, and strategic placement of erosion control devices (if required).

Wind erosion of friable material producing dust emissions is a risk. For limestone surfaces, once treated with water, limestone typically forms a hard crust of precipitated calcium carbonate which stabilises the surface. Fine particles are washed below the surface, leaving only coarse material behind which is less susceptible to wind erosion and dust lift off. If left undisturbed, dust emissions from wind erosion are greatly reduced.

5.4.2 Objectives and Targets

Objective	Target	Performance Indicator
Minimise erosion and sedimentation attributable to project activities	Zero off-site impacts as a result of erosion or sedimentation attributable to project activities.	• Results of regular aerial survey of the project site. • Number of incidents of erosion or sedimentation reported.

5.4.3 Management Controls

Aspect	Management Control
Vegetation clearing	Quarry pit, roads and laydown areas designed to prevent excessive pooling and stormwater runoff from adversely affecting the surrounding environment.
Overburden stripping	Disturbed areas no longer required by the project are to be suitably stabilised to prevent significant erosion.
Road and infrastructure construction	Sediment and erosion controls to be installed (as required).

5.4.4 Monitoring

- Disturbed areas, and sediment and erosion controls (where installed) are to be inspected regularly by environmental personnel and following significant rainfall events.

5.4.5 Reporting and Records

- Significant erosion or sedimentation to be recorded as an environmental incident.

5.5 Weeds

5.5.1 Assessment

The Flora, Vegetation, Fauna and Black Cockatoo Assessment conducted by SLR Consulting identified ten weed species within the subject site, none of which are listed as Declared Pests by the State Department of Primary Industries and Regional Development or as WoNS under the BAM Act.
. Quarry machinery and vehicles can inadvertently introduce weed seeds and plant material to a site by carrying soil or vegetation on tyres, tracks, and equipment surfaces.

5.5.2 Objectives and Targets

Objective	Target	Performance Indicator
Prevent the introduction of weeds and control existing weed populations within the project site as a result of project activities.	Zero new weed outbreaks as a result of project activities.	• Results of regular aerial survey of the project site. • Results of regular site inspections.
	Zero spread in area or increase in density of existing weed populations	• Results of regular aerial survey of the project site. • Results of regular site inspections.

5.5.3 Management Controls

Aspect	Management Control
Quarry Operation	Earth engaging plant and equipment to be cleaned of plant and soil material prior to arrival at site.
	Regular site inspections by environmental personnel to identify weed infestations.
	Where necessary, undertake weed control activities (e.g. spraying) as dictated by the problem.
	Prohibit the importation of soil and plant material except where required for rehabilitation and obtained from weed free source.

5.5.4 Monitoring

- Regular site inspections by environmental personnel to record any weed infestations and monitor the success of weed control works.
- Cleaning of machinery and equipment entering and exiting the subject site.

5.5.5 Reporting and Records

- Site inspection reports to be retained.
- Records of any equipment failing hygiene requirements to be recorded internally as an environmental incident.

5.6 Dieback

5.6.1 Assessment

Given that native vegetation has largely been altered within the subject site to enable the establishment of pasture, dieback indicator species are largely absent and therefore it is not possible to detect whether dieback is present or absent. On this basis, it is reasonable to classify the subject site as 'uninterpretable', denoting that a precautionary management approach should be adopted.

The primary objective of dieback management during operations is to minimise the risk of entry of dieback to the subject site. This can be achieved by preventing the importation of soil or plant material to and from the subject site. The risk of transportation via vehicles and equipment is low given that sealed roads will be
utilised prior to entering the subject site.
The management measures proposed for dieback control are developed in accordance with the Dieback Working Group (DWG) – Best Practice Guidelines (DWG, 2005) for an uninterpretable site and are provided below.

5.6.2 Objectives and Targets

Objective	Target	Performance Indicator
Prevent new Phytophthora dieback infestations, or spread of existing infestations as a result of project activities.	Zero new Phytophthora dieback infestations within the project site, attributable to project activities.	• Routine dieback testing of quarry products.
	Zero increase in the spread of existing dieback infestations (if present) within the project site, attributable to project activities.	• Periodic assessment of the vegetation within the project site for evidence of dieback infestation (where possible).

5.6.3 Management Controls

Aspect	Management Control
Quarry Operation	Training will be provided to all personnel during an initial safety and environment induction course. This will include an explanation of the specific requirements with regard to Phytophthora dieback management.
	Fencing and lockable gates will be maintained and used to control unauthorised access to the excavation area.
	As far as reasonable and practicable haulage vehicles are to be cleaned of all loose external soil and plant material prior to entry and exit from the extraction area.
	Access to the subject site during operation will be restricted to the proposed roads. No other access points should be established. The access location and vehicle inspection point should be clearly sign posted.
	The extraction area will be managed to avoid ponding of surface water where vehicle access is required.
	Trucks will be loaded and covered to ensure there is no spillage of material.

5.6.4 Monitoring

- Routine testing for Phytophthora dieback in quarry products.
- Periodic vegetation assessments and evidence of Phytophthora dieback infestation

5.6.5 Reporting and Records

- Phytophthora dieback test results to be retained.
- Records of any equipment failing hygiene requirements to be reported internally as an environmental incident.

5.7 Water

5.7.1 Assessment

The site is located within the Eneabba Coastal Tributaries Surface Water Area (DWER, 2025). No surface water features occur within, or close to the site. The nearest surface water feature is Hill River, which is approximately 1 km upslope (east) of the project site.

The project site is not located in a surface or groundwater protection area or in proximity to any environmentally sensitive water features.

The quarry operations are consistent with DWER *Water Quality Protection Note (WQPN) 15 – Basic raw materials extraction (2019),* which identifies Basic Raw Material excavation as an acceptable land use with low risk to surface and groundwater features.

Natural ground elevations across the subject site range from RL 10m to RL 50m AHD, with the existing pit situated between 30m and 40m AHD and an indicative final quarry pit floor level of RL 26 m.

5.7.2 Objectives and Targets

Objective	Target	Performance Indicator
Minimise short- and long-term impacts to regional drainage and water quality	Zero short- or long-term impacts to regional drainage and water quality.	• Compliance of project activities with DWER WQPN 15. • Number of incidents reported relating to water pollution.

5.7.3 Management Controls

Aspect	Management Control
Quarry Operation	Excavation to maintain a minimum 2 metre separation to groundwater
	Clean stormwater from upslope of the quarry will be diverted around the works area
	All stormwater originating from the project area to be contained within the project site, with erosion control devices constructed as required.
	Maintenance of all plant and equipment in good working condition in accordance with manufacturers specifications.
	Construction of roads and hardstand areas with suitable grades to prevent water pooling and direct stormwater to appropriate runoff points.
	Maintain roads and hardstand areas in good condition free of significant potholes, rills and product spillages.
	Provision of hydrocarbon spill kits on service and refuelling vehicles.
	Secure access to the site to restrict unauthorised access and illegal dumping.

5.7.4 Monitoring

- Regular inspections to identify potential water contamination
- Regular inspection of stormwater and surface water controls (if installed).
- Inspection for erosion and sedimentation following significant rainfall events.
- Monitoring of project water consumption.

5.7.5 Reporting and Records

- Project water consumption to be recorded and records retained.
- Water pollution, significant erosion or sedimentation to be reported as an environmental incident.
- Any breach of water abstraction licenses and permits (if relevant) to be reported as an environmental incident.

5.8 Waste

5.8.1 Assessment

Extraction of sand and limestone is a clean operation, which does not produce waste. No chemicals are used apart from normal lubricants for machinery. The principal risk of waste is from unauthorised access and illegal dumping.

Vehicle maintenance on-site is limited to minor servicing and light mechanical repairs as part of normal operating procedures. Service trucks are equipped with waste fluids recovery equipment and storage tanks. Any waste chemicals or fluids derived from routine maintenance activities are collected by the service truck and taken from site and disposed of at an approved facility.

Access to the subject land is restricted by fencing, signage, locked gates, the strategic placement of logs and boulders, and security cameras installed.

5.8.2 Objectives and Targets

Objective	Target	Performance Indicator
Abide by all regulatory requirements and industry best practice for waste management.	Zero non-compliances with regulatory requirements	Number of incidents relating to the disposal of waste.
Waste produced by the site to be reused and recycled as far as practicable.	100% of recyclable wastes recycled	Number of non-conformances reported relating to the segregation, storage and disposal of wastes.
Maintenance of the site in a clean and tidy condition at all times.	Site maintained in a clean and tidy condition at all times.	Number of non-conformances reported relating to site housekeeping.

5.8.3 Management Controls

Aspect	Management Control
Quarry Operation	Provision of adequate and appropriate waste receptacles for the types and quantities of waste generated.
	Waste receptacles to be covered to keep out animals and prevent windblown litter.
	Controlled waste (if generated) to be separated from non-controlled waste to avoid the potential for contamination.
	Controlled waste (if generated) to be disposed of by a licenced waste carrier to an appropriately licensed facility.
	Site access restricted by fencing, signage, locked gates, boulders and logs to prevent unauthorised access and illegal dumping.

5.8.4 Monitoring

- Daily inspection by quarry personnel for:
  - Litter in work areas
  - Waste receptacles nearing capacity and requiring disposal

5.8.5 Reporting and Records

- Waste management breaches to be recorded internally as an environmental incident
- Illegal dumping incidents to be reported as an environmental incident
- Records of hydrocarbon waste disposal by appropriately licensed contractor to be retained.

5.9 Bushfire

5.9.1 Assessment

Bushfire within the surrounding vegetation and rural area is a risk to the project.

No habitable buildings exist within the site or are proposed. The continued operation of the quarry does not involve the intensification of land use or increase the bushfire threat.

Quarry activities are undertaken in accordance with the *Bushfire Regulations 1954*, *Work Health and Safety (Mines) Regulations 2022*, and any notices or directions issued by the Department of Fire and Emergency Services (DFES) and the Shire of Dandaragan.

Firebreaks will be established and maintained annually in accordance with Shire of Dandaragan standards and the quarry itself forms a natural firebreak.

The risk of potential bushfire caused by the project quarrying operations is low as project activities within vegetated areas are rare and infrequent. These activities are to be avoided during periods of elevated bushfire risk as far as practicable and appropriate bushfire controls are to be implemented if these activities are undertaken.

5.9.2 Objectives and Targets

Objective	Target	Performance Indicator
Prevent bushfires from occurring as a result of project activities	Zero bushfires occurring as a result of project activities	Number of bushfire incidents occurring as a result of project activities.
Protect the project from bushfires.	Zero damage to project plant, equipment, and infrastructure from bushfires.	Incident reports relating to damage to plant, equipment and infrastructure from bushfire.

5.9.3 Management Controls

Aspect	Management Control
Quarry Operation	• Maintenance of site firebreaks in accordance with government regulations and standards. • Securing of the site from unauthorised access. • Prohibition of activities within vegetated areas during Total Fire Ban and Vehicle Movement Ban periods. • Provision of fire-fighting appliance (water cart) for activities within vegetated areas during periods of elevated bushfire risk. • Establishment of emergency muster point, communication protocols, inductions and training (as required) for site personnel.
Bushfire Event	• Immediate reporting of bushfires to authorities • Provision of assistance to bushfire suppression activities (e.g. use of earth-moving equipment) under the direction and supervision of bushfire control officers.

5.9.4 Monitoring

- Monitoring of fire breaks to maintain condition.
- Visual monitoring for bushfires by quarry personnel.

5.9.5 Reporting and Records

- Bushfire events caused by or impacting the project site to be recorded as an environmental incident.
- Provision of records as required to relevant authorities in the event of bushfire.

5.10 Heritage

5.10.1 Assessment

Non-indigenous heritage
Non-indigenous heritage is regulated by the Department of Planning, Lands and Heritage (DPLH) under the *Heritage Act 2018*.

There are no existing structures or significant evidence of historical non-indigenous occupation of the site therefore the likelihood of any significant unidentified heritage sites is remote.

Aboriginal heritage

The DPLH Aboriginal Cultural Heritage Inquiry System (ACHIS) shows that the site is not within an Aboriginal Cultural Heritage Survey Area and there are no records of heritage sites intersecting the project site (DPLH, 2025).

WA Limestone recognises that it has obligations under Section 15 of the *Aboriginal Heritage Act 1972* to inform the Department of Planning, Lands and Heritage. should any archaeological material be encountered during ground disturbance.

5.10.2 Objectives and Targets

Objective	Target	Performance Indicator
Report the discovery of suspected heritage sites	All suspected heritage sites reported.	• Compliance with relevant heritage legislation.

5.10.3 Management Controls

Aspect	Management Control
Existing / Known Heritage	If present, known heritage sites within the project area are to be demarcated by appropriate fencing, signage, etc.
Unidentified Heritage	Quarry personnel involved in ground disturbance to be inducted and/or trained to identify potential aboriginal heritage sites.
	Should a suspected heritage site be identified: • all works potentially impacting the site are to cease immediately and the area cordoned off • WA Limestone management are to be notified who will direct actions as appropriate to the discovery. • Work in the area is not to recommence until the suspected heritage site has been investigated and any requisite authorisations obtained.

5.10.4 Monitoring

- Monitoring and maintenance of demarcation fencing surrounding known heritage sites (where present).
- Visual monitoring for potential heritage sites by quarry personnel when undertaking ground disturbance.

5.10.5 Reporting and Records

- Discovery of a suspected heritage site to be reported in accordance with DPLH requirements.
- Damage to a known heritage site (where present) to be recorded as an environmental incident and reported in accordance with DPLH requirements.

5.11 Noise

5.11.1 Assessment

The Jurien Bay Quarry project is expected to be classified as a "Prescribed Premises" by Schedule 1 *Environmental Protection Regulations 1987*, with environmental management to be approved and regulated by the Department of Water and Environmental Regulation (DWER). This includes noise management.

The Jurien Bay Quarry is located over 2,000 metres from the nearest dwelling, noise impacts are to be negligible.

5.11.2 Objectives and Targets

Objective	Target	Performance Indicator
Maintain compliance with the *Environmental Protection (Noise) Regulations 1997*	Zero non-compliances	Noise assessment to confirm project noise emissions and compliance with the noise regulations.
Limit disturbance from noise generated by the project to nearby receptors	Zero substantiated noise complaints relating to project activities	Number of substantiated complaints received.

5.11.3 Management Controls

Aspect	Management Control
Quarrying Operation	Excavation and processing to be undertaken below natural ground level as far as practicable.
	Trafficable areas to be maintained in good condition free of potholes and rills.
	Quarry operations to be conducted within the project operating hours specified at Section 4.3.
	Low frequency (Croaker) reversing alarms fitted where safely practicable
	Plant alarms to utilise warning lights rather than audible alarms where safely practicable
	Drivers instructed to avoid the use of engine braking where safely practicable

5.11.4 Monitoring

- No noise monitoring is proposed, due to negligible risk of impacting sensitive receptors.

5.11.5 Reporting and Records

- Plant and equipment maintenance records to be retained.
- Details of complaints received to be provided to relevant authorities in accordance with statutory requirements.

5.12 Dust

5.12.1 Assessment

The Jurien Bay Quarry project is expected to be classified as a "Prescribed Premises" by Schedule 1 *Environmental Protection Regulations 1987*, with environmental management approved and regulated by the Department of Water and Environmental Regulation (DWER). This includes dust management.

There is potential for dust emissions to be generated by the project activities, including:

- Clearing vegetation;
- Stripping and stockpiling soil and overburden;
- Extraction and crushing operations;
- Loading products into trucks; and
- Vehicle travelling on unsealed roads.

The nearest dust sensitive residence is located more than 2,000 metres from the project site, and the nearest public road (Indian ocean drive) is approximately 1.2km west of the site. Due to the small size of the quarry and remote location, the impact of dust emissions on sensitive receptors is expected to be low.

DWER Guidance '*A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities'* provides an assessment methodology for dust impacts (see completed assessment below) and provides recommendations for dust management controls based on the assessed risk (DEC, 2011).

Part A. Nature of site

Item	Score Options				Allocated Score
1. Nuisance potential of soil, when disturbed	Very Low.....**1**	Low.....**2**	Medium.....**4**	High.....**6**	4
2. Topography and protection provided by undisturbed vegetation	Sheltered and screened.....**1**	Medium screening.....**6**	Little screening.....**12**	Exposed and wind prone.....**18**	6
3. Area of site disturbed by the works	Less than 1ha.....**1**	Between 1 and 5ha.....**3**	Between 5 and 10ha.....**6**	More than 10ha.....**9**	3
4. Type of work being done	Roads or shallow trenches **1**	Roads, drains and medium depth sewers...**3**	Roads, drains, sewers and partial earthworks.....**6**	Bulk earthworks and deep trenches.....**9**	9
				TOTAL score for Part A	**22**

Part B. Proximity of site to other land uses

Item	Score Options				Allocated Score
1. Distance of other land uses from site	More than 1km.....**1**	Between 1km and 500m.....**6**	Between 100m and 500m.....**12**	Less than 100m.....**18**	1
2. Effect of prevailing wind direction (at time of construction) on other land uses	Not affected.....**1**	Isolated land uses affected by one wind direction.....**6**	Dense land uses affected by one wind direction.....**9**	Dense/sensitive land uses highly affected by prevailing winds...**12**	6
				TOTAL score for Part B	**7**

Site Classification = 154 (negligible risk) - No provisions or contingency arrangements required.

5.12.2 Objectives and Targets

Objective	Target	Performance Indicator
Minimise excessive visible dust generation by project activities.	Zero incidents of excessive dust generation by project activities.	• Number of incidents of excessive visible dust escaping the project site boundary. • Number of substantiated complaints received relating to dust.
Ensure that nuisance or injury from dust emissions is not experienced by site personnel or sensitive receptors.	Zero incidents of excessive dust generation by project activities.	• Number of incidents of excessive visible dust escaping the project site boundary. • Number of substantiated complaints received relating to dust.

5.12.3 Management Controls

All workers and site personnel are instructed in the use of dust management equipment and provided with appropriate personal protective equipment (PPE) as required. Site personnel are also instructed to monitor for dust entering the subject site from offsite sources. In such an event the site supervisor is to contact the relevant landowner and/or local government and notify them of the issue.

It is the experience of WA Limestone in operating sand and limestone quarries for more than 50 years that dust emissions are a relatively minor issue that is principally resolved by the use of water to dampen material prior to extraction.

Aspect	Management Control
Management	Continuous visual dust monitoring by quarry personnel.
	Implementation of the following trigger conditions to determine when additional dust management is required: • Visible dust – Visual observation of excessive visible dust being generated by project activities with the potential to escape the site boundary. • Adverse weather – Meteorological conditions which cause excessive dust emissions from the project that are unable to be managed by standard dust management controls. In the event that trigger conditions are reached, the Site Supervisor is to implement additional dust management measures proportionate to the increased risk. This may include additional water cart operation, or modification / suspension of site operations until such time as the adverse conditions have abated and dust can be maintained within acceptable levels.
	Site inductions to include dust minimisation practices.
Excavation	Schedule vegetation clearing and topsoil/overburden stripping to times of favourable meteorological conditions.
	Areas of open disturbed ground to be kept to a practicable minimum.
	Plant and equipment to be shut down when not in use.
	Quarry operations are to be located below ground level and/or screening bunds constructed around operating areas.
	Crushing and screening plant conveyors to be enclosed and water sprays fitted to transfer points (where practicable).
	A water cart with a minimum capacity of 10,000 L to be maintained for use by the quarry on an as-required basis.
	Where required, disturbed areas no longer required by the quarry operations to be treated with Hydromulch or similar stabilisation agent to improve stabilisation of the ground.
Transport	Wet down and/or cover loads on trucks that are likely to blow during transport.
	Drivers to inspect loads prior to leaving the site. Any spillage of product on public roads to be reported to the Site Supervisor.

5.12.4 Monitoring

- Visual monitoring of site conditions and activities by site personnel is used to regulate the preventative dust management measures, to maintain acceptable levels of dust during site operations.

5.12.5 Reporting and Records

- Excessive dust emissions crossing the premises boundary is to be recorded internally as an environmental incident.
- Reporting of dust emissions to be undertaken in accordance with relevant statutory requirements.

5.13 Traffic

5.13.1 Assessment

Primary access to the project is via Indian Ocean Drive. At maximum production, traffic from the quarry to be a peak of 8 truck movements per hour (e.g. 4 into site and 4 out of site). This is graded as a 'low-impact' development.

5.13.2 Objectives and Targets

Objective	Target	Performance Indicator
Compliance with all road traffic laws	Zero non-conformances with applicable traffic legislation.	Number of traffic offences received by vehicles undertaking project activities.
Limit disturbance to the community from traffic associated with the project	Zero substantiated complaints relating to traffic associated with the project	Number of substantiated complaints received.

5.13.3 Management Controls

Aspect	Management Control
Transport	
	Vehicles to be maintained in good working condition in accordance with manufacturers specifications.
	WA Limestone vehicles to be fitted with IVMS to monitor compliance.

5.13.4 Monitoring

- WA Limestone vehicles to be fitted with In-Vehicle Monitoring Systems (IVMS).
- Register of WA Limestone vehicle maintenance.

5.13.5 Reporting and Records

- Vehicle maintenance records to be retained.
- Details of traffic incidents to be provided to relevant authorities upon request.

5.14 Dangerous Goods and Hazardous Substances

5.14.1 Assessment

No on-site bulk fuel storage is proposed. Machinery will be refuelled by mobile service trucks, equipped with spill kits and drip trays.

Small quantities of machinery fluids (oil, radiator fluid, etc) may be stored on site within the locked storage enclosure. All hydrocarbons are stored in accordance with relevant Australian Standards and government guidelines. The enclosure is to be located away from vegetated areas.

Mobile service trucks are used to remove waste fluids from vehicles during routine maintenance, which are taken off-site for disposal at an appropriate licensed facility. No major servicing or repairs are undertaken on-site.

No other dangerous goods or hazardous substances are used or required by the project.

5.14.2 Objectives and Targets

Objective	Target	Performance Indicator
Minimise the likelihood and potential impact of environmental contamination from hydrocarbons, dangerous goods and hazardous substances by the project.	Zero incidents involving dangerous goods and hazardous substances.	• Number of incidents occurring as a result of non-compliant transportation, handling, storage, use and disposal of hydrocarbons, dangerous goods and hazardous substances. • Compliance with regulatory requirements relating to the transportation, handling, storage, use and disposal of hydrocarbons, dangerous goods and hazardous substances.

5.14.3 Management Controls

Aspect	Management Control
Procurement	• A register of dangerous goods and hazardous substances used by the project to be maintained. • Compliant Safety Data Sheets (SDS) and labelling for all controlled substances.
Storage	• Hydrocarbons to be stored in bunded area or self-bunded container(s), compliant with relevant Australian Standards. • Spill kits provided at all locations where hydrocarbons are stored and handled. • Spill kits to be clearly labelled and inspected regularly.
Handling and Use	• Risk assessment and Safe Work Method Statement completed for the handling and use of dangerous goods and hazardous substances. • Provision of personnel protective equipment (PPE) as required. • Refuelling of plant and equipment to be undertaken within appropriate areas and drip tray used. • Refuelling and service vehicles to be equipped with spill kits and drip trays.
Disposal	• Used hydrocarbons and contaminated waste (e.g. oily rags, used filters, etc.) to be removed from site in appropriate storage containers by a licensed waste carrier. • Hydrocarbon contaminated soil to be collected and disposed of at an appropriately licensed facility.

5.14.4 Monitoring

- Regular inspections and audits to confirm compliance with relevant transportation, storage, handling, use and disposal regulatory requirements and standards.

5.14.5 Reporting and Records

- Hydrocarbon and chemical spills to be recorded internally as an environmental incident.
- Quantities and use of controlled substances by the project to be tracked and records retained.
- Hydrocarbon disposal receipts to be provided by the licensed waste carrier and retained by the project.

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Appendix 1
Risk Assessment

Aspect	Impact	Inherent Risk			Closure Controls	Residual Risk		
		Likelihood	Consequence	Risk Score		Likelihood	Consequence	Risk Score
Quarry Development								
Clearing of native vegetation	Excessive dust emissions	Likely	Moderate	13	• Provision of water cart • Monitor meteorological conditions and avoid activities during adverse weather conditions (where practicable)	Unlikely	Moderate	5
	Excessive noise emissions	Possible	Minor	4	• Minimise works prior to 7am where practicable	Unlikely	Minor	2
	Loss and/or damage to significant native flora	Possible	Moderate	8	• Physical demarcation of areas to be cleared by surveyor prior to works commencing • Provision of mitigation and/or offsets to reduce the impact of clearing on flora • Provision of fire-fighting appliance (e.g. water cart) if clearing undertaken during elevated bushfire danger rating period.	Rare	Moderate	3
	Injury or mortality of significant fauna	Possible	Serious	13	• Undertake fauna relocation prior to clearing (where appropriate) • Enforcement of speed limit for vehicles and mobile equipment • Provision of fire-fighting appliance (e.g. water cart) if clearing undertaken during elevated bushfire danger rating period.	Rare	Serious	6
	Loss of significant fauna habitat	Possible	Serious	13	• Physical demarcation of areas to be cleared by surveyors prior to works commencing • Provision of mitigation and/or offsets to provide net gain to the environment • Provision of fire-fighting appliance (e.g. water cart) if clearing undertaken during elevated bushfire danger rating period.	Rare	Serious	6
	Destruction / damage to aboriginal heritage	Unlikely	Serious	9	• Assessment of project against the Aboriginal Heritage Due Diligence Guidelines	Rare	Serious	6
	Introduction and/or spread of dieback	Rare	Serious	6	• Enforce vehicle hygiene protocols and operate in a segregated manner to avoid contamination of uninfected areas and transport of infested material	Rare	Serious	6
	Introduction and/or spread of weeds	Likely	Moderate	12	• Enforce vehicle hygiene protocols and operate in a segregated manner to	Rare	Moderate	3

Aspect	Impact	Inherent Risk			Closure Controls	Residual Risk		
		Likelihood	Consequence	Risk Score		Likelihood	Consequence	Risk Score
					• avoid contamination of uninfected areas and transport of infested material. • Regular inspection of vegetation for weeds and weed control (as required).			
	Surface water contamination	Possible	Minor	4	• Construction of stormwater diversion drains, detention basins, sediment traps, etc. as required.	Unlikely	Minor	2
	Ground water contamination	Unlikely	Moderate	5	• Excavation to be undertaken in accordance with the pit design plan and maintain a minimum separation to groundwater of 3 metres.	Unlikely	Minor	2
	Land degradation from erosion	Possible	Minor	8	• Stabilisation of cleared areas to minimise erosion (as required).	Unlikely	Minor	2
Stripping and stockpiling topsoil	Excessive dust emissions	Likely	Moderate	12	• Provision of water cart • Monitor meteorological conditions and avoid activities during adverse weather conditions (where practicable)	Possible	Moderate	8
	Excessive noise emissions	Possible	Minor	4	• Completion of noise assessment to confirm compliance with the *Environmental Protection (Noise) Regulations 1997* • Minimise works prior to 7am where practicable	Unlikely	Minor	2
	Introduction and/or spread of dieback	Rare	Serious	6	• Enforce vehicle hygiene protocols and operate in a segregated manner to avoid contamination of uninfected areas and transport of infested material	Rare	Serious	6
	Introduction and/or spread of weeds	Likely	Moderate	12	• Enforce vehicle hygiene protocols and operate in a segregated manner to avoid contamination of uninfected areas and transport of infested material	Unlikely	Moderate	5
	Inadequate stripping and/or stockpiling of topsoil reducing quantity available for rehabilitation	Possible	Serious	13	• All viable topsoil to be stripped and separately stockpiled for future use (where practicable) • Topsoil to be stored in low height stockpiles to maximise the preservation of the native seed bank	Rare	Serious	6
Burning vegetation windrows	Excessive smoke emissions	Possible	Minor	4	• Burning to be undertaken only during favourable meteorological conditions	Unlikely	Minor	2
	Fire escaping the site impacting surrounding flora and fauna	Unlikely	Major	14	• Construction and maintenance of firebreaks	Rare	Moderate	3

Aspect	Impact	Inherent Risk			Closure Controls	Residual Risk		
		Likelihood	Consequence	Risk Score		Likelihood	Consequence	Risk Score
					• Provision of firefighting appliance (e.g. water cart) during controlled burning operations • Burning to be undertaken only during favourable meteorological conditions			
Overburden excavation and stockpiling	Excessive dust emissions	Likely	Moderate	12	• Provision of water cart • Monitor meteorological conditions and avoid activities during adverse weather conditions (where practicable)	Possible	Moderate	8
	Excessive noise emissions	Possible	Minor	4	• Completion of noise assessment to confirm compliance with the *Environmental Protection (Noise) Regulations 1997* • Minimise works prior to 7am where practicable	Unlikely	Minor	2
	Land degradation from erosion	Possible	Moderate	8	• Stabilisation of cleared areas to minimise erosion (as required).	Unlikely	Moderate	5
	Introduction and/or spread of dieback	Rare	Serious	6	• Enforce vehicle hygiene protocols and operate in a segregated manner to avoid contamination of uninfected areas and transport of infested material	Rare	Serious	6
	Introduction and/or spread of weeds	Likely	Moderate	12	• Enforce vehicle hygiene protocols and operate in a segregated manner to avoid contamination of uninfected areas and transport of infested material	Unlikely	Moderate	5
	Surface water contamination from runoff	Possible	Minor	4	• Construction of stormwater diversion drains, detention basins, sediment traps, etc. as required.	Unlikely	Minor	2
	Visual impact from improper overburden stockpiling	Unlikely	Major	14	• Overburden to be stockpiled in a manner where it is not visible from external vantage points (as far as practicable) • Construction of western screening bund.	Rare	Moderate	3

Aspect	Impact	Inherent Risk			Closure Controls	Residual Risk		
		Likelihood	Consequence	Risk Score		Likelihood	Consequence	Risk Score
Road and infrastructure construction	Excessive dust emissions	Likely	Moderate	12	• Provision of water cart • Monitor meteorological conditions and avoid activities during adverse weather conditions (where practicable)	Unlikely	Moderate	5
	Excessive noise emissions	Possible	Minor	4	• Completion of noise assessment to confirm compliance with the *Environmental Protection (Noise) Regulations 1997* • Minimise works prior to 7am where practicable	Unlikely	Minor	2
	Land degradation from erosion	Possible	Moderate	8	• Construction of stormwater division drains, detention basins, etc. as required. • Appropriate surface treatment of roads and hardstand areas to minimise erosion • Design of roads and infrastructure to minimise surface water flow, pooling, etc.	Unlikely	Moderate	5
	Waste generated from construction works	Likely	Minor	7	• Wastes generated from construction activities to be recycled where practicable, or disposed of to appropriately licensed waste facility	Unlikely	Minor	2
Drilling and Blasting								
Drilling	Excessive dust emissions	Likely	Minor	7	• Dust suppression equipment fitted to drill	Possible	Minor	4
	Excessive noise emissions	Possible	Minor	4	• Completion of noise assessment to confirm compliance with the *Environmental Protection (Noise) Regulations 1997* • Minimise works prior to 7am where practicable	Unlikely	Minor	2
Blasting	Excessive dust emissions	Possible	Moderate	8	• Blast design to utilise microsecond delays. • Avoid blasting during unfavourable meteorological conditions (where practicable)	Unlikely	Minor	2

Aspect	Impact	Inherent Risk			Closure Controls	Residual Risk		
		Likelihood	Consequence	Risk Score		Likelihood	Consequence	Risk Score
	Excessive noise and vibration	Possible	Moderate	8	• Completion of noise assessment to confirm compliance with the *Environmental Protection (Noise) Regulations 1997* • Blast design to utilise microsecond delays • Notification of blasts to nearby receptors (where appropriate) • Avoid blasting during unfavourable meteorological conditions (where practicable)	Unlikely	Moderate	5
	Air quality impacts from explosives burn	Possible	Minor	4	• Blast design and explosives selection by appropriately qualified and experienced persons to minimise explosives use	Possible	Minor	4
	Uncontrolled fly rock causing damage	Unlikely	Major	14	• Blast design to utilise microsecond delays • Blasting undertaken by appropriately qualified and experienced persons	Unlikely	Serious	9
Explosives storage	Waste generation	Nil	Minor	0	• On-site explosives storage is not required or proposed	Nil	Minor	0
Excavation								
Excavation of raw feed	Excessive dust emissions	Likely	Moderate	12	• Provision of water cart • Monitor meteorological conditions and avoid activities during adverse weather conditions (where practicable)	Possible	Minor	4
	Excessive noise emissions	Possible	Minor	4	• Completion of noise assessment to confirm compliance with the *Environmental Protection (Noise) Regulations 1997* • Minimise works prior to 7am where practicable	Unlikely	Minor	2
Materials transfer of raw feed	Excessive dust emissions	Likely	Moderate	12	• Provision of water cart • Monitor meteorological conditions and avoid activities during adverse weather conditions (where practicable)	Possible	Minor	4
	Excessive noise emissions	Possible	Minor	4	• Completion of noise assessment to confirm compliance with the *Environmental Protection (Noise) Regulations 1997* • Minimise works prior to 7am where practicable	Unlikely	Minor	2

Aspect	Impact	Inherent Risk			Closure Controls	Residual Risk		
		Likelihood	Consequence	Risk Score		Likelihood	Consequence	Risk Score
Internal haulage of raw feed	Excessive dust emissions	Likely	Moderate	12	• Provision of water cart • Monitor meteorological conditions and avoid activities during adverse weather conditions (where practicable)	Possible	Minor	4
	Excessive noise emissions	Possible	Minor	4	• Completion of noise assessment to confirm compliance with the *Environmental Protection (Noise) Regulations 1997* • Minimise works prior to 7am where practicable	Unlikely	Minor	2
Stockpiling of raw feed	Excessive dust emissions	Possible	Minor	4	• Provision of water cart • Stabilisation of stockpiles (where required)	Unlikely	Minor	2
	Visual impact from improper stockpiling	Unlikely	Moderate	5	• Stockpiles to be managed in a manner where it is not visible from external vantage points (where practicable) • Construction of western screening bund	Rare	Moderate	3
Crushing and Screening								
Operation of crushing and screening plant	Excessive dust emissions	Likely	Moderate	12	• Provision of water cart • Fitment of water sprays and enclosures (where appropriate) • Monitor meteorological conditions and avoid works during adverse conditions (where practicable)	Possible	Minor	4
	Excessive noise emissions	Likely	Minor	7	• Completion of noise assessment to confirm compliance with the *Environmental Protection (Noise) Regulations 1997* • Maintain plant and equipment in good working condition • Locate crushing and screening plant below natural ground level where possible • Construction of noise screening bunds (where required)	Possible	Minor	4
	Excessive power consumption	Possible	Minor	4	• Turn off plant and equipment when not in use • Monitor power consumption	Possible	Minor	4
	Waste generation	Likely	Minor	7	• Segregation of wastes • Recycle wastes where possible, if not then disposal at appropriately licensed facility	Unlikely	Minor	2

Aspect	Impact	Inherent Risk			Closure Controls	Residual Risk		
		Likelihood	Consequence	Risk Score		Likelihood	Consequence	Risk Score
Materials transfer of processed materials	Excessive dust emissions	Likely	Minor	7	• Provision of water cart • Enforcement of speed limits	Possible	Minor	4
	Excessive noise emissions	Possible	Minor	4	• Completion of noise assessment to confirm compliance with the *Environmental Protection (Noise) Regulations 1997* • Construction of noise screening bunds (where required)	Unlikely	Minor	2
Stockpiling of processed materials	Excessive dust emissions	Possible	Minor	4	• Provision of water cart • Stabilisation of stockpiles (where required)	Unlikely	Minor	2
	Visual impact from improper stockpiling	Unlikely	Moderate	5	• Stockpiles to be managed in a manner where it is not visible from external vantage points • Construction of western screening bunds	Rare	Moderate	3
Material Loadout and Dispatch								
Quarry products loading	Excessive dust emissions	Possible	Minor	4	• Provision of water cart • Enforcement of speed limits	Unlikely	Minor	2
	Excessive noise emissions	Unlikely	Minor	2	• Completion of noise assessment to confirm compliance with the *Environmental Protection (Noise) Regulations 1997* • Construction of noise screening bunds (where required) • Maintain plant and equipment in good working condition	Unlikely	Minor	2
Internal vehicle movements within site	Excessive dust emissions	Likely	Minor	7	• Provision of water cart • Enforcement of speed limits	Unlikely	Minor	2
	Excessive noise emissions	Unlikely	Minor	2	• Completion of noise assessment to confirm compliance with the *Environmental Protection (Noise) Regulations 1997* • Construction of noise screening bunds (where required) • Maintain vehicles in good working condition	Unlikely	Minor	2
External vehicle movements (on public roads)	Excessive dust emissions	Possible	Moderate	8	• All loads covered prior to departing the site • Sealing of quarry entrance road to prevent dust being carried onto public roads	Unlikely	Minor	2

Aspect	Impact	Inherent Risk			Closure Controls	Residual Risk		
		Likelihood	Consequence	Risk Score		Likelihood	Consequence	Risk Score
Plant, Equipment and Infrastructure								
Fuel storage	Contamination of land and/or water	Nil	Serious	0	• Nil – Fuel storage not required or proposed	Nil	Moderate	0
Refuelling	Contamination of land and/or water	Possible	Moderate	8	• Mobile fuel truck equipped with spill kit and drip tray	Possible	Minor	4
Vehicle and plant washing	Contamination of land and/or water	Possible	Moderate	8	• Washing of vehicles and equipment undertaken in designated areas	Possible	Minor	4
Plant and equipment breakdown / malfunction	Contamination of land and/or water	Possible	Moderate	8	• Mobile fuel truck equipped with spill kit and drip tray • Maintenance of plant and equipment in good working condition	Possible	Minor	4
	Waste generation	Likely	Minor	7	• Segregation of wastes • Recycle wastes where possible, if not then disposal at appropriately licensed facility	Possible	Minor	4
Crib & ablution facilities	Waste generation	Nil	Minor	0	• Not on-site	Nil	Minor	0
	Contamination of land and/or water (sewerage)	Nil	Moderate	0	• Not on-site	Nil	Minor	0
Rehabilitation and Closure								
Inadequate understanding of the existing environment and impact of the operations	Poor rehabilitation success	Unlikely	Serious	9	• Completion of baseline environmental assessments • Development of closure design and criteria • Consultation with relevant stakeholders	Rare	Serious	6
Inadequate understanding of the post-quarrying land use	Poor rehabilitation success	Unlikely	Serious	9	• Development of closure design and criteria • Consultation with relevant stakeholders	Rare	Serious	6
Other								
Temporary project closure	Excessive dust emissions	Likely	Minor	7	• Stabilisation of open ground (where necessary)	Unlikely	Moderate	5
	Waste generation	Possible	Minor	4	• Removal of plant and equipment from site	Unlikely	Moderate	5
Unexpected project closure	Closure objectives not achieved	Unlikely	Serious	9	• Closure design and criteria to include provisions for unexpected closure	Rare	Serious	6
Unauthorised public access, vandalism	Land and/or water contamination	Likely	Moderate	12	• Secure potential access points through fencing, bunding, etc. • Signage around the perimeter of the site • Security cameras installed	Unlikely	Moderate	5

Aspect	Impact	Inherent Risk			Closure Controls	Residual Risk		
		Likelihood	Consequence	Risk Score		Likelihood	Consequence	Risk Score
	Waste generation	Likely	Moderate	12	• Secure potential access points through fencing, bunding, etc. • Signage around the permitter of the site • Security cameras installed • Regular inspection of site and removal of illegally dumped waste	Unlikely	Moderate	5
Changes to regulatory requirements	Changes to legislative and/or approvals requirements result in existing operations are no longer compliant	Likely	Serious	17	• Consultation with relevant stakeholders • Maintain awareness of legislative changes and make submissions on potentially adverse changes • Support industry associations	Likely	Serious	17
Encroachment by incompatible land uses	Encroachment by incompatible land use results in compliance not able to be achieved	Possible	Serious	13	• Consultation with relevant stakeholders • Maintain awareness of legislative changes and development proposals, and make submissions on potentially adverse changes • Support industry associations	Possible	Serious	13

			Effect / Consequence					
Type			Nil	Minor	Moderate	Serious	Major	Critical
Environmental Impact			No impact	No discernible, adverse impact, individuals of species may be affected locally.	Discernible effect on the environment but no adverse impact, minor number of individuals of species may be affected locally	Minor adverse effect to the environment (including public amenity), moderate loss of individuals of species locally.	Moderate damage to ecosystem function, major loss of individuals of species locally, loss of public amenity.	Significant long-term damage/loss to ecosystem function, extinction of a species locally
Likelihood	Almost Certain	Likely that the unwanted event could occur often (once per week) during the life of an individual item or system	Nil **0**	Medium **11**	High **16**	High **20**	Very High **23**	Very High **25**
	Likely	Likely that the unwanted event could occur several times per year during the life of an individual item or system.	Nil **0**	Medium **7**	Medium **12**	High **17**	High **21**	Very High **24**
	Possible	Likely that the unwanted event could occur sometime (once per year) during the life of an individual item or system.	Nil **0**	Low **4**	Medium **8**	High **13**	High **18**	High **22**
	Unlikely	Unlikely, but possible for the unwanted event to occur once in the life of an individual item or system.	Nil **0**	Low **2**	Low **5**	Medium **9**	High **14**	High **19**
	Rare	Highly unlikely that the unwanted event could ever occur in the life of an individual item or system.	Nil **0**	Low **1**	Low **3**	Medium **6**	Medium **10**	High **15**
	Nil	No possibility of the event occuring	Nil **0**	Nil **0**	Nil **0**	Nil **0**	Nil **0**	Nil **0**

Risk Matrix

Appendix 2
Development Plans