Nerimbera Quarry Extension

Application Number: **01572** Commencement Date: **08/12/2022** Status: **Locked**

1. About the project

1.1 Project details

1.1.1 Project title *

Nerimbera Quarry Extension

1.1.2 Project industry type *

Mining

1.1.3 Project industry sub-type

Other

1.1.4 Estimated start date *

8/01/2024

1.1.4 Estimated end date *

30/06/2025

1.2 Proposed Action details

1.2.1 Provide an overview of the proposed action, including all proposed activities. *

Holcim (Australia) Pty Ltd ('Holcim') intends to extend the Nerimbera Quarry (which is located on Arnold Drive, Nerimbera, Queensland and herein referred to as the Quarry), to increase the footprint of the quarry pit and facilitate access to additional quarriable resources. The Quarry currently operates under Environmental Authority (EA) EPPR00521713 for numerous activities (including the extraction, screening and processing of quarried materials) Lot 120 on SP113182 and Lot 11 on LN2839. The Project will extend the quarry pit to the south-east, into Lot 605 on LIV40155. This extension will be managed by a quarry development plan, which will be informed by a geotechnical assessment and geological exploration and drilling.

Activities associated with the project which may impact the environment are described within Section 6 Potential Project Impacts of the attached ecological assessment of Nerimbera Quarry Extension report (see pages 42-48).

Activities that may impact the environment as a result of the project include:

Direct Impacts

- Loss of native vegetation and habitat - Vegetation clearing is a direct impact that can result in the loss of vegetation values and habitat, with the severity of impacts more pronounced in habitats that provide values for conservation significant species and communities. Potential impacts resulting from clearing native vegetation can include:
  • Reduced patch size of vegetation communities, potentially compromising the viability of the community and associated habitat.
  • Loss of habitat causing a reduction of biological diversity or loss of local populations and genotypes.
  • Loss of, or disturbance to, microhabitat features including tree hollows, shrubs, leaf litter and ground timber, which provide shelter and breeding opportunities for fauna.
  • Loss of floristic diversity within the Study Area, resulting in reduced food resources including foliage, flowers, nectar, fruits and

seeds.
• The destruction of abiotic features which are necessary to support vegetation communities and habitat structures.

- Loss or alteration of conservation significant flora and fauna habitat - Where clearing occurs within potential habitat for conservation significant species, it is likely to have a greater impact to the ecological value present within the Study Area. For example, removal of mature canopy vegetation is likely to have a significant impact on fauna species which require habitat features associated with this stratum (i.e., tree hollows). This assessment considers that the conservation significant fauna most at risk of impacts resulting from the loss or alteration of conservation significant flora and fauna habitat include:
  - Red goshawk (Erythrotriorchis radiatus)
  - Grey falcon (Falco hypoleucos)
  - Squatter pigeon (Geophaps scripta scripta)
  - White throated needletail (Hirundapus caudacutus)
  - Swift Parrot (Lathamus discolor)
  - Ghost bat (Macroderma gigas)
  - Koala (Phascolarctos cinereus)
  - Marlborough blue (Cycas ophiolitica)
- Habitat fragmentation - Vegetation clearing can fragment and disconnect vegetation communities, creating or further isolating patches which can impact on the success of seed dispersal and species recruitment. Fragmentation of habitat can impact on species populations through a number of mechanisms including increasing edge effects, reducing gene flow between small, isolated populations, reducing the potential for species to adapt to environmental change, and loss or severe modification of the interactions between species.
  Habitat fragmentation creates barriers that may impact long-term viability and persistence of vegetation communities, flora and fauna populations within the landscape. Conservation significant species that are most susceptible to fragmentation include:
  • Marlborough blue (Cycas ophiolitica).
  All other threatened and migratory species are either highly mobile, adapted to fragmented landscapes, or are known to persist and traverse cleared or modified areas without significant risk. Connectivity between the Study Area and the Mt Archer National Park will be retained by the Project, which is likely to offer similar habitat for species' persistence and provide opportunity for species dispersal.
- Disturbance, injury or mortality of fauna - Disturbance, injury and/ or mortality of fauna within the Subject Area may occur as a result of the following vectors:
  • Vehicle or machinery strike,
  • Entrapment in landscape features and habitat patches prior and/ or during vegetation removal,
  • Acute and chronic stress to native fauna as a result of habitat fragmentation and disturbance to local resources.
  Reptiles, nesting birds and arboreal mammals are considered to be the fauna most likely to be impacted directly as a result of the above-described vectors. The conservation significant species which may be susceptible to disturbance, injury or mortality as a result of the project is the koala.

Indirect Impacts:

- Introduction and exacerbation of exotic flora species - This assessment has identified that conservation significant species which are likely to be impacted by increased weed proliferation and the introduction of plant diseases are:
  • Squatter pigeon : Invasion of dense exotic grasses impedes the ability of the species to breeding and forage as the species requires a sparse grassy ground cover. This may also reduce the availability of native food plants utilised by the species.
  • Koala: Root fungus (Phytophora cinnamomi) and myrtle rust (Puccinia psidii) are known to impact the health of eucalypts. Koalas rely on eucalypts for all aspects of their life cycle including as a foraging resource.
- Introduction and exacerbation of exotic fauna species - This assessment considers that the conservation significant fauna most at risk of impacts resulting from the introduction and / or exacerbation of exotic fauna species include:
  • Squatter pigeon: Overgrazing by rabbits and cattle can reduce the availability of foraging resources for the species.
  • Koala: Predation by dogs is known to be a primary threat for the species causing population decline.
- Noise, vibration and light - Noise and vibration resulting from construction activities within the Project Area, including vegetation clearing and earthworks, will likely temporarily impact adjoining habitat by:
  • Reducing the foraging ability of local auditory predators by increasing background noise,
  • Increasing the risk of predation from visual predators as a result of a lack of vegetation cover and an increase in background noise,
  • An increase in the potential for vehicle strikes, as a result of increased vehicle traffic, and
  • Disturbance to foraging and/ or breeding behaviours as a result of human visitation.

The study area, proposed project area, and existing quarry pit footprint are each described and quantified within Section 1.2 of the attached ecological assessment of Nerimbera Quarry Extension report (see page 1). These areas are spatially represented within Figure 3 (see appendix A of the attached ecological assessment report).

The Quarry is located on Arnold Drive, Nerimbera, approximately 10 km east of Rockhampton city, in the Livingstone Shire Council Local Government Area. The Quarry is situated within the Nerimbera Key Resource Area (KRA No. 21 as per the Queensland State Planning Policy 2017 (SPP)). At this site, H**olcim jointly manages approximately 303 hectares (ha) (identified in section 2.1 of this application as the project area)** across the following lots:
• Lot 11 on LN2839 (existing operational lot),
• Lot 120 on SP113182 (existing operational lot),
• Lot 605 on LIV40155 (proposed quarry pit extension lot),
• Lot 120 on LN174,

• Lot 480 on LIV40102,
• Lot 606 on LIV40155,
• Lot 2353 on LIV40914, and
• Lot 1 on RP897266.

It is noted that throughout the attached Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES report, this 303 hectare area is for referred to as the 'Study Area'.

The **disturbance footprint** to facilitate the quarry pit extension is **approximately 56 ha** within Lot 605 on LIV40155 and Lot 120 on SP113182. It is noted that throughout the attached Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES report, this 57 hectare area is for referred to as the 'Project Area'.

1.2.2 Is the project action part of a staged development or related to other actions or proposals in the region?

No

1.2.6 What Commonwealth or state legislation, planning frameworks or policy documents are relevant to the proposed action, and how are they relevant? *

For detail on the relevant legislation, frameworks, and policy for the project, refer to Section 2.0 of the attached ecological assessment of Nerimbera Extension - assessment of MNES report (see Section 2.0 over pages 3-4).

1.2.7 Describe any public consultation that has been, is being or will be undertaken regarding the project area, including with Indigenous stakeholders. Attach any completed consultation documentations, if relevant. *

Holcim and the project team have identified and will continue to proactively engage with all community and government stakeholders anticipated to have an interest or influence on the project. The purpose of the consultation is to understand the key concerns from affected stakeholders, inform stakeholders on the key issues and the specialist investigations undertaken and inform mitigation measures to address key issues.

Community consultation to date and to follow, involves traditional owners, directly impacted property owners, indirectly impacted property owners as well as local, state and federal elected representatives. Letters, email briefings, website updates and in person briefings have been and will be provided to key stakeholders. Updates have been and will be provided as per the following points:

- Update 1 – Project Introduction (Complete): introduced the project, its benefits and identified the next steps.
- Update 2 – Project Definition and Pre-lodgement (Complete): notified the local community that an application has been prepared, identified the key issues and how they have been addressed.
- Update 3 – Application Phase (Underway): will notify the local community that the development application has been lodged and provide updates about the progress and public notification of the development application.

Ongoing consultation post-decision is being considered pending the outcome of the development application.

In particular, Holcim has made several attempts to contact the Darumbal People Aboriginal Corporate Registered Native Title Body and is seeking a meeting early this year. In addition, Holcim has sought advice and assistance from the Cultural Heritage Unit at the Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships.

1.3.1 Identity: Referring party

Privacy Notice:

Personal information means information or an opinion about an identified individual, or an individual who is reasonably identifiable.

By completing and submitting this form, you consent to the collection of all personal information contained in this form. If you are providing the personal information of other individuals in this form, please ensure you have their consent before doing so.

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1.3.1.1 Is Referring party an organisation or business? *

Yes

Referring party organisation details

ABN/ACN	20093846925
Organisation name	AECOM AUSTRALIA PTY LTD
Organisation address	4006 QLD

Referring party details

Name	Hannah Barrenger
Job title	Ecologist
Phone	0466296964
Email	hannah.barrenger@aecom.com
Address	

1.3.2 Identity: Person proposing to take the action

1.3.2.1 Are the Person proposing to take the action details the same as the Referring party details? *

No

1.3.2.2 Is Person proposing to take the action an organisation or business? *

Yes

Person proposing to take the action organisation details

ABN/ACN	87099732297
Organisation name	HOLCIM (AUSTRALIA) PTY LTD
Organisation address	2067 NSW

Person proposing to take the action details

Name	Victoria Musgrove
Job title	Planning Lead
Phone	3259 1709
Email	victoria.musgrove@holcim.com
Address	18 Little Cribb St, Milton, Queensland, Australia, 4064

1.3.2.14 Are you proposing the action as part of a Joint Venture? *

No

1.3.2.15 Are you proposing the action as part of a Trust? *

No

1.3.2.17 Describe the Person proposing the action's history of responsible environmental management including details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against the Person proposing to take the action. *

Holcim undertakes that all work associated with the existing Nerimbera Quarry and the proposed Extension project will be performed in a way that is compliant with all relevant legislation and permits.

Holcim confirms that it has not been subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources.

Details of the Holcim Australia Executive Committee can be found at https://www.holcim.com.au/executive-committee.

1.3.2.18 If the person proposing to take the action is a corporation, provide details of the corporation's environmental policy and planning framework

Holcim is proud of its Environmental Policy. Please see the attached document (Holcim (Australia) Pty Ltd Environmental Policy) for additional detail on this policy.

Holcim's Environmental Policy is a key document in Holcim's Safety, Health and Environment Management System (SHE MS). The SHE MS is an interrelated collection of policies, processes, programs, procedures, responsibilities and activities designed to provide the foundation for successful safety, health and environment management

At the national level, Holcim uses the SHE MS as the primary tool for managing environmental risks and practices. It contains sections relevant to the typical risks involved in our operations. For example, in concrete batching, our activities have the potential to impact air, land, water, noise and/ or resources/ efficiency. Depending on the project and location, risks may include:

- on-site risks (such as bulk admixture, hydrocarbons and cement storage and use);
- off-site risks (such as surface water run-off); and
- in-transit risks (such as product spillage).

Within the SHE MS are Holcim's Environmental Standards. The Standards outline the minimum expected performance against each main activity/ hazard that Holcim undertakes or is exposed to.

The environmental management system has been designed to identify, measure and control environmental risks and impacts, and to affect continual improvement of environmental management. The system has been designed in accordance with ISO 14001 and with *AS/NZS ISO 14004: Environmental Management Systems-General Guidelines on principles, systems and support techniques*. The system has not, however, been formally certified.

At a global level, Holcim Ltd produces a Sustainable Development Report, and makes publicly available sustainability data (including environmental indicators) on an annual basis.

At a national level, environmental performance is monitored strategically via the Holcim SHE Compliance Committee. Environmental representation on the committee is made up of the Chairman, CEO and Holcim Environmental Manager. This group reviews general performance and programs and initiatives for Australia. At a business unit level a quarterly report is compiled that reviews compliance and program implementation.

All Holcim sites are subject to audits to verify the effective implementation of the SHE MS. Audits consist of internal and external audits using standard audit protocols.

Second party audits (internal audit) are carried out such that all sites are audited on a 5 year cycle by Holcim personnel who are independent from the site.

External audits are carried out depending on the risk of the site or where required by specific site approval requirements.

All Holcim staff have environmental responsibilities appropriate to their expertise and area of influence. For example, office workers might be responsible for the appropriate disposal of printer cartridges whereas yard supervisors might be responsible for the management of waste and recycling of palecons.

The National Environmental Manager is a member of the SHE Compliance Committee.

The adequate training of staff is critical to the successful operation of all heavy industry. Training forms a central part of the SHE MS and all Holcim staff undergo training to equip them with the ability to carry out their responsibilities in a safe, effective and environmentally appropriate manner.

Holcim identifies and documents the training and competency requirements of our staff based on the risks associated with their role and legislative requirements.

Ongoing communication of environmental awareness training is provided during pre-start meetings and dedicated environmental toolbox sessions.

Each work-site (e.g. quarry or batch plant) has a designated Environmental Compliance Folder that contains copies of all relevant licenses, permits and approval documents. These requirements are worded in an audit format that the site uses as the basis for bi-annual self Assessment (first party) audits. Site staff are assisted by environmental staff.

All approvals and document submission first go through the Holcim approval team. This ensures all required regulatory documentation is completed efficiently. Input from site staff (batch plants and quarries) is collated by the approvals team and external assistance from specialist consultants is sort when necessary (e.g. Dangerous Goods licensing, site management plans and other supporting documentation). Each site's compliance requirements are transferred to the site's Environmental Compliance Folder for implementation, monitoring and audit once licenses have been obtained.

Audits are carried out in accordance with the SHE MS.

1.3.3 Identity: Proposed designated proponent

1.3.3.1 Are the Proposed designated proponent details the same as the Person proposing to take the action? *

Yes

Proposed designated proponent organisation details

ABN/ACN	87099732297
Organisation name	HOLCIM (AUSTRALIA) PTY LTD

Organisation address	2067 NSW

Proposed designated proponent details

Name	Victoria Musgrove
Job title	Planning Lead
Phone	3259 1709
Email	victoria.musgrove@holcim.com
Address	18 Little Cribb St, Milton, Queensland, Australia, 4064

1.3.4 Identity: Summary of allocation

Confirmed Referring party's identity

The Referring party is the person preparing the information in this referral.

ABN/ACN	20093846925
Organisation name	AECOM AUSTRALIA PTY LTD
Organisation address	4006 QLD
Representative's name	Hannah Barrenger
Representative's job title	Ecologist
Phone	0466296964
Email	hannah.barrenger@aecom.com
Address	

Confirmed Person proposing to take the action's identity

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

ABN/ACN	87099732297
Organisation name	HOLCIM (AUSTRALIA) PTY LTD
Organisation address	2067 NSW
Representative's name	Victoria Musgrove
Representative's job title	Planning Lead
Phone	3259 1709
Email	victoria.musgrove@holcim.com
Address	18 Little Cribb St, Milton, Queensland, Australia, 4064

Confirmed Proposed designated proponent's identity

The Person proposing to take the action is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

1.4 Payment details: Payment exemption and fee waiver

1.4.1 Do you qualify for an exemption from fees under EPBC Regulation 5.23 (1) (a)? *

No

1.4.3 Have you applied for or been granted a waiver for full or partial fees under Regulation 5.21A? *

No

1.4.5 Are you going to apply for a waiver of full or partial fees under EPBC Regulation 5.21A?

No

1.4.7 Has the department issued you with a credit note? *

No

1.4.9 Would you like to add a purchase order number to your invoice? *

No

1.4 Payment details: Payment allocation

1.4.11 Who would you like to allocate as the entity responsible for payment? *

Proposed designated proponent

2. Location

2.1 Project footprint

2.2 Footprint details

2.2.1 What is the address of the proposed action? *

4 Arnold Drive, Nerimbera QLD 4701

2.2.2 Where is the primary jurisdiction of the proposed action? *

Queensland

2.2.3 Is there a secondary jurisdiction for this proposed action? *

No

2.2.5 What is the tenure of the action area relevant to the project area? *

The project area applies to land described as Lot 605 on LIV40155, Lot 11 on LN2839 and Lot 120 on SP113182. Holcim holds freehold tenure over this land.

3. Existing environment

3.1 Physical description

3.1.1 Describe the current condition of the project area's environment.

Holcim (Australia) Pty Limited intends to extend the Nerimbera Quarry (which is located on Arnold Drive, Nerimbera, Queensland and herein referred to as the Quarry), to increase the footprint of the quarry pit and facilitate access to additional quarriable resources. The proposed extension is formally referred to as the Nerimbera Quarry Extension Project (or 'the Project').

The Project is located within the Livingstone Shire Council Local Government Area, located approximately 10 km east of Rockhampton city, and within the Nerimbera Key Resource Area (KRA No. 21 as per the Queensland State Planning Policy 2017 (SPP)). Holcim jointly manages approximately 306 hectares (ha) across the following lots, in association with the Nerimbera Quarry:

- Lot 11 on LN2839 (existing operational lot),
- Lot 120 on SP113182 (existing operational lot),
- Lot 605 on LIV40155 (proposed quarry pit extension lot),
- Lot 120 on LN174,
- Lot 480 on LIV40102,
- Lot 606 on LIV40155,
- Lot 2353 on LIV40914, and
- Lot 1 on RP897266.

These lots are herein referred to as the Study Area.

The existing quarry pit is defined as the operations currently undertaken by Holcim under Environmental Authority (EA) EPPR00521713 on Lot 120 on SP113182 and Lot 11 on LN2839.

The Site to which the development application is related is described as Lot 605 on LIV40155, Lot 11 on LN2839, and Lot 120 on SP113182.

The Project Area is defined as the area which encompasses the proposed disturbance footprint required for the quarry pit extension (the Project). The Project Area is approximately 57 ha within Lot 605 on LIV40155 and Lot 120 on SP113182.

The Project area is situated in the northern section of the Brigalow Belt Bioregion (BRB), in the Marlborough Plains subregion. The landscape of the BRB is mixed, including hilly areas with low ridges and undulating plains within the lower flats and alluvial areas. The BRB is characterised by the tree species *Acacia harpophylla* (brigalow) which forms forest and woodland on clay soils. Brigalow does not predominate across the entire region, with the bioregion including a range of ecosystems including eucalypt forest and woodland, grassland, dry rainforest, cypress pine woodland and riparian communities.

The landscape surrounding the project consists of a mosaic of remnant and non-remnant vegetation, with remnant vegetation primarily associated with Mount Archer National Park to the north, Flat Top Range Resources Reserve to the far east, and the Fitzroy River to the west. The Fitzroy River flows into the coastal waters of the southern Great Barrier Reef to the southeast of the project. Therefore, the Study

Area associated with the Project is generally well-connected and acts as an important vector for species dispersal and movement throughout the Rockhampton region. Some long-term factors limiting connectivity in this area include encroaching urbanisation, land use modification upstream, and altered hydrology and river morphology throughout the Fitzroy catchment.

A review of DES BPA corridor mapping identified state-level biodiversity areas occur primarily to the north east of the Study Area within Lot 120 on LN174, with the remaining Study Area identified as regional and local biodiversity areas (Queensland Department of Environment and Science, 2018). The Project Area is identified mostly as a regional biodiversity area, with some areas having no value.
Native fauna species have movement opportunities throughout the Study Area, with shelter opportunities such as logs and vegetation across the landscape. The Study Area contributes to connectivity from Fitzroy River to the Mount Archer National Park through the small riparian zone on Black Creek, provided the species can safely cross the urbanised areas and major roads such as Emu Park Road.

The Livingstone Planning Scheme 2018 designates the Study Area as a rural zone. The neighbours of the Project are primarily rural houses on large blocks, with some low density cattle grazing. Land use within the local area includes environmental management and conservation (Mount Archer National Park), a local school, and medium impact industry such as an abattoir (JBS Foods Australia) and an asphalt company (Boral). Other land uses include agriculture on the floodplains to the south of the Study Area, a boutique farm stay to the east, a pistol club to the north west, and a cemetery to the west.

Fire scarring is noticeable across the landscape and broader area, as well as evidence of recently maintained fire trails in the north west of the Study Area. Whilst fire history data for the Study Area is not publicly available, Queensland Fire and Emergency Services news articles for bushfires in the general Nerimbera and Mount Archer area mention the following bushfire events:

- 26-28 November 2020
- 22-31 August 2018
- 23-24 February 2017

The scale, intensity and spatial boundaries of these bushfire events is uncertain.

3.1.2 Describe any existing or proposed uses for the project area.

The Nerimbera Quarry has been in operation within the Study Area since the 1960's. Holcim (Australia) Pty Ltd intends to extend the Nerimbera Quarry by approximately 57 ha into Lot 605 on LIV40155, to increase the footprint of the quarry pit and facilitate access to additional quarriable resources. The proposed extension will occur within the Nerimbera Key Resource Area (KRA No. 21 as per the Queensland State Planning Policy 2017 (SPP)). The Nerimbera Quarry is defined as an *Extractive Industry Use* by Livingstone Planning Scheme 2018.

3.1.3 Describe any outstanding natural features and/or any other important or unique values that applies to the project area.

An in-depth ecological assessment of the Nerimbera Quarry Extension project has been completed to assess impacts of this project on Matters of National Environmental Significance. The report (Ecological assessment of Nerimbera Quarry Extension: Ecological Assessment - Matters of National Environmental Significance) is attached and provides a description of the natural features identified within the Study Area. Section 4.2 - Regional Context (pages 25-27), 4.3 - Flora (pages 27-33), 4.4 - Fauna (pages 33-37), 4.5 - Wetlands and Watercourses (page 37) and 4.6 - Protected Areas (page 37) include an in-depth discussion of the natural features within the Study Area.

As described by the report, the Study Area is situated in the northern section of the BRB, in the Marlborough Plains subregion. The landscape of the BRB is mixed, including hilly areas with low ridges and undulating plains within the lower flats and alluvial areas. The BRB is characterised by the tree species *Acacia harpophylla* (brigalow) which forms forest and woodland on clay soils. Brigalow does not predominate across the entire region, with the bioregion including a range of ecosystems including eucalypt forest and woodland, grassland, dry rainforest, cypress pine woodland and riparian communities.

The field survey (which is described in detail in the Ecological assessment of Nerimbera Quarry Extension: Ecological Assessment - Matters of National Environmental Significance report)identified the presence of 137 flora species from 50 families within the Study Area. The dominant families were Poaceae (22 taxa), followed by Myrtaceae (12 taxa), Leguminosae (9 taxa) and Apocynaceae (7 taxa). From these identified flora species, the desktop assessment identified 14 conservation significant flora species which had the potential to occur within 20 km of the Study Area, as listed under the EPBC Act. The field survey identified one of these flora species (Marlborough blue (*Cycas ophiolitica*)) as present within the Study Area. In total, 129 Marlborough blue cycad individuals (mature and juvenile) were identified the Study Area and outside the Project Area. As described within the Ecological assessment of Nerimbera Quarry Extension: Ecological Assessment - Matters of National Environmental Significance report, it is considered that the project will not result in significant impact to the Marlborough blue cycad. No other conservation significant flora species were found to be present within the Study Area.

The Queensland Department of Resources (DoR) regional ecosystem (RE) mapping (Version 12.0) was reviewed to determine the extent and composition of REs across the Study Area (Department of Resources, 2022) and aid the identification of vegetation communities. The results of this desktop assessment indicated that the vegetation communities within the study area are primarily inconsistent with the DoR RE mapping. This was largely a result of an inconsistency between the mapped and ground-truthed land zone. The Study Area is comprised of remnant vegetation identified as four distinct vegetation communities. These communities are:

- Eucalyptus woodland on drainage lines - analogous with RE12.3.25,
- Eucalyptus woodland to open woodland on metamorphosed sediments - analogous with RE11.11.4 and RE11.11.15a,
- Semi-evergreen vine thicket on old sediments - analogous with RE11.11.5a, and
- Non-remnant vegetation.

The locations of each of the above-described vegetation communities are mapped within Appendix A, Figure 3, in the *Ecological Assessment of Nerimbera Quarry - Matters of National Environmental Significance* report.

Habitat value within the Study Area is generally poor as a result of the occurrence of introduced flora and fauna species and evidence of historical disturbance to vegetation, however habitat is present which provides an opportunity for native species to persist. A vegetated corridor connects the Study Area and the Mount Archer National Park, which offers over 4,250 ha of vegetation as a contiguous patch, it is considered likely that native fauna may access the Study Area as a component of a larger dispersal area. Results from the field survey indicate that five fauna habitat types occur within the Study Area. The locations of these habitat areas are presented in Table 11 (Section 4.4.1 on page 33) and mapped in Figure 7 (Appendix A) of the report, and detailed below. The poor value of these distinct habitat types is likely a consequence of the following factors:

- Frequent fire events may have impacted presence of native fauna in the Study Area. Native fauna will likely be driven from the Study Area during a hot fire event and be deterred from re-entering the area if fire results in a reduction in vegetation that provides shelter and food opportunities.
- The open understorey and lack of microhabitat features in parts of the Study Area offers limited opportunities for smaller native fauna species to evade predators, and improves movement opportunities for pest fauna.
- The expected high density of pest fauna populations (including wild and domesticated dogs) are likely to deter a broad variety of native fauna from inhabiting the Study Area and reduce habitat potential as a result of predation risk. It is considered that domestic dogs in particular will significantly reduce the macropod and koala populations inhabiting the site.
- Field survey has determined the presence of multiple vegetation communities which naturally support a low fauna species diversity.

The field survey recorded a total of 148 fauna species including 94 birds, 25 mammals, 17 reptiles and 12 amphibians. The full list is provided in Appendix C of the *Ecological Assessment of Nerimbera Quarry - Matters of National Environmental Significance* report.

The desktop assessment identified 80 fauna species which had the potential to occur within 20 km of the Study Area, as listed under the EPBC Act or NC Act. The likelihood of occurrence assessment identified 16 conservation significant fauna species that are known, likely or have potential to occur within the Study Area based on the habitat encountered during the field surveys. The full likelihood of occurrence assessment is provided in Appendix E of the *Ecological Assessment of Nerimbera Quarry - Matters of National Environmental Significance* report. Two conservation significant fauna species were recorded during the field surveys. These species were:

- Squatter pigeon (southern), which is listed as vulnerable under both EPBC Act and NC Act and is considered known within the Study Area.
- Glossy ibis, which is listed as migratory under the EPBC Act and special least concern under the NC Act. This species was recorded whilst driving adjacent to the Study Area and is therefore considered likely within the Study Area.

Wetlands and watercourses

The Study Area contains watercourse features recognised under the VM Act as stream order 1 and stream order 3 (Black Creek). Black Creek flows approximately 3 km to the southwest of the Study Area into the Fitzroy River, which is a significant regional watercourse (stream order 6).
No VM Act wetlands, declared high ecological wetlands or HES wetlands are mapped in the Study Area. A large wetland system mapped as a wetland of high ecological significance is found 2 km to the south-east of the Project area.

Protected Areas

The Study Area is not located within a protected area. The nearest protected area is Mount Archer National Park, which is connected to the Study Area via remnant vegetation. Mount Archer National Park contains approximately 4,250 ha of open forest and woodland communities dominated by eucalypts, with a large pocket of dry rainforest in the deeply incised Moores Creek valley (Department of Environment and Science, 2018).

3.1.4 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

The Nerimbera Quarry Extension Project will not occur within a marine area. Refer to the attached Groundwater Assessment that has been prepared to support the Development Application and Environment Authority for detail on the study area gradient (see Section 4.2 over pages 11-12 for specific detail on the gradient of the site).

3.2 Flora and fauna

3.2.1 Describe the flora and fauna within the affected area and attach any investigations of surveys if applicable.

The attached Ecological Assessment of Nerimbera Quarry - Matters of National Environmental Significance report includes a detailed summary of the survey efforts undertaken for both flora and fauna assessments (see section 3.2 - Field Surveys over pages 6-7, and section 4.1 - Survey effort over pages 19-24) and identifies flora and fauna species identified within the Study Area (see Appendix C - Flora and Fauna Species Lists over pages C-1 to C-8). As described in Table 7 (included on pages 19-24) of the report, the survey effort undertaken to inform the ecological assessment met the survey guideline requirements for EVNT species which were identified as potentially occurring within the Study Area.

The field survey identified the presence of 137 flora species from 50 families within the Study Area. The dominant families were Poaceae (22 taxa), followed by Myrtaceae (12 taxa), Leguminosae (9 taxa) and Apocynaceae (7 taxa). Additionally, the field survey recorded a total of 148 fauna species including 94 birds, 25 mammals, 17 reptiles and 12 amphibians.

Two conservation significant fauna species were recorded during the field surveys. These species were:

- Squatter pigeon (southern), which is listed as vulnerable under both EPBC Act and NC Act and is considered known within the Study Area.
- Glossy ibis, which is listed as migratory under the EPBC Act and special least concern under the NC Act. This species was recorded whilst driving adjacent to the Study Area and is therefore considered likely within the Study Area.

As described in detail within the Ecological Assessment of Nerimbera Quarry - Matters of National Environmental Significance report, significant impacts to these species are not expected to occur as a result of the Project (see the MNES Significant Impact Assessment included within Appendix F).

The Queensland Department of Resources (DoR) regional ecosystem (RE) mapping (Version 12.0) was reviewed to determine the extent and composition of REs across the Study Area (Department of Resources, 2022) and aid the identification of vegetation communities. The results of this desktop assessment are included within the Ecological Assessment of Nerimbera Quarry - Matters of National Environmental Significance report and indicated that the vegetation communities within the study area are primarily inconsistent with the DoR RE mapping. This was largely a result of an inconsistency between the mapped and ground-truthed land zone. The Study Area is comprised of remnant vegetation identified as four distinct vegetation communities. The ground truthed vegetation communities are:

- Eucalyptus woodland on drainage lines - analogous with RE12.3.25,
- Eucalyptus woodland to open woodland on metamorphosed sediments - analogous with RE11.11.4 and RE11.11.15a,
- Semi-evergreen vine thicket on old sediments - analogous with RE11.11.5a, and
- Non-remnant vegetation.

The locations of each of the above-described vegetation communities are mapped within Appendix A, Figure 5, in the Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES report.

3.2.2 Describe the vegetation (including the status of native vegetation and soil) within the project area.

Habitat value within the Study Area is generally poor as a result of the occurrence of introduced flora and fauna species and evidence of historical disturbance to vegetation, however habitat is present which provides opportunity for native species to persist. This finding is discussed in detailed within the attached Ecological Assessment of Nerimbera Quarry - Matters of National Environmental Significance report in Section 4.4.1 - Fauna habitat over pages 33-37.

A vegetated corridor connects the Study Area and the Mount Archer National Park, which offers over 4,250 ha of vegetation as a contiguous patch, it is considered likely that native fauna may access the Study Area as a component of a larger dispersal area. Results from the field survey indicate that five fauna habitat types occur within the Study Area. The locations of these habitat areas are presented in Table 11 (page 33), and mapped Figure 7 (in Appendix A) within the attached Ecological Assessment of Nerimbera Quarry - Matters of National Environmental Significance report. The poor value of these distinct habitat types is likely a consequence of the following factors:

- Frequent fire events may have impacted presence of native fauna in the Study Area. Native fauna will likely be driven from the Study Area during a hot fire event and be deterred from re-entering the area if fire results in a reduction in vegetation that provides shelter and food opportunities.
- The open understorey and lack of microhabitat features in parts of the Study Area offers limited opportunities for smaller native fauna species to evade predators, and improves movement opportunities for pest fauna.

- The expected high density of pest fauna populations (including wild and domesticated dogs) are likely to deter a broad variety of native fauna from inhabiting the Study Area and reduce habitat potential as a result of predation risk. It is considered that domestic dogs in particular will significantly reduce the macropod and koala populations inhabiting the site.
- Field survey has determined the presence of multiple vegetation communities which naturally support a low fauna species diversity.

3.3 Heritage

3.3.1 Describe any Commonwealth heritage places overseas or other places recognised as having heritage values that apply to the project area.

No Commonwealth heritage places overseas have been identified in the project area.

3.3.2 Describe any Indigenous heritage values that apply to the project area.

Holcim is committed to fulfilling its requirements in accordance with the Cultural heritage duty of care guidelines and the Aboriginal Cultural Heritage Act 2003. Holcim has undertaken the following activities to engage with Traditional Owners via the Darumbal People Aboriginal Corporate Registered Native Title Body to achieve the requirements:

- 14/04/22 - called Darumbal Enterprises - left voicemail
- 14/04/22 - emailed Darumbal Enterprises
- 15/06/22 - attended Black Coffee Rockhampton event
- 27/06/22 - called Darumbal Enterprises - left voicemail
- 27/06/22 - emailed Darumbal Enterprises
- 15/7/22 - called Darumbal Enterprises - left message
- 03/08/22 - called Darumbal Enterprises - left voicemail
- 23/09/22 - called Darumbal Enterprises - left voicemail
- 26/09/22 - emailed admin@darumbal.com.au at Darumbal Enterprises
- 26/09/22 - Response from Kristina Hatfield - details have been passed this onto the Darumbal Enterprises Cultural Heritage team who will respond at their earliest convenience.
- 29/09/22 - discussion with the Cultural Heritage Unit at DSDSATSIP to understand if the Department had any advice on how best to progress these discussions, for example, other contact details or facilitation.
- 24/11/22 - emailed admin@darumbal.com.au at Darumbal Enterprises to request a meeting in early 2023 to discuss the proposed quarry extension
- 13/02/23 - no response to date

Holcim will continue to seek engagement with Traditional owners to satisfy the requirements of the Aboriginal Cultural Heritage Act 2003.

3.4 Hydrology

3.4.1 Describe the hydrology characteristics that apply to the project area and attach any hydrological investigations or surveys if applicable. *

Refer to the attached Nerimbera Quarry Extension - Groundwater Assessment report which has been prepared to support the Development Application and Environment Authority. The hydrology of the site is discussed in detail in Section 4.4 over pages 17-35.

The Development Approval and Environmental Authority being pursued will provide conditions that address water quality outcomes to manage impacts on hydrology.

4. Impacts and mitigation

4.1 Impact details

Potential Matters of National Environmental Significance (MNES) relevant to your proposed action area.

EPBC Act section	Controlling provision	Impacted	Reviewed
S12	World Heritage	No	Yes
S15B	National Heritage	No	Yes
S16	Ramsar Wetland	No	Yes
S18	Threatened Species and Ecological Communities	Yes	Yes
S20	Migratory Species	Yes	Yes
S21	Nuclear	No	Yes
S23	Commonwealth Marine Area	No	Yes
S24B	Great Barrier Reef	No	Yes
S24D	Water resource in relation to large coal mining development or coal seam gas	No	Yes
S26	Commonwealth Land	No	Yes
S27B	Commonwealth heritage places overseas	No	Yes
S28	Commonwealth or Commonwealth Agency	No	Yes

4.1.1 World Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	World heritage
No	No	Great Barrier Reef

4.1.1.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.1.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

Areas associated with the Great Barrier Reef Marine Park (which is a declared property) are located approximately 20km to the east of the Study Area.

The Project area is not located within any World Heritage Properties. Additionally, given the distance between the Project Area and the Great
Barrier Reef Marine Park, and the Environmental Management Plan currently, in operation at the Nerimbera Quarry, it is not considered that
activities undertaken within the Project Area will impact this World Heritage Property.

4.1.2 National Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	National heritage
No	No	Great Barrier Reef

4.1.2.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.2.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The Great Barrier Reef is a ‘listed place’ and areas associated with the Great Barrier Reef Marine Park are located approximately 20km to the east of the Study Area.

The Project area is not located within any National Heritage Places. Additionally, given the distance between the Project Area and the Great
Barrier Reef Marine Park, and the Environmental Management Plan currently, in operation at the Nerimbera Quarry, it is not considered that
activities undertaken within the Project Area will impact this National Heritage Place.

4.1.3 Ramsar Wetland

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.3.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.3.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

Review of PMST reporting, and ground truthing of vegetation communities and topographic structures, indicate that there are no wetlands present
within the Study Area.

Please refer to the Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES report for additional discussion on this matter (see Section 4.5 - Wetlands and Watercourses on page 37, and Table 14 on pages 38-41).

4.1.4 Threatened Species and Ecological Communities

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Threatened species

Direct impact	Indirect impact	Species
No	No	Botaurus poiciloptilus
No	No	Calidris ferruginea
No	No	Caretta caretta
No	No	Chalinolobus dwyeri
No	No	Charadrius leschenaultii
No	No	Chelonia mydas
No	No	Cupaniopsis shirleyana
No	Yes	Cycas ophiolitica
No	No	Dasyurus hallucatus
No	No	Delma torquata
No	No	Denisonia maculata
No	No	Dermochelys coriacea
No	No	Dichanthium setosum
No	No	Egernia rugosa
No	No	Elseya albagula
No	No	Epthianura crocea macgregori
No	No	Eretmochelys imbricata
Yes	No	Erythrotriorchis radiatus
No	No	Eucalyptus raveretiana
Yes	No	Falco hypoleucos
Yes	No	Furina dunmalli

Direct impact	Indirect impact	Species
Yes	Yes	Geophaps scripta scripta
No	No	Hemiaspis damelii
Yes	No	Hirundapus caudacutus
No	No	Leichhardtia brevifolia
No	No	Lepidochelys olivacea
Yes	No	Macroderma gigas
No	No	Macronectes giganteus
No	No	Natator depressus
No	No	Neochmia ruficauda ruficauda
No	No	Numenius madagascariensis
No	No	Nyctophilus corbeni
No	No	Petauroides volans
Yes	Yes	Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)
No	No	Pimelea leptospermoides
No	No	Poephila cincta cincta
No	No	Pristis zijsron
No	No	Pteropus poliocephalus
No	No	Rheodytes leukops
No	No	Rostratula australis
No	No	Samadera bidwillii
No	No	Sphyrna lewini
No	No	Thalassarche impavida
No	No	Turnix melanogaster
No	No	Xeromys myoides

Ecological communities

Direct impact	Indirect impact	Ecological community
No	No	Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions
No	No	Poplar Box Grassy Woodland on Alluvial Plains
No	No	Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions
No	No	Weeping Myall Woodlands

4.1.4.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.4.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

The attached Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES report outlines the nature and extent of potential impacts to MNES within Table 18 on pages 54-59. It is considered that the project will have both direct and indirect impacts on MNES however, all impacts can will be managed and mitigated so as to not be significant. The following describes the MNES potentially impacted by the project and the expected nature of impacts.

Hirundapus caudacutus (White-throated needletail) - The Project Area is suitable foraging habitat for the species, in the form of wooded vegetation. The Project Area is suitable dispersal habitat for the species. The project may have a direct impact on this species. including vegetation clearing and habitat fragmentation.

This species is migratory and, while in Australia, is widespread and predominately aerial. This assessment has identified that vegetation within the Study Area may provide opportunity for foraging (as a result of the occurrence of wooded vegetation) and dispersal. The Project retains approximately 90% of the vegetation potentially utilised by this species within the Study Area.

Erythrotriorchis radiatus (Red goshawk) - The Project Area may be suitable for foraging, however does not offer a mosaic of vegetation which is preferred by the species. It is possible that the Project Area would be utilised for dispersal given its connectivity value. The project may have a direct impact on this species including vegetation clearing.

The species was not observed during the ecology field survey. As the species was not recorded and is known to have a large distribution and home range, only a very small number of individuals are expected to utilise the Study Area at any time. Breeding habitat was not found in the Study Area, as the vegetation lacks suitable tall trees within 1 km of permanent water. Potential foraging and dispersal habitat was identified within both the Study Area and Project Area. Of the available 229.8 ha of suitable potential habitat for foraging and dispersal within the Study Area, the Project proposes removal of approximately 13.8% (31.8 ha). Based on the small number of individuals likely to utilise the potential habitat, the highly mobile nature of the species, and the vast areas of suitable habitat within the local area, these impacts are expected to be low and inconsequential to the success of the species.

Falco hypoleucos (Grey falcon) - Suitable habitat is generally available in the Project Area for foraging and dispersal, however the area likely gets too much rain for the species. The project may have a direct impact on this species including vegetation clearing.

The species was not observed during the ecology field survey, however is considered to potentially occur within the Study Area. A review of potential habitat for the Grey falcon determined that approximately 229.8 ha of potential breeding, foraging and dispersal habitat is present within the Study Area. Approximately 31.8 ha (13.8%) of this potential habitat is within the Project Area and will be cleared to facilitate development. Given this species is highly mobile, the availability of potential habitat that will remain within the Study Area and the likely large availability of potential habitat in the wider locality, it is considered unlikely the Project will reduce the extent of occurrence of the species. Therefore, the Project has a low risk of resulting in a significant impact to the species.

Macroderma gigas (Ghost bat) - The Project Area may contain suitable habitat for foraging and dispersal, especially considering the Project Area is within the day roost foraging range (2 km) of the nearby record, and within seasonal dispersal range of the Mt Etna maternity roost (150 km). The project may have a direct impact on this species.

The Ghost bat was not observed during the ecology field survey and no Ghost bat calls were recorded during the January survey efforts which incorporated the use of the handheld Anabat detector. No known roost sites occur within Project Area, or within the average foraging distance from the Project Area. Roost habitat is also not present within the Project Area. The nearest known maternity roost location is at Mount Etna, 30 km north of the Project Area. A review of potential habitat for the Ghost bat determined that approximately 206.4 ha of potential foraging and dispersal habitat is present within the Study Area. Approximately 31.8 ha (15.4%) of this potential habitat is within the Project Area and will be cleared to facilitate development. The Project will not result in the fragmentation of the potential habitat for this species within the Study Area and in the region, with suitable habitat of equal or greater quality likely to be common in the local area.

Direct impacts on this species may include vegetation clearing.

Furina dunmalli (Dunmall's snake) - Potentially suitable habitat occurs for the species. The project may have a direct impact on this species.

The Dunmall’s snake was not observed during the ecology field survey or the targeted survey. The targeted survey was conducted by suitably qualified ecologists during January in warm, humid conditions. AECOM subcontracted Steve Wilson to conduct the survey with a senior AECOM ecologist (Sebastian Knight). Steve is an award-winning herpetologist who has worked extensively with reptiles for over 40 years. He is very familiar with the current knowledge base of the species and has observed the species on multiple occasions in several locations and communities in Queensland.
A review of potential habitat for the Dunmall’s snake determined that approximately 182.1 ha of potential breeding, foraging and dispersal habitat is present within the Study Area. Approximately 26 ha (14.3%) of this potential habitat is within the Project Area and will be cleared to facilitate development. The project may directly impact this species as a result of vegetation clearing.

Geophaps scripta scripta (Squatter pigeon) - The Squatter pigeon was observed during the ecology field survey, and is considered known to occur in the Study Area, outside the Project Area. This assessment has identified 27.3 ha of known dispersal habitat, and 184.7 ha of likely dispersal habitat within the Study Area. The Project Area has been identified as containing 31.8 ha of likely dispersal habitat and no known dispersal habitat. Given the retention of the majority of potential habitat within the Study Area (85%), the Project is not expected to reduce the area of occupancy of an important population. The Squatter pigeon is a mobile species and whilst patches of vegetation tend not to be suitable for the species' foraging or breeding, they have been identified as facilitating the local movement of the species between patches of foraging habitat, breeding habitat and/or waterbodies, and/ or the wider dispersal of individuals in search of reliable water sources during the dry season or during droughts. Furthermore, given the mobility of this species, and the currently existing Quarry pit, this assessment considers that the Project is unlikely to create an additional barrier to this movement. The project may directly impact this species as a result of vegetation clearing and habitat fragmentation. Additionally, the project may indirectly impact this species as a result of the introduction and exacerbation of exotic flora and fauna species.

Phascolarctos cinereus (Koala) - The Project Area may contain suitable habitat for breeding for the koala. The Project Area offers suitable foraging opportunities for the koala, however, the Project Area contains threats to the species including dogs and frequent fire. The Project Area is likely to be difficult for the species' mobility given the steep terrain and small canopy trees. It is considered that the project may result in direct impacts to the koala. The project may directly impact this species as a result of vegetation clearing and habitat fragmentation. Additionally, the project may indirectly impact this species as a result of the introduction and exacerbation of exotic flora and fauna species.

A review of potential habitat for the Koala determined that approximately 206.4 ha of potential refuge, foraging and dispersal habitat is present within the Study Area. Approximately 31.8 ha (15.4%) of this potential habitat is within the Project Area and will be cleared to facilitate development. It is noted that whilst koala habitat trees have been identified as present within the Study Area, non-juvenile koala habitat trees occurred in low densities, reducing the quality of potential habitat for the koala. In addition, the dog (Canis lupus familiaris*), a key predator of the koala has been frequently identified within the Study Area. The presence of this predator is considered to further degrade potential of the Project Area to provide habitat for the Koala. Given the historic systematic culling of the species within the Rockhampton area, the low quality of koala habitat within the Study Area, and the presence of dogs, the Study Area is unlikely to support a koala population. Furthermore, higher quality koala habitat occurs to the north-east of the Study Area within the Mount Archer National Park, which is more likely to be suitable for the species.

Cycas ophiolitica (Marlborough blue cycad) - A portion of the study area is considered known habitat for the species. The field survey identified 129 Cycas ophiolitica individuals within the Study Area. It is noted that each of the identified individuals are outside of the proposed Project Area by design, and extensive field survey did not identify evidence that the species is present within the Project Area. Direct impacts on this species may include vegetation clearing and habitat fragmentation. Indirect impacts on this species may include the generation of dust.

4.1.4.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? *

No

4.1.4.6 Describe why you do not consider this to be a Significant Impact. *

An initial risk assessment was undertaken in accordance with the developed risk framework approach detailed in Section 3.6 of the Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES report (pages 12-18). This approach identified MNES as either at a low risk of potential impacts from Project activities, or at a potential risk which required further assessment.
The findings of the risk assessment determined that 13 MNES were at low risk of being significantly impacted by the Project. These species are identified within Table 18 (see section 18 on page 54 of the Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES report). Given the outcome of this assessment it has been determined that no further assessment is required for these species.

Matters of National Environmental Significance (MNES) that are known, likely or have the potential to occur within the Study Area were subject to a two-step assessment in order to determine the potential of the Project to have a significant impact on these values.

As outlined in Figure 2 on page 13 of the Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES report , the first step of this assessment was a risk assessment and involved a review of the nature, magnitude and consequence of potential impacts of the Project. The outcome of the risk assessment indicates the vulnerability of the MNES to impacts from the Project, and indicates if further assessment, in the form of a significant impact assessment, is necessary to determine significant impacts.

To determine the potential significant impacts of the Project on relevant MNES a risk assessment framework has been incorporated into this assessment. The potentially occurring direct and indirect impacts on MNES have been assessed against a 'worst-case' scenario of impacts and project consequences (see Table 2), and the understood likelihood of the anticipated impacts occurring (see Table 3). The outcome of these assessments was evaluated via a comprehensive risk matrix to determine the level of risk of significant residual impacts to relevant MNES (see Table 4).

To accurately determine the nature, magnitude and consequence of the potential impacts to MNES as a result of the Project, species specific impacts of the Project have been assessed against numerous criterion (outlined in Table 2 on page 14 of Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES), to assign a 'consequence level'. This assessment considers the context of each specific MNES' ecology, including community or species distribution, and habitat preference (inclusive of breeding requirements and movement patterns and preferences). Where a referral guidance document exists for an MNES, this assessment has given consideration to the terminology, area thresholds and recommendations listed within.

This assessment has incorporated a precautionary approach and to assign a consequence level or either 'one' or 'two' to an MNES, all listed associated criterion must be met by the project. Where all criteria are not met, a level 'three' consequence level is automatically assigned. To be assigned a level 'three' consequence level, only one of the listed associated criteria must be met by the Project. To accurately determine the likelihood of the determined consequence level occurring as a result of the Project, the potential of each MNES to occur within the Study Area was assessed (see Table 3 on page 15 of Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES). This assessment included review of records from field survey and records sources from the Atlas of Living Australia (Atlas of Living Australia, 2022).

Following the completion of this two-step assessment, MNES were evaluated against the risk matrix included in Table 4, on page 15 of Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES. The outcome of this risk assessment was either a 'potential risk' rating, triggering further assessment through a Significant Impact Assessment, or a 'low risk' rating, determining that the Project is considered unlikely to have a Significant Impact Assessment on the MNES, and no further assessment is required.

As identified and described in Table 18 on pages 54-59 Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES, the following two MNES were identified as being potentially significantly impacted by the Project:
• Marlborough blue cycad (*Cycas ophiolitica*), and
• Squatter pigeon (southern) (G*eophaps scripta scripta*).
Significant impact assessments are presented in Appendix F on page 221, and identified that significant, residual area considered unlikely for the Marlborough blue cycad (*Cycas ophiolitica*), and the Squatter pigeon (southern) (G*eophaps scripta scripta*). As a result, it is not expected that the project will result in a significant impact on MNES.

4.1.4.7 Do you think your proposed action is a controlled action? *

No

4.1.4.9 Please elaborate why you do not think your proposed action is a controlled action. *

The Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES report has identified that the project is unlikely to have a significant impact on MNES (see Appendix F on page 221)

The following two MNES were identified as being potentially impacted by the Project:
• Marlborough blue cycad (Cycas ophiolitica), and
• Squatter pigeon (southern) (Geophaps scripta scripta).
Significant impact assessments are presented in Appendix F on page 221, and identified that significant, residual impacts were considered unlikely for these two species.

The report discusses the expected direct and indirect impacts of the project on MNES and provides key mitigation measures to minimise potential impacts. See Section 6.1.1 over pages 43-48, and Section 7.0 on page 49 of the Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES report. It is considered that the Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES report adequately considers impacts to MNES and provides an appropriate measure for avoidance, minimization and mitigation, to manage the project and minimize impacts to MNES without the project being a controlled action.

4.1.4.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

The report discusses the expected direct and indirect impacts of the project on MNES and provides key mitigation measures to minimise potential impacts. See Section 6.1.1 over pages 43-48, and Section 7.0 on page 49 of the Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES report.

Avoidance and minimisation

The Project Quarry Development Plan (QDP) has been designed to avoid, to the greatest extent possible, areas of ecological value. Direct impacts will be limited to within this corridor during operation. Vegetation clearing will occur in a staged and sequential manner across the life of the Project, as per the Quarry Development Staging Plans (QDSP).
Avoidance was achieved by revising the QDP following both ecological and geotechnical assessments undertaken in 2021, including the following considerations:
• Avoiding the MNES Cycas ophiolitica located on the site,
• Retain ridgelines and associated vegetation, where possible, to avoid indirect impacts to landform and vegetation on the opposite slope outside the Project Area,
• Offsetting the impact area from property boundaries, reducing potential impacts and edge effects to flora communities and fauna located on neighbouring land, and
• Minimising the development footprint while achieving the reserves volumes required for the longevity of Project quarry operations.

Mitigation and management - Vegetation clearing

Where removal of remnant vegetation cannot be avoided, a range of measures should be implemented to mitigate and manage the extent of impact to native vegetation communities. These include:
• Vegetation clearing will be staged as indicatively outlined in the QDSP,
• The IEMS should include a section on vegetation management that is to define areas to be cleared and retained, methods for clearing and other relevant environmental protection measures,
• Clearing areas should be surveyed and demarcated by a qualified surveyor,
• Workers should be made aware of vegetation management requirements in induction training and through work instructions,
• Where possible, topsoil should be stockpiled appropriately for future use by documenting its location and protecting from runoff or other activity that may degrade the soil.

Mitigation and management - Loss or alteration of fauna habitat and habitat fragmentation

While the extent of vegetation clearing for the proposed works will mean that impacts to fauna and their habitat is likely unavoidable, there are a range of measures will be implemented by the Project team to minimise the level of impact. These include:
• Suitably qualified fauna spotter-catchers will be engaged to undertake pre-clearance habitat searches and be present during vegetation clearing activities to minimise fauna harm,

• The IEMS will provide clear guidance on areas to be cleared and retained, methods for clearing, role of the spotter-catcher and other relevant environmental protection matters,
• The Project team will identify and map clear no-go zones to avoid unauthorised disturbance of areas of sensitive vegetation and habitat outside the Project Area,Habitat features such as felled trees and logs should be considered for relocation to other areas where practical to provide microhabitat for fauna in adjacent habitat zones,
• Consideration of connectivity and fauna passage will be undertaken at each design stage of operation. Where possible, Project works should be incremental such that barriers to fauna movement are restricted to small portions of the Project area at any one time,

• Clearing vegetation will be planned in a sequential manner which directs any escaping fauna to adjacent native vegetation,
• Rehabilitation will be undertaken in accordance with the IEMS including opportunities to restore ecological values in key areas i.e. ensure appropriate grass species utilised by squatter pigeon for foraging are included in suitable habitat, and
• The IEMS will incorporate Weed and Pest Management for the Project.

Mitigation and management - Disturbance, injury, and mortality of fauna

The following mitigation measures will be implemented to reduce the likelihood of injury or mortality to fauna:
• Undertake pre-clearance surveys to identify shelters / nests potentially utilised by conservation significant fauna,
• Fauna spotter-catchers will be used to capture and relocate fauna prior to and during vegetation clearing,
• A clear escape path will be kept available for ground fauna during vegetation clearing
• Any injured, sick and dead vertebrate fauna must be recorded before (by fauna spotter-catchers), during and after construction and operation. Any fauna injured by Project activities will be transported to a vet or recognised wildlife carer,
• Vegetation clearing will be limited to daytime hours to reduce impacts from light and noise on nocturnal species,
• Tall equipment such as cranes will be lowered from dusk to dawn, where possible, to minimise potential for flying species to be injured or killed through machinery strike, and
• Wildlife are more likely to be stressed and moving through new and unfamiliar territory during disturbance events (vegetation clearing), making them easy prey. Where possible, consultation should occur with local landholders that own domestic dogs, aiming to reduce the impact of dogs
on fauna by keeping animals restrained during these disturbance events, particularly in the evening directly after vegetation clearing.

Mitigation and management - Introduction and exacerbation of exotic flora and fauna

The risk of the potential impacts related to the establishment and proliferation of weeds and feral animals will be mitigated and managed, through the incorporation of appropriate measures into the IEMS, including:
• The management of weeds and pests during operation will be included in the IEMS prior to any Project works commencing. Consideration will be given to measures to mitigate the establishment and or proliferation of feral cats, feral dogs, feral pigs and weedy grass and forb species
establishing, particularly in in stream areas.
• Known WONS and category 3 restricted invasive weeds will be identified in or adjacent to the Project Area.
• Appropriate wash down protocols will be developed, incorporated into the IEMS and implemented for any vehicles or machinery entering the Project site.
• Monitoring will be conducted regularly to determine the occurrence of ponding and potential breeding of cane toad. If evidence of cane toad breeding is found, an eradication strategy will be developed to mitigate the proliferation of this species.
• The origin of high-risk construction materials, machinery and equipment will be identified to mitigate introduction of weed species.
• Management methods to control spread of weeds considered to be Restricted Matters will be in keeping with regional management practice or Queensland DAF pest control prescriptions.
• Weed management protocols will be included in the Project's site induction program, including the location of known weeds on site, photographs for easy identification, mechanisms for spreading the weed, and procedures for management.
• Weed monitoring will be undertaken to identify and appropriately manage weeds.

Mitigation and management - Noise, vibration and light

Project activities will be conducted during daylight hours, with the exception of maintenance which may occur outside daylight hours. The operation phase of the Project is not expected to result in increased noise or light to the current levels associated with the quarry, therefore the impacts during the operational phases of the Project are unlikely to cause a new disturbance impact from noise, vibration or light.

Mitigation and management - Dust

Dust generation during the operation phase will be minimised through dust suppression measures, such as water trucks and sprinklers, where required. Dust suppression and monitoring currently occurs as part of existing quarry operations and will continue in the Project area.

The existing quarry's IEMS will be updated to incorporate requirements for the Project and include potential impacts to conservation of significant flora species and vegetation communities, as well as management measures to minimise dust emissions. It is the consideration of this assessment that this IEMS will be sufficient to manage the potential indirect impacts of increased dust emission on the vegetation communities within the Study Area.

Mitigation and management - Surface water flow and environmental spills

These indirect impacts can generally be managed through the implementation of construction environmental management measures. Mitigation measures that will be considered by the Project team include:
• Development of an appropriate spill prevention and response plan within the IEMS to cover Project activities, and the types and quantities of fuel, oil and chemicals held.

• Plant and equipment storage, stockpiling and laydown areas should be located away from creeks and drainage lines and within already cleared or disturbed areas, where possible.
• All vehicles, plant and equipment required on-site will be in good condition, and will be regularly maintained and inspected for leakages, in order to minimise the risk of contaminant spill.
• In the event of an accidental spill or release of contaminants, works will cease immediately, and preventative actions implemented as per the IEMS. Spill kits will be available and staff inducted in their use.
• Within the IEMS, development of an Erosion and Sediment Control Plan for the Project in accordance with Best Practice Erosion and Sediment Control Guidelines.

The report additionally includes species-specific measures for avoidance, minimization, mitigation and management of project related impacts. These measures are outlined in Section 7.3 over pages 51-52 of the attached Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES report.

4.1.4.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

The results of the Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES reporting indicates that no offsetting for impacts to MNES is triggered by this project.

4.1.5 Migratory Species

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	Species
No	No	Actitis hypoleucos
No	No	Anoxypristis cuspidata
Yes	No	Apus pacificus
No	No	Calidris acuminata
No	No	Calidris ferruginea
No	No	Calidris melanotos
No	No	Calonectris leucomelas
No	No	Caretta caretta
No	No	Charadrius leschenaultii
No	No	Chelonia mydas
No	No	Crocodylus porosus
No	No	Cuculus optatus
No	No	Dermochelys coriacea
No	No	Eretmochelys imbricata

Direct impact	Indirect impact	Species
No	No	Gallinago hardwickii
Yes	No	Hirundapus caudacutus
Yes	No	Hirundo rustica
No	No	Lepidochelys olivacea
No	No	Macronectes giganteus
No	No	Mobula alfredi
No	No	Mobula birostris
Yes	No	Monarcha melanopsis
Yes	No	Monarcha trivirgatus
Yes	No	Myiagra cyanoleuca
No	No	Natator depressus
No	No	Numenius madagascariensis
No	No	Pandion haliaetus
No	No	Phaethon lepturus
Yes	No	Plegadis falcinellus
No	No	Pristis zijsron
Yes	No	Rhipidura rufifrons
No	Yes	Symposiachrus trivirgatus
No	No	Thalassarche impavida
No	No	Tringa nebularia

4.1.5.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.5.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

Excluding species also listed as critically endangered, endangered or vulnerable, the PMST identified 33 migratory species potentially occurring within a 20km radius of the Project Area. The field survey identified one migratory fauna species present within the locality of the Subject Area:
• The Glossy ibis, which is listed as migratory under the EPBC Act was recorded whilst driving adjacent to the Study Area. Given the proximity of this sighting, it is considered likely that the species traverses the Study Area.

A likelihood of occurrence assessment was conducted for migratory species identified in the desktop assessment to determine which species are possible or unlikely to occur within the Study Area. This evaluation was based on an understanding of the preferred habitats of the species,
knowledge of the type and condition of habitats present at the Study Area as well as field records and the proximity of publicly available records.

The assessment determined seven listed migratory species were ‘potential’ or ‘likely’ to occur within the Study Area. Following the completion of this assessment, a Risk Assessment was undertaken to assess potential risks (including indirect and direct impacts) on MNES species. This assessment is included in Table 18 on pages 54-59 of the Ecological Assessment of Nerimbera Quarry Extension Ecological Assessment - Matters of National Environmental Significance report.

As identified in Table 18 (pages 54-59), it is expected that the project will have only indirect impacts on migratory species, and the risk rates for impacts to each migratory species is low, and no significant impacts to these species is expected as a result of the project.

Hirundo rustica (Barn swallow) - The Project Area may contain marginally suitable habitat for the species, including open areas and vine thicket. The species may utilise the airspace above the Project Area for dispersal. The project may have a direct impact on this species as a result of vegetation clearing.

This species has general habitat requirements, with marginally suitable habitat for the species available in the Study Area, including open areas and vine thicket vegetation. Vegetation clearing will occur to approximately 35.0 ha of potential habitat for this species. The Project will not result in habitat fragmentation or barriers to movement for this highly mobile species. The Project does not present other potential threats to the species.

Monarcha melanopsis (Black-faced monarch) - The Project Area contains suitable habitat for the species for breeding, foraging and dispersal, in the form of semi-evergreen vine thicket. The project may have a direct impact on this species as a result of vegetation clearing.

No rainforest habitat occurs within the Study Area, which is considered required for the breeding of this species. Open eucalypt forest is present within the Study Area and may be used by the species to forage and disperse to areas of more suitable habitat, particularly during winter and periods of migration. Given the highly mobile nature of this species, vegetation clearing and construction activities proposed to facilitate the project. Additionally, as the Project will retain approximately 84% of the potential habitat for this species within the Study Area, it is considered that the project will not have a significant impact on the habitat availability, or dispersal opportunity, for this species.

Rhipidura rufifrons (Rufous fantail) - The Project Area contains suitable habitat for the species for breeding, foraging and dispersal, in the form
of semi-evergreen vine thicket. The eucalypt woodland in the Project Area is unlikely to contain the habitat complexity required for the species. The project may have a direct impact on this species as a result of vegetation clearing.

Vegetation communities within the Project Area do not meet the definition to be considered important habitat. However, this species may occur in the trees scattered throughout the Project Area while on passage to more suitable areas, although this habitat is considered marginal. All potential habitat is suitable for foraging and dispersal only as this species prefers to breed in dense, moist vegetation. Due to the broad habitat requirements, suitable habitat is highly likely to be common within the local area surrounding the Project Area. Direct impacts via vegetation clearing will occur to approximately 6.09 ha of potential habitat. The extent of habitat present within the Project Area does not meet the thresholds suggested to lead to a significant impact to the species. Further, it is unlikely that this habitat supports an ecologically significant proportion of the population. This species is considered common and secure in Australia. It is highly mobile and unlikely to be sensitive to potential indirect impacts associated with the Project due to the likely existing presence of rubber vine and black rats.

Plegadis falcinellus (Glossy ibis) - The Project Area does not contain suitable habitat for the species such as large bodies of water, however
they may utilise the Study Area for dispersal or when water resources are low. The project may have a direct impact on this species as a result of vegetation clearing.

This survey has not identified preferred foraging or breeding habitat for this species within the Study Area. The Study Area does not contain swamps, wetlands or irrigated fields, and is not located adjacent to an estuary or marshland. As a result, it is considered that this species is highly unlikely to access the Study Area for either foraging or breeding. There is limited opportunity that vagrant individuals of this species may use the Study for opportunistic roosting, however, considering the current quarrying activities undertaken within this area, and the general lack of preferred habitat types, it is considered that this would be unlikely.

Apus pacificus (Fork-tailed swift) - The Project Area is suitable foraging habitat for the species, in the form of wooded vegetation and open paddock. The Project Area is suitable dispersal habitat for the species. The project may have a direct impact on this species as a result of vegetation clearing.

Due to the broad habitat requirements, suitable habitat is highly likely to be common within the local area surrounding the Project Area. Direct impacts via vegetation clearing will occur to approximately 6.09 ha of potential habitat. The species is exclusively aerial and will not depend on habitat within the Project Area to breed or roost but may forage or disperse in the airspace above. The Project will not result in habitat fragmentation or barriers to movement for this highly mobile species. The Project does not present other potential threats to the species.

Myiagra cyanoleuca (Satin flycatcher) - The Project Area contains suitable habitat for the species for foraging and dispersal. The project may have a direct impact on this species as a result of vegetation clearing.

The Study Area contains vegetation which meets the definition of important habitat, as it is a wooded habitat within the migration route of the species. The species is likely to be a seasonal visitor to the Project Area when in transit between breeding grounds in south-eastern Australia and wintering areas in northern Australia. This assessment notes that whilst some vegetation within the Study Area meets the definition of important habitat, it is considered of marginal quality. The species utilizes this region on its' migration and does not reside or breed in the area. As such habitat within the Study Area has been identified as foraging and dispersal only. Due to the broad habitat requirements, suitable habitat is highly likely to be common within the local area surrounding the Study Area. Direct impacts via vegetation clearing will occur to approximately 31.9 ha of potential habitat. The extent of habitat present within the Study Area does not meet the thresholds suggested to lead to a significant impact to the species. Further, it is unlikely that this habitat supports an ecologically significant proportion of the population.

Monarcha trivirgatus (Spectacled monarch) - The Project Area contains suitable habitat for the species for breeding, foraging and dispersal, in the form of semi-evergreen vine thicket. The project may have a direct impact on this species as a result of vegetation clearing.

Vegetation communities within the Project Area do not meet the preferred structural complexity to be considered important habitat. However it may occur in the trees scattered throughout the Project Area while on passage to more suitable areas, although this habitat is considered marginal. Vegetation clearing will occur to approximately 6.09 ha of potential habitat. The extent of habitat present within the Project Area does not meet the thresholds suggested to lead to a significant impact to the species.

Hirundapus caudacutus - The project may have a direct impact on this species as a result of vegetation clearing.

This species is migratory and, while in Australia, is widespread and predominately aerial. This assessment has identified that vegetation within the Study Area may provide opportunity for foraging (as a result of the occurrence of wooded vegetation) and dispersal. It is considered that this species will use the Study Area as a 'fly-over' resource, and not be restricted or wholly reliant on the vegetation within. The Project retains approximately 90% of the vegetation potentially utilised by this species within the Study Area. Given the retention of the larger percentage of potentially utilised vegetation within the Study Area, the proximity of the Study Area to the Mount Archer National Park, and the assumed nature of use of the White-throated needletail of the Subject Area, it is a consideration of this assessment that the Project will not lead to a long-term decrease in the size of a local population.

4.1.5.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? *

No

4.1.5.6 Describe why you do not consider this to be a Significant Impact. *

Matters of National Environmental Significance (MNES) that are known, likely or have the potential to occur within the Study Area were subject to a two-step assessment in order to determine the potential of the Project to have a significant impact on these values.

As outlined in Figure 2 on page 13 of the Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES report , the first step of this assessment was a risk assessment and involved a review of the nature, magnitude and consequence of potential impacts of the Project. The outcome of the risk assessment indicates the vulnerability of the MNES to impacts from the Project, and indicates if further assessment, in the form of a significant impact assessment, is necessary to determine significant impacts.

To determine the potential significant impacts of the Project on relevant MNES a risk assessment framework has been incorporated into this assessment. The potentially occurring direct and indirect impacts on MNES have been assessed against a 'worst-case' scenario of impacts and project consequences (see Table 2), and the understood likelihood of the anticipated impacts occurring (see Table 3). The outcome of these assessments was evaluated via a comprehensive risk matrix to determine the level of risk of significant residual impacts to relevant MNES (see Table 4).

To accurately determine the nature, magnitude and consequence of the potential impacts to MNES as a result of the Project, species specific impacts of the Project have been assessed against numerous criterion (outlined in Table 2 on page 14 of Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES), to assign a 'consequence level'. This assessment considers the context of each specific MNES' ecology, including community or species distribution, and habitat preference (inclusive of breeding requirements and movement patterns and preferences). Where a referral guidance document exists for an MNES, this assessment has given consideration to the terminology, area thresholds and recommendations listed within.

This assessment has incorporated a precautionary approach and to assign a consequence level or either 'one' or 'two' to an MNES, all listed associated criterion must be met by the project. Where all criteria are not met, a level 'three' consequence level is automatically assigned. To be assigned a level 'three' consequence level, only one of the listed associated criteria must be met by the Project. To accurately determine the likelihood of the determined consequence level occurring as a result of the Project, the potential of each MNES to occur within the Study Area was assessed (see Table 3 on page 15 of Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES). This assessment included review of records from field survey and records sources from the Atlas of Living Australia (Atlas of Living Australia, 2022).

Following the completion of this two-step assessment, MNES were evaluated against the risk matrix included in Table 4, on page 15 of Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES. The outcome of this risk assessment was either a 'potential risk' rating, triggering further assessment through a Significant Impact Assessment, or a 'low risk' rating, determining that the Project is considered unlikely to have a Significant Impact Assessment on the MNES, and no further assessment is required.

As identified and described in Table 18 on pages 54-59 Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES, the risk of direct and indirect impacts of the project to migratory species is considered low. As a result, it is considered that the project will not result in a significant impact to migratory species.

4.1.5.7 Do you think your proposed action is a controlled action? *

No

4.1.5.9 Please elaborate why you do not think your proposed action is a controlled action. *

The Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES report has identified that the project is unlikely to have a significant impact on MNES (see Appendix F on page 221)

The following two MNES were identified as being potentially impacted by the Project:
• Marlborough blue cycad (Cycas ophiolitica), and
• Squatter pigeon (southern) (Geophaps scripta scripta).
Significant impact assessments are presented in Appendix F on page 221, and identified that significant, residual impacts were considered unlikely for these two species. The risk assessment completed in Table 18 on pages 54-59 of the Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES report indicates that the project has a low risk of impacting migratory species.

The report discusses the expected direct and indirect impacts of the project on MNES and provides key mitigation measures to minimise potential impacts. See Section 6.1.1 over pages 43-48, and Section 7.0 on page 49 of the Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES report. It is considered that the Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES report adequately considers impacts to MNES and provides an appropriate measure for avoidance, minimization and mitigation, to manage the project and minimize impacts to MNES without the project being a controlled action.

4.1.5.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

The report discusses the expected direct and indirect impacts of the project on MNES and provides key mitigation measures to minimise potential impacts. See Section 6.1.1 over pages 43-48, and Section 7.0 on page 49 of the Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES report.

Avoidance and minimisation

The Project Quarry Development Plan (QDP) has been designed to avoid, to the greatest extent possible, areas of ecological value. Direct impacts will be limited to within this corridor during operation. Vegetation clearing will occur in a staged and sequential manner across the life of the Project, as per the Quarry Development Staging Plans (QDSP).
Avoidance was achieved by revising the QDP following both ecological and geotechnical assessments undertaken in 2021, including the following considerations:
• Avoiding the MNES Cycas ophiolitica located on the site,
• Retain ridgelines and associated vegetation, where possible, to avoid indirect impacts to landform and vegetation on the opposite slope outside the Project Area,
• Offsetting the impact area from property boundaries, reducing potential impacts and edge effects to flora communities and fauna located on neighbouring land, and
• Minimising the development footprint while achieving the reserves volumes required for the longevity of Project quarry operations.

Mitigation and management - Vegetation clearing

Where removal of remnant vegetation cannot be avoided, a range of measures should be implemented to mitigate and manage the extent of impact to native vegetation communities. These include:
• Vegetation clearing will be staged as indicatively outlined in the QDSP,
• The IEMS should include a section on vegetation management that is to define areas to be cleared and retained, methods for clearing and other relevant environmental protection measures,
• Clearing areas should be surveyed and demarcated by a qualified surveyor,
• Workers should be made aware of vegetation management requirements in induction training and through work instructions,
• Where possible, topsoil should be stockpiled appropriately for future use by documenting its location and protecting from runoff or other activity that may degrade the soil.

Mitigation and management - Loss or alteration of fauna habitat and habitat fragmentation

While the extent of vegetation clearing for the proposed works will mean that impacts to fauna and their habitat is likely unavoidable, there are a range of measures will be implemented by the Project team to minimise the level of impact. These include:
• Suitably qualified fauna spotter-catchers will be engaged to undertake pre-clearance habitat searches and be present during vegetation clearing activities to minimise fauna harm,
• The IEMS will provide clear guidance on areas to be cleared and retained, methods for clearing, role of the spotter-catcher and other relevant environmental protection matters,
• The Project team will identify and map clear no-go zones to avoid unauthorised disturbance of areas of sensitive vegetation and habitat outside the Project Area,Habitat features such as felled trees and logs should be considered for relocation to other areas where practical to provide microhabitat for fauna in adjacent habitat zones,
• Consideration of connectivity and fauna passage will be undertaken at each design stage of operation. Where possible, Project works should be incremental such that barriers to fauna movement are restricted to small portions of the Project area at any one time,

• Clearing vegetation will be planned in a sequential manner which directs any escaping fauna to adjacent native vegetation,
• Rehabilitation will be undertaken in accordance with the IEMS including opportunities to restore ecological values in key areas i.e. ensure appropriate grass species utilised by squatter pigeon for foraging are included in suitable habitat, and
• The IEMS will incorporate Weed and Pest Management for the Project.

Mitigation and management - Disturbance, injury, and mortality of fauna

The following mitigation measures will be implemented to reduce the likelihood of injury or mortality to fauna:
• Undertake pre-clearance surveys to identify shelters / nests potentially utilised by conservation significant fauna,
• Fauna spotter-catchers will be used to capture and relocate fauna prior to and during vegetation clearing,
• A clear escape path will be kept available for ground fauna during vegetation clearing

• Any injured, sick and dead vertebrate fauna must be recorded before (by fauna spotter-catchers), during and after construction and operation. Any fauna injured by Project activities will be transported to a vet or recognised wildlife carer,
• Vegetation clearing will be limited to daytime hours to reduce impacts from light and noise on nocturnal species,
• Tall equipment such as cranes will be lowered from dusk to dawn, where possible, to minimise potential for flying species to be injured or killed through machinery strike, and
• Wildlife are more likely to be stressed and moving through new and unfamiliar territory during disturbance events (vegetation clearing), making them easy prey. Where possible, consultation should occur with local landholders that own domestic dogs, aiming to reduce the impact of dogs
on fauna by keeping animals restrained during these disturbance events, particularly in the evening directly after vegetation clearing.

Mitigation and management - Introduction and exacerbation of exotic flora and fauna

The risk of the potential impacts related to the establishment and proliferation of weeds and feral animals will be mitigated and managed, through the incorporation of appropriate measures into the IEMS, including:
• The management of weeds and pests during operation will be included in the IEMS prior to any Project works commencing. Consideration will be given to measures to mitigate the establishment and or proliferation of feral cats, feral dogs, feral pigs and weedy grass and forb species
establishing, particularly in in stream areas.
• Known WONS and category 3 restricted invasive weeds will be identified in or adjacent to the Project Area.
• Appropriate wash down protocols will be developed, incorporated into the IEMS and implemented for any vehicles or machinery entering the Project site.
• Monitoring will be conducted regularly to determine the occurrence of ponding and potential breeding of cane toad. If evidence of cane toad breeding is found, an eradication strategy will be developed to mitigate the proliferation of this species.
• The origin of high-risk construction materials, machinery and equipment will be identified to mitigate introduction of weed species.
• Management methods to control spread of weeds considered to be Restricted Matters will be in keeping with regional management practice or Queensland DAF pest control prescriptions.
• Weed management protocols will be included in the Project's site induction program, including the location of known weeds on site, photographs for easy identification, mechanisms for spreading the weed, and procedures for management.
• Weed monitoring will be undertaken to identify and appropriately manage weeds.

Mitigation and management - Noise, vibration and light

Project activities will be conducted during daylight hours, with the exception of maintenance which may occur outside daylight hours. The operation phase of the Project is not expected to result in increased noise or light to the current levels associated with the quarry, therefore the impacts during the operational phases of the Project are unlikely to cause a new disturbance impact from noise, vibration or light.

Mitigation and management - Dust

Dust generation during the operation phase will be minimised through dust suppression measures, such as water trucks and sprinklers, where required. Dust suppression and monitoring currently occurs as part of existing quarry operations and will continue in the Project area.

The existing quarry's IEMS will be updated to incorporate requirements for the Project and include potential impacts to conservation of significant flora species and vegetation communities, as well as management measures to minimise dust emissions. It is the consideration of this assessment that this IEMS will be sufficient to manage the potential indirect impacts of increased dust emission on the vegetation communities within the Study Area.

Mitigation and management - Surface water flow and environmental spills

These indirect impacts can generally be managed through the implementation of construction environmental management measures. Mitigation measures that will be considered by the Project team include:
• Development of an appropriate spill prevention and response plan within the IEMS to cover Project activities, and the types and quantities of fuel, oil and chemicals held.
• Plant and equipment storage, stockpiling and laydown areas should be located away from creeks and drainage lines and within already cleared or disturbed areas, where possible.
• All vehicles, plant and equipment required on-site will be in good condition, and will be regularly maintained and inspected for leakages, in order to minimise the risk of contaminant spill.
• In the event of an accidental spill or release of contaminants, works will cease immediately, and preventative actions implemented as per the IEMS. Spill kits will be available and staff inducted in their use.
• Within the IEMS, development of an Erosion and Sediment Control Plan for the Project in accordance with Best Practice Erosion and Sediment Control Guidelines.

The report additionally includes species-specific measures for avoidance, minimization, mitigation and management of project related impacts. These measures are outlined in Section 7.3 over pages 51-52 of the attached Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES report.

4.1.5.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

The results of the Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES reporting indicates that no offsetting for impacts to MNES is triggered by this project.

4.1.6 Nuclear

4.1.6.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.6.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The Project is not and does not involve a nuclear action.

4.1.7 Commonwealth Marine Area

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.7.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.7.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

PMST reporting indicate that the Study Area does not contain any Commonwealth Marine Areas.

The Study Area is sufficiently distant from any Commonwealth Marine Area that no impacts are anticipated. Additionally, given the distance between the Project Area and the Great Barrier Reef Marine Park, and the Environmental Management Plan currently in operation at the Nerimbera Quarry, it is not considered that activities undertaken within the Project Area will impact this World Heritage Property.

4.1.8 Great Barrier Reef

4.1.8.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.8.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

PMST reporting identifies that the Study Area is not located within proximity of the Great Barrier Reef Marine Park. This assessment has confirmed that the Great Barrier Reef Marine Park is not located within proximity to the Study Area. No impacts from the project are anticipated on the Great Barrier Reef Marine Park.

4.1.9 Water resource in relation to large coal mining development or coal seam gas

4.1.9.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.9.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The Project is not a coal seam gas development or a large coal mining development.

4.1.10 Commonwealth Land

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.10.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.10.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The Project is not located in Commonwealth land.

4.1.11 Commonwealth heritage places overseas

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.11.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.11.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

No Commonwealth heritage places overseas have been identified in the project area.

4.1.12 Commonwealth or Commonwealth Agency

4.1.12.1 Is the proposed action to be taken by the Commonwealth or a Commonwealth Agency? *

No

4.2 Impact summary

Conclusion on the likelihood of significant impacts

You have indicated that the proposed action will likely have a significant impact on the following Matters of National Environmental Significance:

None

Conclusion on the likelihood of unlikely significant impacts

You have indicated that the proposed action will unlikely have a significant impact on the following Matters of National Environmental Significance:

- World Heritage (S12)
- National Heritage (S15B)
- Ramsar Wetland (S16)
- Threatened Species and Ecological Communities (S18)
- Migratory Species (S20)
- Nuclear (S21)
- Commonwealth Marine Area (S23)
- Great Barrier Reef (S24B)
- Water resource in relation to large coal mining development or coal seam gas (S24D)
- Commonwealth Land (S26)
- Commonwealth heritage places overseas (S27B)
- Commonwealth or Commonwealth Agency (S28)

4.3 Alternatives

4.3.1 Do you have any possible alternatives for your proposed action to be considered as part of your referral? *

No

4.3.8 Describe why alternatives for your proposed action were not possible. *

The location of hard rock quarries are driven by geology - the location of the rock required for the application sought. The viability of hard rock quarries is driven in large part by proximity to the communities they supply and the significant establishment costs (e.g. plant and equipment).

In the case of Nerimbera Quarry, the source rock located within the existing quarry footprint produces (and in the extension area, is capable of producing), a range of quarry products including oversize rock, aggregates, and manufactured sand for use in concrete, asphalt, road base, ballast, draining and fill applications. The Nerimbera Quarry is an existing, established quarry. As the primary hard rock resource in the region, it is located in close proximity to both Rockhampton and Yeppoon, and supplies a broad catchment.

An alternative to the proposed Nerimbera Quarry extension is a ‘do nothing’ approach at this location, which would result the region's quarry products being undersupplied, leading to increased costs for critical infrastructure (e.g. major roads, rail, hospitals) and development (local roads, housing development).

Another alternative is the establishment of a new, replacement quarry at another location, which would result in the translocation of potential impacts to that location and, depending on siting, potential increases in costs of quarry materials where transportation distances, and therefore charges, are greater.

The proposed development is consistent with the envisaged use of the site as per the (Qld) State Planning Policy 2017. The policy recognises the resources industry as a key driver of the Queensland economy. It acknowledges the need for local governments to support and provide extractive industries in order to meet local demand and provide an affordable supply of extractive resources to support construction and infrastructure projects. The policy identifies the site as a key resource area. The identification of key resource areas in the policy reflects the strategic importance these areas have in supplying local markets with extractive resources.

The proposed development will be a major contributor to the material supply and economic development of the Livingstone and Rockhampton areas. This is supported by the attached Nerimbera Quarry Needs Assessment and Economic Impact Assessment Report (See Section 5 on page 19).

The proposed development will result in a number of economic benefits including:

- Security and longevity of supply
- High quality products for the local construction, mining and transport sectors
- Lower costs comparative to importing similar materials
- Continuation of local economic activity and employment opportunities generated through the quarry
- Support for local supply chain businesses
- Greater government taxation revenues through a variety of taxes and duties
- Support local, regional, state and national economic development, industry and community strategies

5. Lodgement

5.1 Attachments

1.2.1 Overview of the proposed action

#1.	Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES	Document	This ecological assessment has identified, quantifie…

1.2.6 Commonwealth or state legislation, planning frameworks or policy documents that are relevant to the proposed action

#1.	Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES	Document	This ecological assessment has identified, quantifie…

1.3.2.17 (Person proposing to take the action) Proposer's history of responsible environmental management

#1.	Executive Committee - Meet the Holcim Australia management team	Link (Webpage)	https://www.holcim.com.au/executive-commit…

1.3.2.18 (Person proposing to take the action) If the person proposing to take the action is a corporation, provide details of the corporation's environmental policy and planning framework

#1.	Holcim (Australia) Pty Ltd Environmental Policy	Document	Holcim (Australia) Pty Ltd's Environment Policy

3.1.1 Current condition of the project area's environment

#1.	Biodiversity planning assessment - Brigalow Belt.	Link (Webpage)	https://qldspatial.information.qld.gov.au/catal…

3.1.3 Natural features, important or unique values that applies to the project area

#1.	Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES	Document	This ecological assessment has identified, quantifie…
#2.	About Mount Archer.	Link (Webpage)	https://parks.des.qld.gov.au/parks/mount-arc…

3.1.4 Gradient relevant to the project area

#1.	Nerimbera Quarry Extension - Groundwater Assessment	Document	The primary aims of this groundwater investigation …

3.2.1 Flora and fauna within the affected area

#1.	Ecological assessment of Nerimbera Quarry	Document	This ecological assessment has identified, quantifie…

	Extension - Assessment of MNES		

3.2.2 Vegetation within the project area

#1.	Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES	Document	This ecological assessment has identified, quantifie…

3.4.1 Hydrology characteristics that apply to the project area

#1.	Nerimbera Quarry Extension - Groundwater Assessment	Document	The primary aims of this groundwater investigation …

4.1.1.3 (World Heritage) Why your action is unlikely to have a direct and/or indirect impact

#1.	Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES	Document	This ecological assessment has identified, quantifie…

4.1.3.3 (Ramsar Wetland) Why your action is unlikely to have a direct and/or indirect impact

#1.	Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES	Document	This ecological assessment has identified, quantifie…

4.1.4.2 (Threatened Species and Ecological Communities) Why your action has a direct and/or indirect impact on the identified protected matters

#1.	Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES	Document	This ecological assessment has identified, quantifie…

4.1.4.3 (Threatened Species and Ecological Communities) Why your action is unlikely to have a direct and/or indirect impact

#1.	Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES	Document	This ecological assessment has identified, quantifie…

4.1.4.6 (Threatened Species and Ecological Communities) Why you do not consider the direct and/or indirect impact to be a Significant Impact

#1.	Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES	Document	This ecological assessment has identified, quantifie…
#2.	Atlas of Living Australia. Spatial Portal and Database.	Link (Webpage)	http://www.ala.org.au/about-the-atlas/

4.1.4.9 (Threatened Species and Ecological Communities) Why you do not think your proposed action is a controlled action

#1.	Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES	Document	This ecological assessment has identified, quantifie…

4.1.4.10 (Threatened Species and Ecological Communities) Avoidance or mitigation measures proposed for this action

#1.	Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES	Document	This ecological assessment has identified, quantifie…

4.1.5.2 (Migratory Species) Why your action has a direct and/or indirect impact on the identified protected matters

#1.	Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES	Document	This ecological assessment has identified, quantifie…

4.1.5.3 (Migratory Species) Why your action is unlikely to have a direct and/or indirect impact

#1.	Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES	Document	This ecological assessment has identified, quantifie…

4.1.5.6 (Migratory Species) Why you do not consider the direct and/or indirect impact to be a Significant Impact

#1.	Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES	Document	This ecological assessment has identified, quantifie…
#2.	Atlas of Living Australia. Spatial Portal and Database	Link (Webpage)	http://www.ala.org.au/about-the-atlas/

4.1.5.9 (Migratory Species) Why you do not think your proposed action is a controlled action

#1.	Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES	Document	This ecological assessment has identified, quantifie…

4.1.5.10 (Migratory Species) Avoidance or mitigation measures proposed for this action

#1.	Ecological assessment of Nerimbera Quarry Extension - Assessment of MNES	Document	This ecological assessment has identified, quantifie…

4.3.8 Why alternatives for your proposed action were not possible

#1.	Nerimbera Quarry Needs Assessment and Economic Impact Assessment	Document	This report has been developed as a technical doc…

5.2 Declarations

Completed Referring party's declaration

The Referring party is the person preparing the information in this referral.

ABN/ACN	20093846925
Organisation name	AECOM AUSTRALIA PTY LTD
Organisation address	4006 QLD
Representative's name	Hannah Barrenger
Representative's job title	Ecologist
Phone	0466296964
Email	hannah.barrenger@aecom.com
Address	

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ By checking this box, I, **Hannah Barrenger of AECOM AUSTRALIA PTY LTD**, declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

Completed Person proposing to take the action's declaration

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

ABN/ACN	87099732297
Organisation name	HOLCIM (AUSTRALIA) PTY LTD
Organisation address	2067 NSW
Representative's name	Victoria Musgrove
Representative's job title	Planning Lead
Phone	3259 1709
Email	victoria.musgrove@holcim.com
Address	18 Little Cribb St, Milton, Queensland, Australia, 4064

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ I, **Victoria Musgrove of HOLCIM (AUSTRALIA) PTY LTD**, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf or for the benefit of any other person or entity. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

✔ Completed Proposed designated proponent's declaration

The Proposed designated proponent is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ I, **Victoria Musgrove of HOLCIM (AUSTRALIA) PTY LTD**, the Proposed designated proponent, consent to the designation of myself as the Proposed designated proponent for the purposes of the action described in this EPBC Act Referral. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *