Deep Creek Quarry

State Significant Development Assessment SSD-11591659

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Cover image: Aerial view of the site (Mara Consulting, 2021)

Executive Summary

On 5 November 2021, Ironstone submitted a State significant development application and accompanying Environmental Impact Statement for the Deep Creek Quarry Project (the Project) under Part 4 of the *Environmental Planning and Assessment Act 1979*. The application sought approval to develop a new hard rock quarry to extract, process and transport up to 500,000 tonnes per annum of hard rock material over a 30-year period.

Strategic context

The Project is located immediately to the west of The Bucketts Way, approximately 12 kilometres (km) north of the Pacific Highway on the boundary of the localities of Limeburners Creek and Allworth, in the Mid-Coast Local Government Area. It is a greenfield development that would be situated in a rural setting, dominated by vegetated hills and drainage lines interspersed with open grasslands. Several rural properties and associated dwellings, roads and trails also surround the Project site. The proposed quarry extraction area is also located approximately 100 metres (m) to the west of Deep Creek, an ephemeral watercourse which connects to the Karuah River about 20 km downstream. The Karuah State Conservation Area and Karuah National Park are located approximately 2.1 km to the southeast.

The proposed quarry would primarily supply hard rock products to the Hunter, Central Coast and Sydney construction markets. The construction sector is a key contributor to economic growth in NSW, employing approximately 370,000 workers and contributing 45% of the NSW taxation revenue base. Competitive and reliable supplies of quarry products are critical to the NSW construction industry. Demand for these products is driven by government spending on public infrastructure and private investment in commercial, industrial and residential development.

The need for infrastructure investment in NSW, including within the Hunter region, is identified in several key State and regional strategy documents. This infrastructure pipeline includes multi-billion-dollar road and rail projects in the Sydney metropolitan area, new and upgraded education and health infrastructure throughout the State, and several major infrastructure projects within the Hunter region that will require a reliable and affordable supply of hard rock quarry products over the next few years. The increased demand for construction materials that could be partially met by the Project, combined with the surrounding rural and residential development and the recognised historic, tourism and ecological values of the region, prompts the need for careful and balanced consideration of these potentially competing land uses.

Assessment process

The Project has been declared a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999*, due to its potential impacts on threatened species and communities. The Commonwealth government has agreed that the proposal may be assessed by the NSW Government, in accordance with the Bilateral Agreement between the NSW and Commonwealth Governments.

The Department publicly exhibited the Project for a period of 29 days from 19 November 2021 to 17 December 2021. Ironstone provided a Submissions Report on 31 December 2022. The report provided Ironstone's consideration of issues raised in submissions and agency advice and included several minor changes to the Project to address these issues. These changes include an increase in the capacity of sediment basins to limit the frequency of site water dischargers, removal of Deep Creek Road as a possible access route during construction, refinement of the infrastructure area design and additional controls to further avoid and mitigate impacts on Koalas and modification of a proposed

biodiversity offset site to incorporate additional threatened species habitat. It also included additional assessment of the Project's biodiversity, groundwater and surface water impacts.

The Department sought advice from affected agencies and provided it to Ironstone in conjunction with several requests for other additional information. Ironstone's responses to these requests have been carefully considered in the Department's assessment and evaluation of the Project.

The Department's assessment report and recommended conditions will now be referred to the Independent Planning Commission (the Commission) to make a determination on the Project.

Engagement

During the public exhibition of the Project, the Department received 59 public submissions, including 57 from individuals and 2 from special interest groups. Two of these submissions supported, 56 objected, and 1 commented on the Project. Of the 56 objecting submissions, 53 were considered unique submissions. The remaining three were duplicates that have not been counted as unique submissions.

The Department also received advice from 8 State government agencies and two local councils (MidCoast Council and Port Stephens Council).

The Department carried out a site visit and held a community information session at the Limeburners Creek Community Hall on 9 December 2021. At this meeting, the Department provided an overview of the Project exhibition and assessment process and received feedback on the community's views about the proposal. The Department also undertook a second site visit, which included a visit to a local landowner's residence, on 19 June 2023.

The Department considers that its engagement process met the community participation requirements of the *Environmental Planning and Assessment Act 1979* and associated Regulation. The Department also considers that this process has fulfilled the State's obligations under the Bilateral Agreement with the Commonwealth Government.

Assessment

Due to the proposed clearing of remnant vegetation and road haulage of quarry products, and the Project's location adjacent to the sensitive riparian environment of Deep Creek, the Department considers that the key assessment issues relate to biodiversity, traffic and water resources. Given it is an extractive industry proposal involving drilling, blasting and excavation of extractive material in a relatively undeveloped rural setting, potential noise impacts is also an important assessment issue.

Biodiversity

The Department considers that the Project has been designed to avoid, mitigate and manage biodiversity impacts where practicable. The final disturbance footprint has avoided direct clearing of 72 ha of native vegetation. Nevertheless, the Project would result in a range of residual impacts on biodiversity through the disturbance of 29.15 ha of native vegetation comprising four plant community types. No vegetation within the proposed disturbance area was identified as constituting a Threatened Ecological Community under the BC Act or the EPBC Act.

While none of the vegetation within the proposed disturbance area was identified as constituting a threatened ecological community, it does provide habitat for a variety of threatened flora and fauna species listed under either or both the BC Act and EPBC Act. Two threatened flora species (Black-eyed Susan and Netted Bottlebrush) and habitat for three threatened fauna species (Koala, Southern Myotis and Squirrel Glider) would require offsetting via the retirement of 'species credits' due to direct impacts

to individuals or the loss of breeding habitat. A further 14 fauna species (comprising four bird, eight microbat, and two mammal species) would require offsetting via the retirement of 'ecosystem credits' due to the loss of foraging habitat within the proposed disturbance area. Importantly, the Project would not result in any 'serious and irreversible impacts', as defined by the BC Act. The Project is also unlikely to have an adverse effect on the aquatic biota within the receiving environment of Deep Creek or on the oyster aquaculture industry further downstream along the Karuah River.

To offset the residual biodiversity impacts of the Project, Ironstone has committed to revegetating riparian areas with Koala feed trees, replacing removed hollows with nest boxes in retained vegetation and establishing an onsite biodiversity stewardship site on land adjacent to the quarry that would include approximately 235 ha within its own land holding and potentially a further 125 ha of an adjacent holding (subject to execution of an options agreement with the landowner).

The Department has recommended conditions of consent requiring Ironstone to provide for the sound mitigation and management of retained biodiversity values on the site and offsetting in accordance with the NSW Biodiversity Offsets Scheme. BCD has not raised any objections to the proposed mitigation, management and offsetting of biodiversity. Overall, the Department considers the impacts of the Project on biodiversity are acceptable, subject to the recommended conditions.

Traffic

The Department acknowledges that traffic impacts from road haulage activities is a key community concern for the Project. The aspects of the Project that have the greatest potential for adverse traffic impacts are those affecting the safety and efficiency of the local road network as a result of road haulage of materials to and from the quarry.

The Project would involve laden quarry haulage trucks travelling south for approximately 12.5 km along The Bucketts Way (a classified regional road) at Limeburners Creek to the Pacific Highway at Twelve Mile Creek. The vast majority of quarry trucks would then continue along the Pacific Highway to markets in the south. Unladen trucks would travel towards the quarry along the same route, but in the opposite direction.

Traffic volumes generated by the Project would not result in a change to the existing levels of service for roads along the primary haulage route. While some deterioration in intersection and road network performance is predicted during the life of the Project, this would mostly result from broader regional traffic growth and would be expected to occur with or without the Project.

Similarly, while some road safety risks were identified along the primary road haulage route, most of these would be resolved prior to the commencement of quarry haulage activities. Further, negligible concerns regarding road safety have been raised by the relevant road authorities including MidCoast Council, Port Stephens Council and TfNSW.

Ironstone has proposed a quarry access road and intersection with The Bucketts Way and several mitigation and management measures to minimise the Project's traffic and transport impacts. The Department has recommended conditions requiring Ironstone to prepare a comprehensive traffic management plan prior to the commencement of construction under the recommended consent. The recommended conditions also require strict monitoring of road haulage rates. Subject to these conditions, the Department considers that the traffic and transport impacts of the Project are acceptable.

Water resources

The Department considers that the key issues related to water resources are associated with the discharge of water to downstream waters and potential impacts on the water quality and hydrology of

Deep Creek, and groundwater inflows into the quarry pit, water licencing and groundwater drawdown potentially impacting groundwater dependent ecosystems and other water users.

The Project has been designed to maximise the reuse of water on site, minimise the take of clean water from the catchment, and minimise discharges to Deep Creek. Ironstone has refined the Project design, undertaken further assessment, and committed to additional mitigation and management measures to address all the issues raised by the relevant water management agencies, including EPA, DPE Water and DPI Fisheries. The Department considers that the proposed water management system has been suitably designed to manage risks to hydrology, water quality and flooding and that there are measures available to manage any water shortfalls or surpluses without adversely impacting the receiving environment.

Excavation of the quarry would result in some inflow of groundwater into the quarry pit, although this is expected to be relatively minor, considering the low porosity and permeability of the strata within and the proposed extraction area. The quarry has been designed so the base of the extraction area remains in the rhyolite, limiting interaction and possible future discharge of groundwater from the underlying, more porous, shale units.

The Department notes that the predicted impacts would be very localised and limited to a 'less productive' aquifer. The predicted impacts are less than the Level 1 minimal impact considerations set out in the AIP. DPE Water has not objected to these assessment findings. Accordingly, the Department consider that these impacts acceptable.

Ironstone has also demonstrated, to the satisfaction of DPE Water and the Department, that it can obtain sufficient entitlement under its harvestable rights and water access licenses to account for the quarry's water take.

The Department considers that the risks of impact to surface water and groundwater resources are low and that the Project could be suitably managed in accordance with the recommended conditions to avoid any unacceptable impacts.

Noise

The Department is aware that increased noise levels associated with the Project was a key issue raised in public submissions. Notwithstanding these concerns, the Department accepts, and EPA agrees, that the Project is unlikely to result in greater than 'negligible' noise impacts on affected sensitive receivers during construction and operation of the Project.

The Department supports the design mitigation, monitoring and management measures proposed by Ironstone to reduce predicted noise levels to acceptable levels during both construction and operation of the Project. The Department has also taken a precautionary approach in recommending strict noise limits and operating conditions for the Project, consistent with EPA's recommendations. The Department considers that the recommended conditions strike a fair balance between protecting the amenity of the local community and providing for the operation of the Project. Subject to these conditions, the Department considers the noise impacts of the Project are acceptable.

Other issues

In response to the concerns raised by a nearby resident, the Department engaged an independent expert to provide advice in relation to potential health impacts from diesel particulate emissions associated with the Project. The expert concluded that exposure to diesel particulates from the Project would be below guideline levels protective of adverse health effects, including for hypersensitive

individuals. On this basis, the Department accepts that the risk of Project-related adverse health impacts to the nearby resident and other residents is very low.

The Department has also assessed the impacts of the Project on other values including air quality, greenhouse gas emissions, blasting, social, economic, Aboriginal cultural heritage, historic heritage, hazards and waste, visual amenity, and rehabilitation and final landform impacts. The Department considers that, following the implementation of reasonable and feasible mitigation measures, the residual impacts of the Project can be suitably managed.

Evaluation

The Department has carried out a detailed assessment of the merits of the Project, having regard to Ironstone's Project documentation, advice from NSW government agencies and independent experts, and all public submissions. The Department has also considered the objects of the EP&A Act and relevant considerations under Section 4.15(1) of the EP&A Act.

The Department acknowledges the considerable public interest in the Project, and in particular the community's concerns regarding the potential traffic, biodiversity, noise and vibration, air quality and water impacts from the Project. It also acknowledges the negative sentiment towards the Project expressed by nearby neighbours and understands that perceived impacts can affect an individual's wellbeing. This is particularly relevant to the Project, which proposes to establish a new quarry in what is a relatively undeveloped rural setting.

The Department has carefully considered all the issues raised throughout its assessment process, including Ironstone's responses to the community concerns raised in submissions and feedback from government agencies. It has also considered the suitability of the site and whether it is in the public interest to allow the Project to proceed. Based on this assessment, the Department considers that Ironstone has designed the Project in a way that would achieve a practicable balance between maximising resource recovery and minimising associated impacts on the surrounding landholders and the environment through contemporary practices and mitigation measures. The Department recognises that the Project's ability to avoid impacts is restricted by the location of the resource and that complete avoidance is impractical.

The Department has recommended a comprehensive and precautionary suite of conditions to ensure that the Project complies with contemporary criteria and standards, and that residual impacts are effectively minimised, managed, offset and/or compensated for. The recommended conditions were provided to key NSW Government agencies and their comments taken into account in finalising the conditions. Ironstone has reviewed and accepted the recommended conditions. The Department considers that the conditions reflect current best practice for the regulation of hard rock quarrying projects in NSW and would lead to acceptable environmental outcomes.

The Department recognises that the proposed quarry expansion would contribute a range of high-quality construction materials to local and regional markets. It would contribute significantly to the supply of materials for the construction of housing and major regional infrastructure projects. The Department also recognises that the proximity of the Project's hard rock resources to the Pacific Highway via The Bucketts Way facilitates safe and efficient distribution of products to the market. The Department accepts there is a strategic need for hard rock quarry materials in the Hunter, Central Coast and Sydney regions and considers the site to be well-suited for the Project.

The Department also considers that the Project would result in significant economic benefits to the region and to the State of NSW through the supply of materials critical to the construction industry and is therefore justified from an economic efficiency perspective.

The Department has carefully weighed the environmental impacts of the Project against the significance of the Project's identified hard rock resource and the wider socio-economic benefits associated with operating the quarry for 30 years under a contemporary development consent. On balance, the Department considers that the benefits of the Project outweigh its residual costs, the site is suitable for the proposed development, and that the Project is in the public interest and is approvable, subject to the recommended strict conditions of consent.

Contents

1 Introduction

1. Ironstone Developments Pty Ltd (Ironstone) propose to establish a hard rock quarry called Deep Creek Quarry. The proposed quarry is located on the boundary of the localities of Limeburners Creek and Allworth, in the Mid-Coast Local Government Area (LGA), approximately 10 km northeast of Clarence Town and 11 km northwest of Karuah, NSW (see

2. **Figure 1-1**).

2 Project

3. On 5 November 2021, Ironstone submitted a State significant development (SSD) application and accompanying Environmental Impact Statement (EIS) for the Deep Creek Quarry Project (the Project) under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The application sought approval to develop a new hard rock quarry to extract, process and transport up to 500,000 tonnes per annum (tpa) of hard rock material over a 30-year period.

4. A summary of the key components of the proposed development is provided in **Table 2-1**. The proposed site layout is shown in **Figure 2-1**. A detailed description of the Project is provided in the EIS (see **Appendix A**).

Table 2-1 | Key components of the proposed development

Component	Proposed development
Operational workforce	10 full time equivalent (FTE) personnel
Quarry products	Hard rock aggregates
Production limit	500,000 tpa quarry products
Footprint	30 hectares (ha)
Depth of extraction	37 m Australian Height Datum (AHD)
Quarry method	Open cut extraction methods including excavation, drill, blast, load and haul
Processing	On site crushing, screening and stockpiling
Operating hours	Construction and quarry operations 7 am to 5 pm Monday to Friday, 8 am to 1 pm Saturday Blasting 9 am to 4 pm Monday to Friday Loading and dispatch of trucks 6 am to 6 pm Monday to Friday, 6 am to 1 pm Saturday
Site access	Dedicated quarry access road and intersection off The Bucketts Way
Product transport	25 laden truck movements per hour 110 laden truck movements per day
Rehabilitation and final landform	Rehabilitated to achieve a stable, safe, non-polluting landform able to support self-sustaining native vegetation and pasture for grazing

Figure 1-1 | Local context

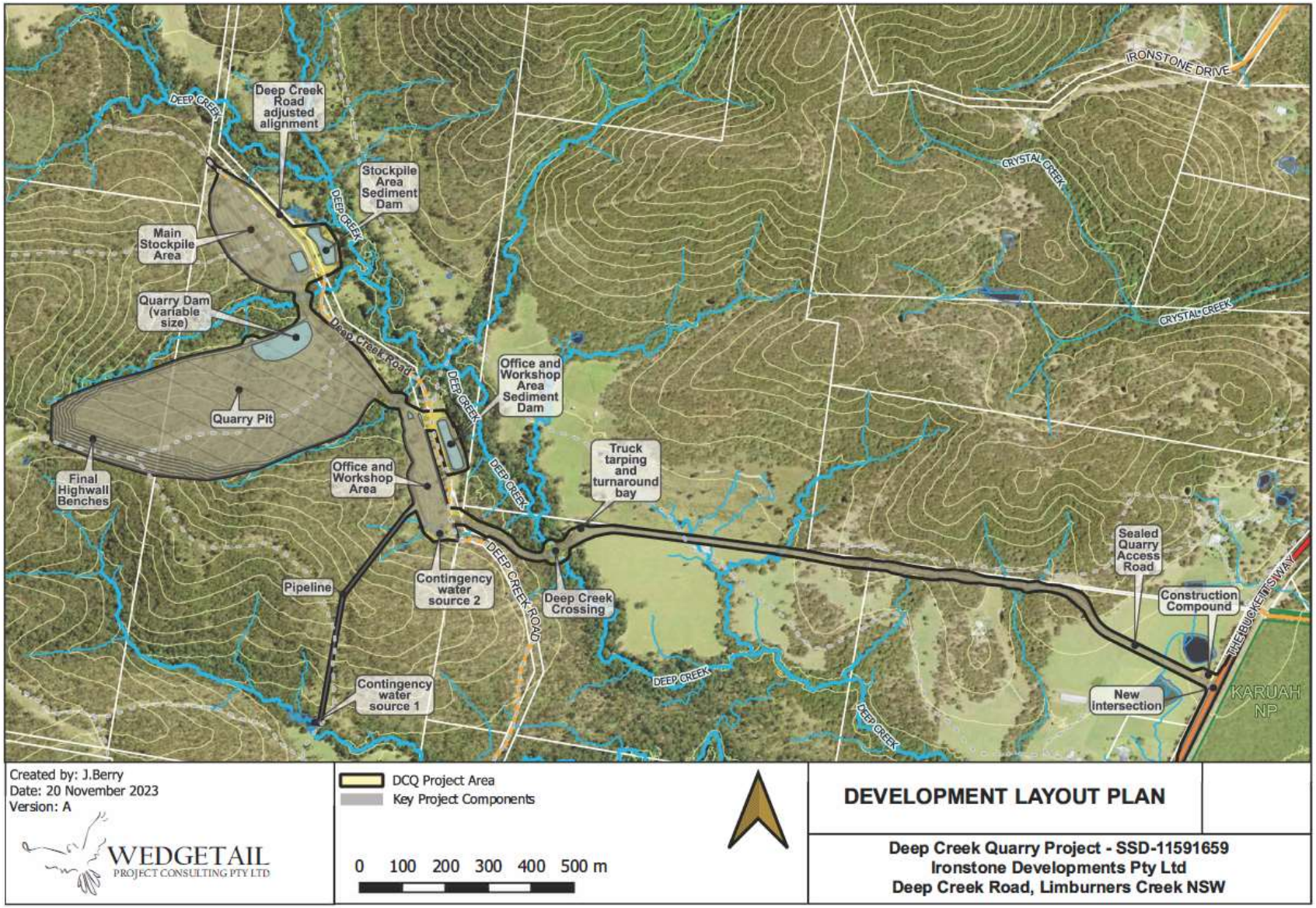


Figure 2-1 | Proposed site layout

3 Strategic context

3.1 Project setting

5. The Project is in a rural setting, dominated by vegetated hills and drainage lines interspersed with open grasslands. Several rural properties and associated dwellings, roads and trails also surround the Project site.

6. The Karuah State Conservation Area and Karuah National Park are located approximately 2.1 km to the southeast. The proposal is located immediately to the west of The Bucketts Way, approximately 12 km north of the Pacific Highway and 50 km north of Newcastle.

3.2 Strategic policy

7. The *Hunter Regional Plan 2041* (NSW Government, 2022) sets out the NSW Government's strategic vision for the Hunter region. It aims to strengthen the region's economic resilience, maintain its well-established economic and employment bases, and build on its existing strengths to foster greater market and industry diversification. It also aims to protect its diverse terrestrial and aquatic ecological systems, conserve its heritage values, and create thriving communities that enrich the quality of life and wellbeing of their residents.

8. Importantly, the Plan emphasises the need to manage different land uses in pursuit of complementary outcomes and attainment of its overriding goals. The increased demand for construction materials that could be partially met by the Project, combined with the surrounding rural and residential development and the recognised historic, tourism and ecological values of the region, prompts the need for careful and balanced consideration of these potentially competing land uses.

3.3 Resource and markets

9. The hard rock resource comprises a mixture of rhyolite, trachyte, volcanic arenite and quartz trachyte. Products from the quarry would include manufactured sand, rail ballast, gabion and armour rock, general and select fill, road base and a range of aggregates for concrete and asphalt production, drainage works and landscaping.

10. The primary target material for extraction is the rhyolite resource, which is aimed at satisfying demand for high friction road aggregates. An important property of rhyolite is the Polishing Aggregate Friction Value (PAFV). The PAFV refers to a test result for aggregates obtained through skid resistance testing in a laboratory. TfNSW typically specifies high PAFV aggregates for use in intersections and roundabouts. A PAFV of 48 is typically specified for general road construction, while a high grip material requires a PAFV of 58 to 65. The Project's rhyolite resource has exhibited PAFV test results ranging from 57 to 65, meeting the requirements of high grip material. This high grip quality has the potential to substantially increase road safety.

11. This material also has a lighter colour, giving it a high solar reflectance value that generates lower surface temperatures than typical road pavement aggregates. This can reduce road surface temperatures and help to minimise the urban heat island effect in built up areas.

12. The quarry would primarily supply the Hunter, Central Coast and Sydney construction markets. Owing to their relative proximity to these markets and key transportation corridors including the Pacific Highway, Hunter Expressway and New England Highway there are several other existing and proposed hard rock quarries within approximately 25 km of the Project (see **Table 3-1**). While it is difficult to quantify the amount of hard rock material required over the next few years, the recent influx of SSD applications for hard rock quarries in the region points to a strong demand for hard rock material in the short-to-medium term.

Table 3-1 | Proposed and operating SSD hard rock quarries within 25 km of the Project

Proposal / Project	Location	Production rate	Status
Hillview Quarry	Stroud	750,000 tpa over 20 years	Applicant preparing EIS
Seaham Quarry	Eagleton	2 Mtpa over 30 years	Applicant preparing EIS
Stone Ridge Quarry	Balickera	1.5 Mtpa over 30 years	Applicant preparing EIS
Eagleton Quarry	Eagleton	600,000 tpa over 30 years	Applicant preparing Submissions Report
Karuah South Quarry	Karuah	600,000 tpa over 25 years	Applicant preparing Submissions Report
Karuah East Quarry	Karuah	1.5 Mtpa until December 2034	Operating quarry, approved in 2014
Brandy Hill Quarry	Brandy Hill	1.5 Mtpa until July 2050	Operating quarry approved in 2020

3.4 Demand for construction materials

13. The construction sector is a key contributor to economic growth in NSW, employing approximately 370,000 workers and contributing 45% of the NSW taxation revenue base. Competitive and reliable supplies of quarry products are critical to the NSW construction industry. Demand for these products is driven by government spending on public infrastructure and private investment in commercial, industrial and residential development.

14. The need for infrastructure investment in NSW, including within the Hunter region, is identified in several key State and regional strategy documents, including:

- *Future Transport Strategy: Our vision for transport in NSW* (Transport for NSW (TfNSW), 2022), which sets the strategic direction for TfNSW to achieve world-leading mobility for customers, communities, businesses and people. Within the Lower Hunter and Newcastle regions this includes establishing better road, rail and freight connections with the aim of creating '30-minute cities';
- *Hunter Regional Plan 2041* (NSW Government, 2022), which predicts that the Hunter region will require an additional 101,800 dwellings by 2041 to meet the needs of a growing population. The Plan also recognises the Hunter region as a leading regional economy and identifies the need for additional employment land, expanded freight and passenger rail networks, and better inter-regional transport connections; and
- *State Infrastructure Strategy 2022-2042: Staying ahead* (NSW Government, 2022), which sets out Infrastructure NSW's independent advice to the NSW Government on the State's needs and strategic priorities for infrastructure over the long term. The Strategy identifies

that the future infrastructure investment pipeline in NSW remains healthy and consistent with the commitments of the past 10 years. It also recommends that infrastructure spending should target freight and energy infrastructure and provide for productive regional industries and connected regional communities.

15. To meet the identified infrastructure needs, the NSW Government has committed over $108 billion in infrastructure spending over the four years to 2025. This infrastructure pipeline includes multi-billion dollar road and rail projects in the Sydney metropolitan area, new and upgraded education and health infrastructure throughout the State, and several major infrastructure projects within the Hunter region, including the Newcastle Power Station, Jesmond to Rankin Park Bypass, M1 Pacific Motorway Extension to Raymond Terrace, and Lower Hunter Freight Corridor, that will require a reliable and affordable supply of hard rock quarry products over the next few years.

4 Statutory context

4.1 State significance

16. The Project is an extractive industry development that would extract 500,000 tonnes of extractive materials per year from a total resource of more than 5 million tonnes. Accordingly, the Project is declared to be State Significant Development (SSD) under section 4.36 of the EP&A Act, as it meets the criteria specified in clause 7 of Schedule 1 of the *State Environmental Planning Policy (Planning Systems) 2021*.

4.2 Permissibility

17. The Project would be located on freehold land owned by Ironstone and other private landholders. The land is zoned RU2 (Rural Landscape) under the *Great Lakes Local Environmental Plan 2014* (Great Lakes LEP). The Project is defined as development for the purpose of "Extractive industries" under the Great Lakes LEP, which is permitted with consent in the RU2 zone.

18. Furthermore, clause 2.9(b)(i) of the *State Environmental Planning Policy (Resources and Energy) 2021* provides that development for the purpose of extractive industry is permissible with development consent on land on which development for the purpose of agriculture may be carried out, which includes the proposed Project site.

19. Therefore, the Department considers that the Project is permissible with development consent.

4.3 Consent authority

20. In accordance with section 4.5 of the EP&A Act and clause 2.7(1)(b) of the *State Environmental Planning Policy (Planning Systems) 2021*, the Independent Planning Commission of NSW (the Commission) is the consent authority for the development application, as more than 50 unique public submissions objecting to the Project were received.

4.4 Mandatory matters for consideration

21. The Department has undertaken a detailed assessment of the Project, taking into consideration each of the relevant matters listed in Section 4.15 of the EP&A Act, including:

- applicable Environmental Planning Instruments (EPIs, see **Appendix E**);
- issues raised in submissions on the Project (see **Section 5**);
- the likely environmental, social and economic impacts of the Project (see **Section 6**);
- the suitability of the site for the Project (see **Sections 3** and **6**);
- the objects of the EP&A Act (see **Appendix E**); and
- the public interest (see **Section 7**).

4.5 Biodiversity assessment

22. Section 1.7 of the EP&A Act provides that the operation of the EP&A Act is subject to the requirements of Part 7 of the *Biodiversity Conservation Act 2016* (BC Act). Section 7.9 of the BC Act requires that:

- an application for development consent for SSD is to be accompanied by a biodiversity development assessment report (BDAR) unless the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values; and
- an EIS that accompanies any such application is to include the biodiversity assessment required by the environmental assessment requirements of the Planning Agency Head under the EP&A Act.

23. Section 7.14 of the BC Act requires the consent authority to take into consideration the likely impact of the proposed development on biodiversity values as assessed in the BDAR. It also enables the consent authority to grant a development consent subject to the requirement to retire biodiversity credits in accordance with the biodiversity offsets scheme established under the BC Act.

24. A BDAR prepared in accordance with the Biodiversity Assessment Method (BAM) established under the BC Act, accompanied the Environmental Impact Statement (EIS) for the Project (see **Appendix A**). The BDAR was subsequently revised (the Revised BDAR) and included as part of the Submissions Report for the Project. **Section 6.1** provides a summary of the findings of the Revised BDAR.

4.6 Commonwealth matters

25. On 7 December 2020, a delegate of the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) (formerly Department of Agriculture, Water and the Environment) determined that the Project was a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), due to its potential impacts on threatened species and communities (see Sections 18 & 18A of the EPBC Act).

26. In its determination, the Commonwealth agreed that the proposal may be assessed by the NSW Government, in accordance with the Bilateral Agreement between the NSW and Commonwealth Governments. The Department's Secretary issued SEARs for the Project addressing matters of national environmental significance (MNES) on 19 February 2021.

27. The Department's assessment of impacts to MNES is provided in **Section 6.1** and **Appendix G**.

28. Following the Commission's determination of SSD 11591659 (if approved), the matter would be referred to DCCEEW for determination under the EPBC Act in accordance with the relevant provisions of that Act.

4.7 Integrated and other NSW approvals

29. Under Section 4.41 of the EP&A Act, several approvals are integrated into the SSD approval process and consequently are not required to be separately obtained for the Project. These include:

- approvals relating to heritage required under the *National Parks and Wildlife Act 1974* and the *Heritage Act 1977*; and
- certain water approvals under the *Water Management Act* 2000.

30. Under Section 4.42 of the EP&A Act, several other approvals (if required) cannot be refused and must be granted in terms substantially consistent with any consent granted for the Project. These include:

- consents under the *Roads Act 1993* (Roads Act); and
- an EPL under the *Protection of the Environment Operations Act 1997* (POEO Act).

31. The Department has consulted with the relevant government authorities responsible for these other approvals (see **Section 5**) and considered their advice in its assessment of the Project (see **Section 6**).

4.8 Water licenses

32. The Project is predicted to require up to 25 megalitres (ML) per year of licensed groundwater allocation from the *Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016* (New England Fold Belt Coast Groundwater Source) to account for seepage into the quarry pit. Ironstone has committed to obtaining the required groundwater entitlements for the Project.

33. The Project is not expected to require any licensed surface water entitlement. The surface water demand for the Project is predicted to remain within the harvestable rights provisions for landholders set out in the *Water Management Act 2000* (WM Act).

5 Engagement

5.1 Department's engagement

34. The Department publicly exhibited the Project on the Department's website from 19 November 2021 to 17 December 2021 (29 days).

35. The Department advertised the exhibition in the Newcastle Herald and The Australian on Monday 22 November 2021 and in the Sydney Morning Herald and Daily Telegraph on Wednesday 24 November 2021. The Department also notified landholders in proximity to the quarry site and requested advice from key government agencies and public authorities, including MidCoast Council.

36. The Department carried out a site visit and held a community information session at the Limeburners Creek Community Hall on 9 December 2021. At this meeting, the Department provided an overview of the Project exhibition and assessment process and received feedback on the community's views about the proposal. The Department also undertook a second site visit, which included a visit to a local landowner's residence, on 19 June 2023.

37. In undertaking these activities, the Department considers that its notification processes met the requirements of the EP&A Act and *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation), and that related public participation statutory obligations have been satisfied.

5.2 Summary of submissions

38. During the exhibition period, the Department received a total of 59 public submissions, including 57 from individuals and 2 from special interest groups. These submissions comprised:

- two (3%) individuals expressing support for the Project;
- 56 (95%) objecting to the Project, including 54 from individuals and two from special interest groups; and
- 1 (2%) individual providing comment on the Project.

39. Of the 56 objecting submissions, 53 were considered to be unique submissions. The remaining three were duplicates that have not been counted as unique submissions.

40. A summary of the public submissions received on the Project is presented in **Table 5-1**. Copies of all submissions are included in **Appendix B**.

Table 5-1 | Summary of public submissions

Proximity	Submissions	Support	Object	Comment
Within approximately 5 km of the Project	39	0	39	0
Between approximately 5 km and 100 km of the Project	10	2	7	1
Greater than 100 km from the Project	9	0	9	0
Location not provided	1	0	1	0
Total	**59**	**2**	**56**	**1**

41. After the close of the exhibition period, the Department received several additional representations from members of the public and one special interest group objecting to the Project.

42. A summary of the issues raised in public submissions is provided in **Section 5.4**.

5.3 Agency advice

43. Several State government agencies raised issues or expressed concerns about specific aspects of the Project and/or provided recommendations relating to their administrative and regulatory responsibilities. A copy of all advice received from agencies is attached in **Appendix D**.

44. **Table 5-2** below provides an overview of the key comments made by State and Commonwealth government agencies. Further consideration of agency advice is provided in **Section 6**.

Table 5-2 | Summary of agency advice

Agency	Summary of advice
Biodiversity Conservation and Science Directorate of the Department (BCD)	• Requested further information regarding biodiversity data collection and survey methodologies, vegetation classifications and proposed offsetting of biodiversity impacts. • Requested further information to demonstrate the consideration of avoidance, minimisation, mitigation and management of impacts to MNES and the proposed timing of impacts. • In its final advice, BCD indicated its earlier comments on the EIS and Submissions Report had been addressed and it made recommendations for conditions of consent. • Further details of the Department's consideration of BCD's advice with regard to biodiversity impacts and MNES are presented in **Section 6.1**.
DPE Water	• Requested further information: ○ regarding the calculation of Maximum Harvestable Rights Dam Capacity (MHRDC) and any associated surface water licensing requirements; ○ on how site water demand would be met during dry conditions; and ○ to demonstrate that Ironstone could acquire necessary licensed groundwater entitlements to account for the predicted groundwater take during operation and closure of the project.

Agency	Summary of advice
	• Requested that Ironstone confirm the need to extract water from a third order watercourse and undertake an assessment of any associated. surface water impacts • Requested further assessment of groundwater impacts in accordance with the *NSW Aquifer Interference Policy* (AIP), including the completion of an independent peer review of the groundwater modelling predictions. • Requested reconfiguration of the surface water management system to maintain a 40 m buffer between the high bank of Deep Creek and a proposed sediment basin. • Recommended that all watercourse crossings are designed and constructed in accordance with the *Guidelines for Watercourse Crossings on Waterfront Land*. • Provided recommendations for conditions of consent regarding the ongoing management, monitoring, and reporting of surface water and groundwater impacts. • Further details of the Department's consideration of DPE Water's advice with regard to water-related impacts are presented in **Section 6.3**.
Environment Protection Authority (EPA)	• Noted that the proposal would require an Environment Protection Licence (EPL) under the *Protection of the Environment Operations Act 1997* (POEO Act) and made recommendations for proposed licence conditions. • Recommended that Ironstone modify the surface water management system to ensure all practical measures are implemented to minimise the potential for impacts to the receiving environment of Deep Creek. • Requested that the Department considers potential land use conflicts regarding noise impacts from the proposal and impacts on any new residential development. • Requested additional information regarding the proposed maximum daily rate of road haulage to inform EPL conditions. • In its final advice, EPA provided recommended conditions of consent related to noise and air quality. • Further details of the Department's consideration of EPA's advice with regard to noise and air quality impacts are presented in **Sections 6.4** and **6.5** respectively.
Crown Lands	• Requested further information regarding potential impacts to the Deep Creek Road Crown Road reserve. • Commented that Deep Creek Road is required to be transferred to MidCoast Council control and that requirements associated with the road transfer should be incorporated into any conditions of consent. • Provided guidance on potential legal mechanisms for transfer of Crown Road to MidCoast Council and relevant approvals required under the *Roads Act 1993* in accordance with the Crown Lands policies and guidelines. • The Department has considered Crown Lands' advice in developing its recommended conditions of consent (refer to **Appendix F**).
TfNSW	• Commented that it raises no objection to or requirements for the proposal. • Noted that any works required on The Bucketts Way would require approval of MidCoast Council with concurrence from TfNSW in accordance with Section 138(2) of the *Roads Act 1993*. • Further details of the Department's consideration of TfNSW's advice with regard to traffic impacts are presented in **Section 6.2**.
Mining, Exploration & Geosciences	• Recommended a condition requiring provision of annual production data to MEG.

Agency	Summary of advice
Division of the Department of Regional NSW (MEG)	• Acknowledged Ironstone's clarification that dimension stone, whilst mentioned in the EIS, is not proposed to be extracted as part of the Project. It also noted that dimension stone is a scheduled mineral under the *Mining Act 1992* and any proposal to extract this material would require a mining lease from MEG.
Heritage Council of NSW	• Noted that there were no State Heritage listed items within the Project area.
DPI Fisheries	• Provided recommendations for conditions of consent with regard to mitigating impacts to Key Fish Habitat. • The Department has considered DPI Fisheries advice in developing its recommended conditions of consent (refer to **Appendix F**).
NSW Rural Fire Service (RFS); Heritage NSW, NSW Health, Hunter Water, DPI Agriculture, and DCCEEW	• Did not provide any comments or recommendations.

5.4 Council submissions and advice

45. MidCoast Council and Port Stephens Council provided comments on the Project. Neither council objected to the Project. A summary of the issues raised by each council is presented in **Table 5-3**.

Table 5-3 | Summary of comments provided by MidCoast Council and Port Stephens Council

Agency	Summary of comments
MidCoast Council	• Requested revisions to the biodiversity assessment to: ○ address issues with the assessment of impacts to MNES; ○ ensure further avoidance, minimisation and mitigation of impacts; ○ include further assessment of impacts to Koalas; ○ include further consideration of regional biodiversity corridors; ○ consider a recent Land and Environment Court judgement; ○ address issues with the biodiversity offset strategy; and ○ include further analysis of local and sub-regional wildlife connectivity for the proposed offset areas and their contribution to agency and community aspirations. • Made recommendations for an Offset Area Management Plan, Final Layout and Offset Strategy and rezoning of any offset areas. • Requested that the finalisation of the disturbance footprint and offsets be a deferred commencement condition. • Requested that quarry proposals in the region be considered in the context of a strategic framework. • Noted that the quarry access road intersection would be subject to a detailed design and permitting process through Council.

Agency	Summary of comments
	• Provided recommendations for detailed design of proposed road upgrades. • Commented that The Bucketts Way is currently under review for potentially being handed back to TfNSW management. • Commented that the noise and air quality assessments may not be representative of a worst-case scenario and requested updates to these assessments to address agency comments and other issues. • Requested an air quality monitoring network, including real-time monitoring. • Requested further details regarding proposed proactive and reactive air quality management measures. • Provided advice on recommended conditions of consent in relation to water management, erosion and sediment control, noise, and air quality. • Further details of the Department's consideration of MidCoast Council's advice are presented in Section 6. The Department has also considered MidCoast Council's advice in developing its recommended conditions of consent (refer to **Appendix F**).
Port Stephens Council	• Provided advice on recommended conditions of consent in relation to road haulage contributions. • The Department has considered Port Stephens Council's advice in developing its recommended conditions of consent (refer to **Appendix F**).

5.5 Community and special interest group submissions

46. The frequency with which issues were raised in objecting community and special interest group submissions is depicted in **Figure 5-1**.

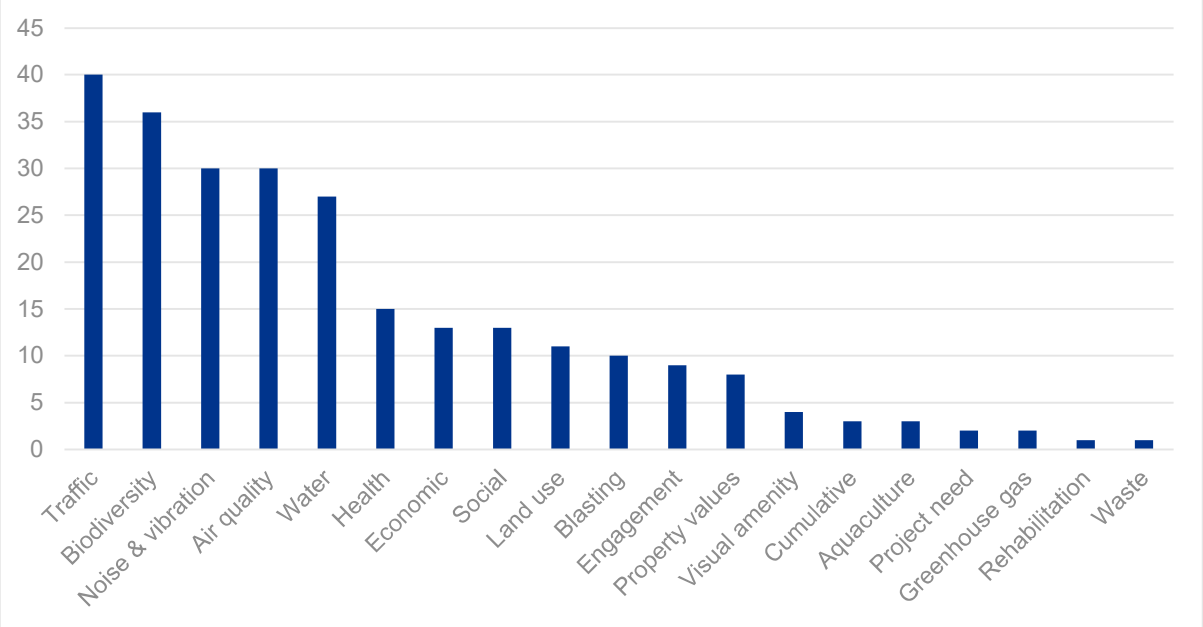


Figure 5-1 | Key issues raised in community and special interest group submissions

47. The dominant issue raised in submissions was concerns about traffic, particularly in relation to road safety impacts from heavy vehicles travelling along The Bucketts Ways. Closely following

this were concerns about biodiversity, noise and vibration, air quality, and water impacts. The potential health impacts of the proposal were also consistently raised as a concern in submissions. Other issues raised included potential economic, social, land use, and blasting impacts. Concerns with Ironstone's community engagement program during preparation of the EIS was also raised as an issue in several submissions.

48. The key issues raised in community and special interest group submissions have been given detailed consideration in the assessment of the Project's impacts, as set out in **Section 6**.

5.6 Submissions Report

49. On 22 December 2021, the Department requested that Ironstone prepare a Submissions Report that responded to the issues raised in agency advice and public submissions received during exhibition of the Project.

50. On 31 December 2022, Ironstone lodged its Submissions Report, which was published on the Department's website and is attached as **Appendix C**.

51. The report provided Ironstone's consideration of issues raised in submissions and agency advice and included several refinements to the Project to address these issues. These changes (as set out in **Section 2**) included:

- an increase in the sediment basin size to limit the frequency of site water discharges;
- removal of Deep Creek Road as a possible access route during construction;
- adjustment of the infrastructure area to minimise works within the Deep Creek Road reserve and avoid impacts to Koala feed trees;
- adoption of modified controls, including exclusion fencing, road speed changes, signage and suitable fauna underpasses, to mitigate potential impacts to Koalas; and
- modification of a proposed offset site to incorporate an area of *Tetratheca Juncea* and a New Holland Mouse population.

52. In response to comments from the Department and other agencies, the Submissions Report also included additional assessment of the Project's biodiversity, groundwater and surface water impacts.

53. Additional advice on the Submissions Report was sought from affected agencies and provided to Ironstone in conjunction with several requests for additional information by the Department. Ironstone's responses to these requests have been carefully considered in the Department's assessment and evaluation of the Project. Where necessary, they have also been provided to relevant agencies for comment. Copies of the Department's information requests, and Ironstone's responses are available in **Appendix C**.

6 Assessment

54. Due to the proposed clearing of remnant vegetation and road haulage of quarry products, and the Project's location adjacent to the sensitive receiving environment of Deep Creek, the

Department considers that the key assessment issues relate to biodiversity, traffic and water resources. Given it is an extractive industry proposal involving drilling, blasting and excavation of extractive material in a relatively undeveloped rural setting, the Department considers that potential noise impacts is also an important assessment issue for the Project. These issues are discussed in **Sections 6.1** to **6.4** below.

55. A summary of the Department's assessment of other issues is provided in **Section 6.5**.

6.1 Biodiversity

Introduction

56. Impacts to biodiversity were raised as an issue in 59% of objecting submissions. Potential biodiversity impacts from the Project include:

- loss of native vegetation and fauna habitats through direct clearing;
- habitat fragmentation or isolation;
- impacts to aquatic ecology through altered hydrology regimes; and
- reduced quality and extent of habitat from indirect impacts during construction and operation.

57. The EIS included a BDAR, including a Koala Plan of Management (KPOM), which were prepared by Kleinfelder Australia Pty Ltd in accordance with the BAM under the BC Act. The BDAR described and assessed potential impacts to biodiversity from the Project, including threatened biodiversity listed under the BC Act and MNES listed under the EPBC Act.

58. Both BCD and MidCoast Council initially raised a range of issues regarding the adequacy of the BDAR, primarily in relation to the adopted survey methodologies, assessments of potential impacts to threatened species and offsetting obligations. BCD also requested further information in relation to consideration of MNES, while MidCoast Council requested additional information in relation to avoidance measures, cumulative impacts and the KPOM.

59. In response, Ironstone engaged Wedgetail Project Consulting (Wedgetail) to prepare an amended BDAR, which was included in its Submissions Report. In addition, the Submissions Report included:

- results of *Supplementary Surveys for Koalas and New Holland Mice*, prepared by Biolink;
- an amended KPOM, prepared by Wedgetail;
- an *Aquatic Ecology Biodiversity Study*, prepared by Marine Pollution Research Pty Ltd (MPR); and
- a Biodiversity Offset Strategy (Section 3.7 of the Submissions Report).

60. Ironstone subsequently provided further responses and additional information, including an updated version of the amended BDAR, to clarify residual issues raised by BCD, including more detailed information to allow BCD to contribute to the bilateral assessment for the Project under the Commonwealth EPBC Act (see **Appendix G**). BCD has confirmed that its comments on biodiversity issues have now been adequately addressed and made recommendations for conditions of consent.

61. Further information was also provided by Ironstone after the Department identified inconsistencies regarding biodiversity impact areas and credit obligations in the updated version of the amended BDAR.

62. The Department and BCD are both satisfied that the final version of the amended BDAR and additional information have been prepared in accordance with relevant guidelines and policies and are adequate for assessing the biodiversity impacts and offsetting requirements for the Project.

Terrestrial biodiversity impacts

63. The Project would directly impact terrestrial biodiversity through the clearing of 31.89 ha of land for the quarry pit, stockpile areas, offices, water pipeline, ancillary infrastructure, quarry access road and intersection upgrade. Of this, 29.15 ha consists of native vegetation within four plant community types (PCTs) including:

- *PCT 1590: Spotted Gum - Broad-leaved Mahogany - Red Ironbark shrubby open forest;*
- *PCT 1619: Smooth-barked Apple - Red Bloodwood - Brown Stringybark - Hairpin Banksia heathy open forest of coastal lowlands;*
- *PCT 1567: Tallowwood - Brush Box - Sydney Blue Gum moist shrubby tall open forest on foothills of the lower North Coast;* and
- *PCT 1556: Tallowwood - Smooth-barked Apple - Blackbutt grass tall open forest of the Central and lower North Coast.*

64. The remainder of the proposed disturbance area contains areas of non-native vegetation, including exotic grasslands, dams and already disturbed land (existing roads/ tracks).

65. The PCTs contain two species-credit threatened flora species (i.e. Black-eyed Susan and Netted Bottlebrush) and habitat for three species-credit threatened fauna species (i.e. Koala, Southern Myotis and Squirrel Glider) that would require offsetting.

66. The extent of impacts from the Project on vegetation communities and the associated biodiversity credits required to offset these impacts in accordance with the BAM are presented in **Table 6-1.**

67. In addition to the threatened fauna species listed in **Table 6-1**, a further 14 species listed as vulnerable under the BC Act and/or the EPBC Act were detected within the proposed disturbance area (including four birds, eight microbats and two mammals). These fauna species are all ecosystem credit species for foraging habitat and would need to be offset via ecosystem credits in accordance with the BAM.

68. No vegetation within the proposed disturbance area was identified as constituting a Threatened Ecological Community under the BC Act or the EPBC Act. No Serious and Irreversible Impacts (SAII) as defined by the BC Act were identified within or due to the Project.

Table 6-1 | Terrestrial biodiversity impacts of the Project

Ecological feature	Listing Status	Impact	Impact Credits Generated
Plant Community Type (PCT)			
PCT 1590: Spotted Gum - Broad-leaved Mahogany - Red Ironbark shrubby open forest	Not listed	18.42 ha	321
PCT 1619: Smooth-barked Apple - Red Bloodwood - Brown Stringybark – Hairpin Banksia heathy open forest of coastal lowlands	Not listed	8.74 ha	166
PCT 1567: Tallowwood - Brush Box - Sydney Blue Gum moist shrubby tall open forest on foothills of the lower North Coast	Not listed	1.83 ha	52
PCT 1556 Tallowwood - Smooth-barked Apple - Blackbutt grass tall open forest of the Central and lower North Coast	Not listed	0.17 ha	5
Total Ecosystem Credits			*544*
Threatened Credit Species			
Tetratheca juncea (Black-eyed Susan)	BC Act (V) EPBC Act (V)	Removal of 586 plants	572
Callistemon linearifolius (Netted Bottlebrush)	BC Act (V)	Removal of 60 plants	92
Phascolarctos cinereus (Koala)	BC Act (E) EPBC Act (E)	29.15 ha of potential habitat	728
Myotis macropus (Southern Myotis)	BC Act (V)	17.70 ha potential habitat	409
Petaurus norfolcensis (Squirrel Glider)	BC Act (V)	29.15 ha potential habitat	728
Total Species Credits			*2,529*

V – Vulnerable, E – Endangered

69. The Project also has the potential to cause indirect or prescribed impacts on land adjacent to the disturbance footprint during construction and operation, including increased levels of dust and noise; erosion of soils; downstream modification of hydrology and aquatic biodiversity; and the transfer of weeds and pathogens.

Koala

70. Numerous public submissions and a submission received from the Koala Koalition Econetwork Port Stephens Inc organisation specifically raised concerns in relation to potential impacts to the local Koala population. Additional surveys undertaken by Biolink confirmed that Koalas inhabit the area, with evidence of Koalas detected in the vicinity of the proposed quarry access road and towards the southern edge of the proposed quarry pit. However, Biolink considered that the Koala activity in the area is at low use/transient movement levels rather than use by individuals with established home range areas. No evidence of Koala breeding was found within the proposed disturbance area.

71. As detailed in **Table 6-1**, approximately 29.15 ha of potential Koala habitat would be cleared as part of the Project. The proposed quarry is located within the Wang Wauk State Forest Area of Regional Koala Significance[1] and at its eastern end directly adjoins a known area of Koala generational persistence (i.e. Core Koala Habitat). Approximately 235 ha of suitable habitat for the Koala would be retained within Ironstone's property boundary, outside the proposed disturbance area. Due to the extent of habitat in the locality and the large occurrence of local Koala records, Wedgetail concluded that it is unlikely that the Koala population within the proposed disturbance area is necessary for maintaining genetic diversity within the species. The area is not near the limit of the species range. As such, Wedgetail considered it unlikely that the Koala population within the disturbance area comprises an important population and concluded that the Project would not result in the long-term decrease in the size of an important population of the species. BCD did not raise any objections to this conclusion.

72. The clearing of potential Koala habitat as part of the Project would require the retirement of 728 Koala species credits. In addition, as discussed in detail below, Ironstone has committed to plant 450 preferred Koala feed trees within and adjacent to the Deep Creek riparian corridor to increase local habitat value, as well as implement controls along the quarry access road such as speed reduction, exclusion fence and fauna underpasses. The Department has recommended that these measures be required to be detailed in an updated KPOM.

Aquatic ecological impacts

73. Numerous public submissions raised concerns regarding the risks from the quarry on the downstream environment, including the Karuah National Park, the Port Stephens Marine Park and the local oyster aquaculture industry. In response, an Aquatic Ecology Biodiversity Study was prepared by MPR which included extensive baseline aquatic ecology surveys of tributary drainages intersected by the Project, and Deep Creek between the proposed quarry and the Karuah River estuary interface.

74. Water discharges from the quarry's water management system have the potential to impact aquatic ecology within Deep Creek which flows through the Karuah National Park and into the Karuah River, approximately 10 km to the east. Karuah River oyster aquaculture leases extend up to and past the Deep Creek confluence. The Karuah River/Port Stephens estuary is one of the largest shellfish aquaculture areas in NSW.

[1] Areas of Regional Koala Significance mapping undertaken as part of the Koala Prioritisation Project NSW under the Saving our Species Icon Koala Project (NSW Government, 2018) to provide focus priorities for the profiling and analysis of the landscape values and threats for koala populations in NSW.

75. MPR assessed the aquatic and riparian habitat conditions within Deep Creek as being good to very good, with the main Deep Creek channel classified as a Type 1 "Highly sensitive key fish habitat" (owing to the substratum consisting of gravel beds, boulders and snags suitable for fish habitat)[2]. The water quality within Deep Creek was found to have low pH, occasional elevated nutrients and occasional elevated heavy metals (copper, lead, iron and zinc), which is considered consistent with the overall Karuah River catchment water quality.

76. Aquatic macroinvertebrate sampling and fish trapping identified 39 macroinvertebrate taxa and 3 native (Striped gudgeons, Empire gudgeons and Common jollytail) and 1 introduced (plague minnow) fish species in the Deep Creek study area. No threatened aquatic species, populations or ecological communities listed under the *Fisheries Management Act 1999* (FM Act) or the EPBC Act were identified.

77. The Project is predicted to require between three and five controlled discharges to tributaries of Deep Creek per year on average to maintain the proposed sediment basins at a capacity to capture runoff from storm events. It is predicted that there could be one to two uncontrolled discharges (during storm events) on average per year. The proposed water management system would be operated to meet specific water quality criteria established in accordance with Australian and New Zealand guidelines for fresh and marine water quality (ANZDG, 2018). It would take into account of both historical and current water qualities in the surrounding watercourses, and current and future downstream water users. It would be managed in accordance with a Water Management Plan (WMP) that would include water quality and aquatic ecology monitoring requirements linked to a Trigger Action Response Plan (TARP). A key objective of the WMP would be to avoid impacts on the receiving environment and downstream water users, including oyster aquaculture areas.

78. MPR concluded that, providing water discharged from the quarry is maintained within the adopted water quality parameters, and that the quarry is constructed and operated consistent with a WMP, there is minimal risk to ecological values downstream or effects on the users within the Karuah River. Further, MRP stated that "*the quarry is unlikely to have an adverse effect on oyster aquaculture development or a priority oyster aquaculture area".* The Department, BCD and DPE Water accept these conclusions.

79. In line with MPR's recommendation, the Department has recommended that the WMP required for the Project be developed with consideration of avoiding impacts on downstream aquaculture, in accordance with the *Healthy Estuaries for Health Oysters – Guidelines* (HEHO 2017).

Avoidance, minimisation and mitigation

80. The Department considers that Ironstone has made adequate efforts to avoid impacts to biodiversity through changes to infrastructure layout and design during the development of the Project. In particular, these include the removal of Deep Creek Road as an access route; generation of electricity on site rather than constructing an electricity line to The Bucketts Way; adjustment to the design of the infrastructure to minimise works in along the site access/haulage

[2] In accordance with the *Policy and Guidelines for Fish Habitat Conservation and Management* (NSW Department of Primary Industries, June 2013).

road route reserve; and modifications to the location of the tarping bay to avoid preferred Koala feed trees. Through refinement of project design, Ironstone indicated that the Project would avoid impacting over 72 ha of native vegetation (and the associated habitat for a broad range of threatened fauna), around 1,225 *Tetratheca juncea* and 200 *Callistemon Linearifolius* individuals, and numerous hollow bearing trees. The Project has also been designed to limit direct impacts to 1st order drainage lines from the quarry pit.

81. Ironstone has also committed to mitigating impacts on biodiversity by:

- delineating clearing boundaries and work areas with fencing and signage to avoid accidental disturbance of vegetation;
- implementing a clearing protocol including pre-clearance surveys and relocation of displaced fauna;
- limiting the removal of hollow bearing trees and replacing removed hollows with nest boxes in retained vegetation;
- enforcing vehicle speed restrictions and limiting haulage operations to 6 am to 6 pm (i.e. essentially daylight hours) to avoid impacts to nocturnal species;
- implementing a plan of management for the control of weeds, pathogens and pests;
- implementing relevant management plans for noise, dust and water quality; and
- training staff and conducting site briefings to communicate environmental features to be protected and measures to be implemented.

82. In addition, to specifically manage impacts on the local Koala population, Ironstone has committed to:

- implementing controls along the quarry access road including mapping of Koala feed trees, speed reduction, exclusion fencing incorporating Koala grids and fauna underpasses; and
- preparing and implementing an updated KPOM.

83. The Department has recommended a condition requiring Ironstone to prepare and implement a Biodiversity Management Plan that incorporates these mitigation measures, as well as other contemporary biodiversity management practices. BCD supports the Department's recommended conditions of consent regarding the mitigation and management of biodiversity impacts.

Biodiversity Offset Strategy

84. To offset the residual biodiversity impacts of the Project, Ironstone proposes to implement a Biodiversity Offset Strategy (BOS), which would involve:

- the retirement of:
  - 544 ecosystem credits for four native plant community types and foraging habitat for threatened fauna species; and
  - 2,528 species credits for two threatened flora and three threatened fauna species;

- planting of a minimum of 450 preferred Koala feed trees within Ironstone's land holding within or adjacent to land along the Deep Creek riparian corridor; and
- erection of nest boxes in retained vegetation at a ratio of one nest box for each tree hollow removed.

85. Ironstone has committed to establishing an onsite biodiversity stewardship site consistent with the *NSW Biodiversity Offsets Scheme* on land adjacent to the quarry, that is expected to include approximately 235 ha within its own land holding and potentially a further 125 ha of an adjacent holding (subject to execution of an options agreement with landowner).

86. Ironstone indicated that the biodiversity offsets obligations would be satisfied in the following order of preference:

- retirement of 'like for like' credits generated within the onsite biodiversity offset areas; and/or
- retirement of required credits through purchase from existing biodiversity stewardship sites (that are considered likely to be local to satisfy the credit requirement); and/or
- payment into the Biodiversity Conservation Trust Fund.

87. Ironstone has proposed a staged approach for the retirement of credit liabilities, including prior to disturbance:

- of biodiversity in the construction footprint;
- within the area covering the first 12 months of quarry extraction;
- within the area covering the next 2 years of quarry extraction; and
- of any further quarry extraction area for the remainder of the obligations.

88. The Department accepts this staged approach and has recommended conditions requiring the retirement of corresponding credit liabilities prior to each stage of vegetation clearing. This accords with MidCoast Council's recommendation that offsets be secured prior to disturbance. BCD is also satisfied with the calculated offset liability and proposed offsetting approach.

Biodiversity Matters of National Environmental Significance (MNES)

89. The Project has been declared a 'controlled action' under the EPBC Act due to potentially significant impacts on several MNES, including potential impact on one EPBC-listed flora and seven fauna species. As noted above, in response to issues raised by BCD and MidCoast Council, additional survey and assessment was conducted for two EPBC-listed fauna species, including the Koala and the New Holland Mouse (*Pseudomys novaehollandiae*) (see **Appendix C**).

90. The amended BDAR included assessments of significance for all the EPBC-listed species potentially impacted and concluded that the Project has the potential to have residual significant adverse impacts on two species, including Black-eyed Susan *(Tetratheca juncea)* (listed as Vulnerable under the EPBC Act and BC Act) and New Holland Mouse (*Pseudomys novaehollandiae*) (listed as Vulnerable under the EPBC Act).

91. In accordance with the Commonwealth-NSW Bilateral Agreement relating to environmental assessment, the Department has assessed the Project's impacts on these species (below). The Department has also undertaken a detailed consideration of the assessments of significance for all other EPBC-listed species potentially impacted, BCD's advice, relevant approved conservation advice, recovery plans and threat abatement plans (TAPs). A summary of this assessment is provided in **Appendix G**. The Department accepts that there is unlikely to be a significant impact on the other EPBC-listed species.

92. The BDAR indicated that the Project would result in the clearing of approximately 32% (586 individuals) of the Black-eyed Susan found onsite, with the remaining 68% (1,225 plants) retained in high quality vegetation. This represents a loss of approximately 1.5% of the local metapopulation (likely over 40,000 individuals) and 0.5% of the State population (over 115,000 individuals). Of the total area of occupancy of the species on site (44.21 ha), an area of approximately 19.01 ha would be removed.

93. The Department's assessment has found that while there is the potential for significant impact on this population, the project is unlikely to disrupt breeding cycles, lead to the fragmentation of an important population or further decrease the habitat in the study area through indirect impacts.

94. The BDAR indicated that surveys identified a population of New Holland Mouse which is likely more than 1,000 individuals across the study area. The quarry pit is estimated to disturb around 14% of this population, with the remainder of the population proposed to be protected within the 235 ha of retained vegetation and/or within the proposed stewardship site. Assessments determined that the Project has potential to have a significant impact on this population, but it is unlikely that the loss of habitat would disrupt the breeding cycle, impact mobility, or decrease the availability or quality of habitat to the extent that the species is likely to decline. To mitigate the impacts of the Project on this species, Ironstone has committed to develop and implement a New Holland Mouse Relocation Plan in consultation with Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEW) prior to disturbance of the identified habitat.

95. As discussed above, Ironstone has committed to implement a BOS which would involve retiring 577 species credits to offset the impact of the Project on the Black-eyed Susan population. The company has committed to establishing a biodiversity stewardship site within existing and adjacent landholdings which contains local Black-eyed Susan populations and habitat for the New Holland Mouse. The credits generated from the biodiversity stewardship site would be retired to meet the biodiversity credit requirements for the Project. Alternatively, species credit requirements would be met through purchase of credits from the Biodiversity Conservation Trust (BCT) or directly from the market.

96. The Department accepts the proposed offset approach, so long as all credits associated with vegetation removal are retired prior to disturbance, in a staged manner as proposed, and 'like-for-like' direct offsets are delivered for impacts to MNES. Accordingly, the Department has recommended conditions requiring implementation of Ironstone's BOS, including a note that offsets for MNES must meet Commonwealth offset requirements.

97. Further, in accordance with BCD's recommendations, the Department has recommended that Ironstone be required to prepare and implement:

- a New Holland Mouse Relocation Plan which provides details of:
    - an optimum habitat model to assist identification of potential sites for relocation of the local population; and
    - timing and methodology for the relocation of the disturbed local population;
- a Black-eyed Susan Plan of Management which provides details of:
    - ongoing monitoring of the plants to be retained beside the quarry pit area to check for their on-going health and persistence under changed hydrological conditions; and
    - the offsetting regime that would be implemented if a change (partial or full direct impacts) in the plants is detected and found to be caused by the development; and
- a long term monitoring and management program of the local New Holland Mouse and Black-eyed Susan populations, including in the Biodiversity Stewardship Site, to:
    - identify key threats to the species;
    - assess the effectiveness of management actions and the need to adapt them, if necessary;
    - detect and, if necessary, remove invasive weeds that could be a threat to the species;
    - detect and control the presence of feral pigs, *Phytophthora cinnamomic* and other feral animals; and
    - manage fire to ensure that the local populations have access to appropriate age classes of vegetation and areas of suitable habitat.

98. The Department has recommended that these measures be included as part of the Biodiversity Management Plan. On this basis, the Department considers the Project's impacts on these species are acceptable.

Summary

99. The Department considers that the Project has been designed to avoid, mitigate and manage biodiversity impacts where practicable. The final disturbance footprint has avoided direct clearing of 72 ha of native vegetation, which has resulted in fewer individuals of Black-eyed Susan, Koala feed trees and hollow bearing logs being impacted. However, the Project would result in a range of residual impacts on biodiversity through the disturbance of 29.15 ha of native vegetation, including threatened flora and fauna species listed under either or both the BC Act and EPBC Act.

100. The Department has carefully considered these impacts on biodiversity values and considers that they would be suitability mitigated, managed and/or offset under the proposed BOS and retirement of ecosystem and species credits in accordance with the BC Act and the EPBC Act. Additionally, the recommended conditions of consent would provide for sound management of retained biodiversity values on the site and assurance to the community and regulatory agencies over the management of residual biodiversity impacts. Overall, the Department considers the impacts of the Project on biodiversity are acceptable, subject to the recommended conditions.

6.2 Traffic

Introduction

101. Traffic and transport was the key issue raised in the majority of public submissions, with 65% of objecting submissions indicating concerns in relation to the safety of cars and school buses; increased wait times; current road condition and its future deterioration as a result of the Project; and/or potential problems associated with the management of haulage contractors.

102. The Department considers that the key issues on traffic and transport include the safety and efficiency of the local road network as a result of road haulage of materials to and from the quarry.

103. The EIS included a Traffic Impact Assessment (TIA) prepared by Intersect Traffic Pty Ltd (Intersect) in accordance with the *Guide to Traffic Generating Developments* (NSW Roads and Traffic Authority, 2002) to assess the potential impacts of the Project on the efficiency and safety of the local and regional road networks. The TIA included a road safety audit prepared by Greg Baird & Associates to identify existing road safety risks and recommend corrective actions.

104. Neither MidCoast Council nor TfNSW raised any issues or objections in relation to the TIA or traffic and transport aspects of the Project. TfNSW considered that the Project would not result in any significant impact on the nearby classified State Road network. MidCoast Council noted that proposed upgrade of The Bucketts Way/quarry access road intersection would need to be designed and constructed in accordance with applicable guidelines.

Existing road network

105. The existing regional road network proposed to be used as the primary haulage route (refer to **Figure 1-1**) includes trucks travelling south for approximately 12.5 km along The Bucketts Way at Limeburners Creek to the Pacific Highway at Twelve Mile Creek. The vast majority of quarry trucks would then continue along the Pacific Highway to markets in the south. A small number of trucks may travel to the north along The Bucketts Way or to the north along the Pacific Highway.

106. The Bucketts Way in the vicinity of the quarry site is a major collector road under the care and maintenance of MidCoast Council (7.2 km northern portion) and Port Stephens Council (5.3km southern portion, connecting to the Pacific Highway). It is a two lane, two-way sealed road with a 90 km/hr speed limit, used to connect surrounding rural towns. The TIA indicated that The Bucketts Way is overall in a good condition with satisfactory road pavement conditions. Improvements to The Bucketts Way have recently been completed or are currently being undertaken, with key upgrades relevant to the Project including construction of three overtaking lanes, road pavement upgrades, road widening and drainage works, and replacement of Limeburners Creek Bridge.

107. The Pacific Highway (A1) is a major highway under the care and maintenance of TfNSW. Near The Bucketts Way intersection it is a four lane, two-way sealed road with a 100 km/hour speed limit, used to distribute traffic between Northern NSW, Newcastle, Central Coast and Sydney. The TIA indicated that this section of the Pacific Highway is overall in excellent condition. TfNSW has recently completed improvements to the Pacific Highway / The Bucketts Way

intersection, including the introduction of a left turn slip lane from the Pacific Highway to The Bucketts Way and the provision of a dedicated left turn lane on The Bucketts Way.

Proposed quarry access road and intersection

108. Access to the quarry is proposed via a dedicated quarry access road to be constructed from The Bucketts Way to the quarry entrance. It would be a bitumen sealed two-lane road along the approximate 1.9 km length. The road would require a crossing of Deep Creek immediately to the east of the quarry entrance, which would involve the installation of four large, piped culverts. It is also proposed that the quarry access road would include a right of way to maintain access for three properties located at the northern end of Deep Creek Road.

109. In addition, a new T-intersection is proposed to be constructed at the junction of the quarry access road and The Bucketts Way. It is proposed that the intersection would operate as a rural give way controlled Channelised right turn (CHR) / Auxiliary left turn (AUL) T-intersection which would provide an acceleration lane for vehicles exiting the quarry in a southbound direction, and a right turn lane for vehicles entering the quarry from a northbound direction (**Figure 6-1**).

110. In response to issues raised in submissions from the owners of properties located along Deep Creek Road, Ironstone committed to avoid using this road for access during either construction or operation of the Project. However, Ironstone has indicated that Forest Glen Road, which is located to the south of the proposed quarry access road and provides legal access to the quarry property (**Figure 1-1**), may be used to float some heavy machinery to the site to assist site establishment works if the quarry access road is not yet operational. Ironstone indicated that the number of vehicles that would use Forest Glen Road during construction would be kept to a minimum.

111. Both MidCoast Council and TfNSW accepted these outcomes. The Department has recommended conditions which reflect the above access arrangements and require that the quarry access road and intersection are designed and constructed in consultation with the relevant road authority, in accordance with the relevant Austroad standards.

Traffic predictions and impacts

112. The TIA indicated that during operation, the Project would result in maximum traffic movements to and from the site of:

- 252 vehicle trips per day (vtpd), including 220[3] haulage trucks and 32 light vehicles (employees, service and visitor vehicles); and
- 62 vehicle trips per hour (vtph), including 50 haulage trucks and 12 light vehicles.

113. The TIA noted that these traffic volumes would not occur every day and every hour but would rather be maximum short-term peaks associated with concurrent major orders. Average haulage truck movements are predicted to be approximately half the maximum number of movements (i.e. 110 vtpd on average). Conversely, if road haulage was undertaken at the maximum daily rate (approximately 120-125 laden truck movements per day assuming each

[3] Whilst the TIA assumed a daily maximum of 220 trucks per day, Ironstone subsequently clarified that the Project may generate up to 250 truck movements per day, which would not impact road network performance as the peak hourly trucking would remain consistent with the TIA (i.e. not exceeding 50 truck movements per hour).

truck would carry approximately 32 tonnes of product), the annual extraction limit of 500,000 tpa would be reached in less than six months.

114. When compared to existing hourly traffic volumes on the road network, the additional maximum vehicle movements associated with the Project represent an increase of around 4-5% on the Pacific Highway and 19% on The Bucketts Way.

115. The TIA indicated that during construction of the Project, peak hour traffic movements to and from the site are predicted to be less than 10 vtph and daily traffic movements are unlikely to exceed 30 vtpd during the 12-week construction period.

Road network and intersection capacity

116. Numerous community submissions raised concerns regarding the capacity of the road network to cater for additional traffic volumes, and increased wait times on the road network as a result of the Project.

117. The TIA modelled the potential impact of the Project on the capacity of the road network and on the performance of the Pacific Highway / The Bucketts Way intersection. **Table 6-2** presents the current (2020) and modelled future (2030 and 2052) traffic volumes based on recent traffic counts, assumed background and cumulative traffic growth (2%), and the additional traffic generated by the Project. The TIA indicated that the mid-block road capacity (second column) was based on desirable road capacity for rural roads (i.e. up to a Level of Service (LoS) C) in accordance *Guide to Traffic Generating Developments* (RTA, 2002).

Table 6-2 | Road capacity assessment (peak vtph)

Road	Road capacity	2020		2030		2052	
		AM	PM	AM	PM	AM	PM
The Pacific Highway (East of The Bucketts Way)	**2820**	1266	1505	1541	1832	2375	2826
The Pacific Highway (West of The Bucketts Way)	**2820**	1498	1838	1816	2230	2781	3421
The Bucketts Way	**970**	324	407	382	483	558	714

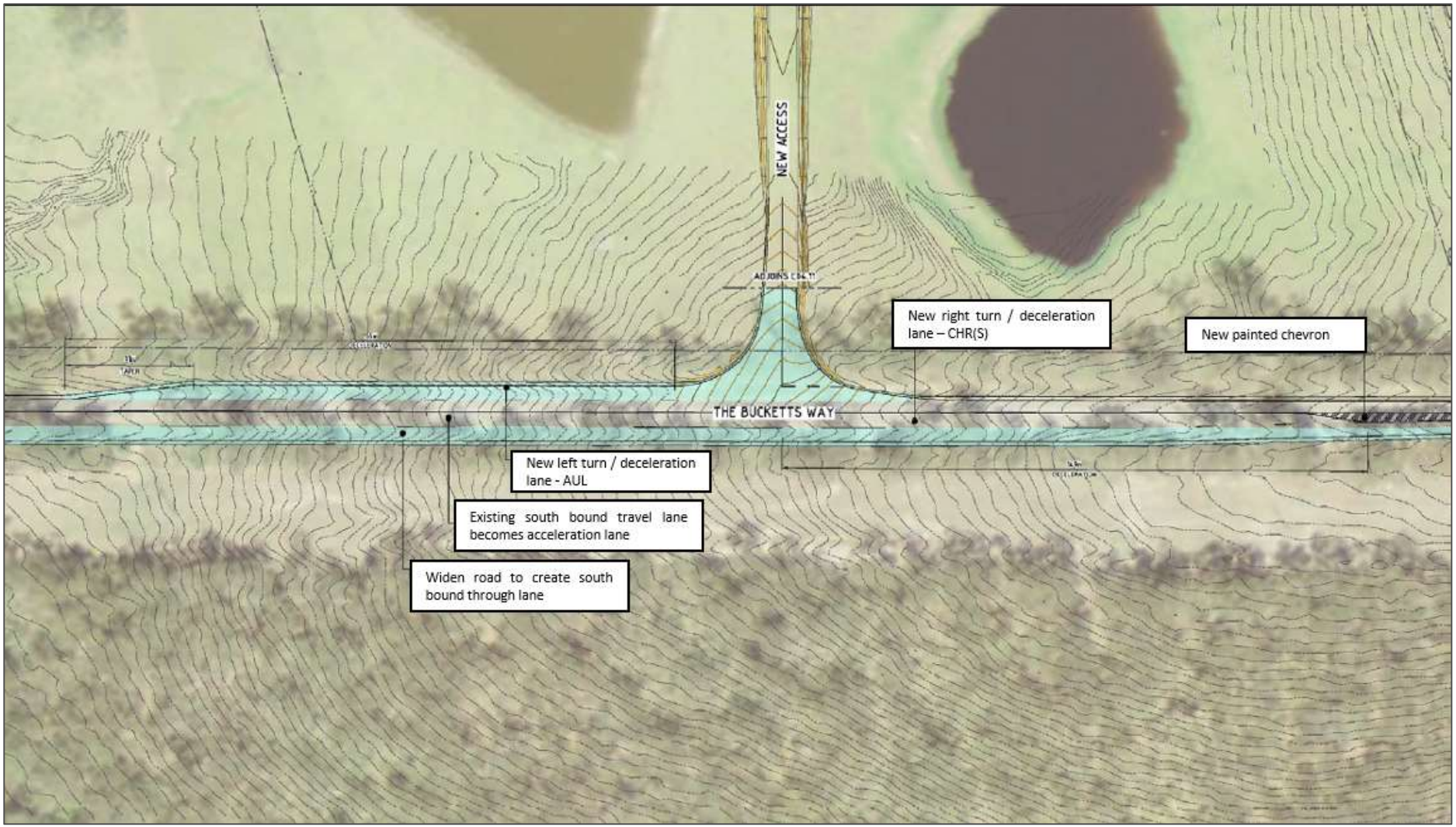


Figure 6-1 | Proposed quarry access road intersection on The Bucketts Way

118. The road capacity assessment indicates that the existing road network is currently operating at a good level of efficiency, with little or no delays, and has spare capacity to cater for future traffic growth, including additional traffic generated by the Project. The TIA indicates that a satisfactory level of service (up to LoS C) would still be experienced by motorists on the road network during the construction and over the life of the Project.

119. The TIA acknowledged that the mid-block road capacity may be reached in the PM periods along the Pacific Highway towards the end of quarry operations (i.e. 2052 when traffic levels are predicted to be between 6 and 600 vtph over the desirable road capacity), therefore potentially requiring the provision of additional travel lanes. However, the TIA indicates that this would occur with or without the Project.

120. The impact of the Project on the Pacific Highway / The Bucketts Way intersection was assessed using the SIDRA Model. Modelling indicated that the intersection would continue to operate satisfactorily during peak periods associated with the Project through to at least 2030, with the average delay, levels of service and queue lengths for all movements remaining satisfactory (i.e. up to LoS C). It is noted that during the AM peaks there is no modelled deterioration in overall LoS for the intersection while in the PM peak the LoS drops from B to C, with average intersection delays predicted to increase by up to 18 seconds and queue lengths predicted to increase by less than 1 vehicle. The TIA confirmed that this LoS would remain satisfactory in accordance with the TfNSW criteria.

121. However, the modelling (which included the recent intersection upgrades completed by TfNSW) indicates that later in the quarry life (i.e. sometime after 2030 and before 2052) the performance of the intersection would fall to LoS D-F, which is worse than the LoS target and indicates that the intersection operation may not operate satisfactorily in accordance with applicable TfNSW criteria. However, again the TIA indicates that this would occur with or without the additional traffic generated by the Project.

122. The TIA confirmed that the proposed new T-intersection design for the junction of the quarry access road and The Bucketts Ways is sufficient to ensure uninterrupted flow conditions along the section of The Bucketts Way in the vicinity of the quarry.

123. The Department accepts these outcomes and considers that the increased number of heavy vehicles associated with the Project is unlikely to result in an unacceptable level of impact to road network capacity or intersection performance on the local or regional road network. The Department considers that it would be the responsibility of the applicable road authority to upgrade roads and intersections to ensure an adequate level of service for future traffic. As discussed below, Ironstone would be required to pay MidCoast Council and Port Stephens Council road maintenance contributions for ongoing maintenance of local roads along the haulage route.

Road safety

124. Numerous community submissions raised road safety risks associated with additional heavy vehicles as a concern, particularly for motorists and school buses travelling along The Bucketts Way. Safety concerns were also raised about heavy vehicles and buses travelling across the narrow Limeburners Creek Bridge.

125. The TIA included a road safety audit which identified existing road safety risks and recommended corrective actions. It is noted that the audit was prepared on the basis of the road network condition and layout as at the date it was undertaken (i.e. April 2021) and did not include some improvements undertaken after the audit date. In response to a request by the Department, Ironstone provided an addendum to the road safety audit to reflect conditions as of June 2023.

126. The road safety audit (including the June 2023 update) raised several issues in relation to The Bucketts Way / Pacific Highway intersection, which were considered to present "medium" safety risks. These include an inadequate length of the right turn deceleration lane from the Pacific Highway onto The Bucketts Way and a lack of acceleration lane for left turning vehicles out of The Bucketts Way onto the Pacific Highway. Notwithstanding these risks TfNSW has not raised any issues or objections in relation to the ongoing safe operation of this intersection. Further, given the quarry's key markets would be to the south, most of the quarry-related traffic would turn left off the Pacific Highway onto The Bucketts Way when travelling to the quarry and right out of The Bucketts Way onto the Pacific Highway when returning from the quarry. This would limit the frequency with which quarry-related traffic, particularly heavy vehicles, would be utilising the elements of the intersection where safety risks were identified.

127. Similarly, MidCoast Council has confirmed that signage issues raised in the road safety audit in relation to Limeburners Creek Bridge would be resolved as part of the full bridge replacement, which is likely to be completed by the end of December 2023. Based on this timing, the Department is satisfied that the bridge replacement would be completed prior to the commencement of quarry haulage activities (i.e. mid-2024 at the earliest) and that this would ensure that additional vehicles associated with the Project would not present unacceptable safety risks on the bridge.

128. Ironstone has committed to address other issues raised in the road safety audit regarding the Bucketts Way/quarry access road intersection as part of detailed design of the intersection. This includes issues in relation to intersection sight distances and delineation measures.

129. No issues were raised in the road safety audit regarding safety issues for school buses operating along The Bucketts Way. Ironstone acknowledged that The Bucketts Way is a transport route for buses between Medowie and Raymond Terrace and Limeburners Creek and Booral, however there are no dedicated public bus stops located in the vicinity of the proposed quarry, with the closest stop being off The Bucketts Way along Old Coach Road at Limeburners Creek, approximately 6.5 km to the south of the proposed quarry access road intersection. The TIA indicated that The Bucketts Way is a main arterial road that has adequate capacity to cater for the safe operation of all vehicles, including the combined operation of school buses and proposed quarry traffic.

130. The Department has recommended that measures to minimise traffic safety issues and disruption to local road users, including minimising potential for conflict with school bus operations, be included as part of the Traffic Management Plan (TMP) for the Project. On this basis, the Department considers that the additional traffic associated with the Project would not present unacceptable safety risks to existing road users. This conclusion is also consistent with the advice provided by the relevant roads authorities (TfNSW, MidCoast Council and Port Stephens Council), who did not raise concerns regarding any unacceptable road safety risks associated with the Project.

Contributions to Council

131. Ironstone has committed to pay annual Section 7.11 (formally Section 94) contributions to both MidCoast and Port Stephens Councils in accordance with each council's relevant contributions plan for ongoing maintenance of The Bucketts Way between the quarry entrance and the Pacific Highway. Ironstone has indicated that contributions would total approximately $11.1 million dollars over the quarry life. Neither council has objected to Ironstone's proposed road maintenance contributions.

Traffic mitigation and management

132. Ironstone's proposed measures to mitigate and manage traffic and transport impacts include:

- Road and intersection works, including constructing a:
  - quarry access road from The Bucketts Way to allow heavy vehicle access directly to the quarry and provide legal access for the three properties at the northern end of Deep Creek Road; and
  - T-intersection at the junction of the quarry access road and The Bucketts Way.
- Traffic management and drivers' conduct, including:
  - preparing and implementing a TMP prior to the commencement of operations, in consultation with MidCoast Council, Port Stephens Council and TfNSW;
  - installing speed limit signage and enforcing a 40 km/hr speed limit along all internal quarry roads and a 20 km/h limit at the Deep Creek Crossing section of the quarry access road;
  - preparing a Drivers Code of Conduct which stipulates the haulage route, speed limits, quiet driving practices (including compression braking restrictions), driver behaviour expectations and safety requirements; and
  - weighing of haul trucks entering and leaving the quarry to record the quarry product volumes existing the site.

133. In addition, the Department has recommended conditions that:

- limit total truck movements at the site (i.e. arrivals and dispatches) to a maximum of 220 movements per day and no more than 50 movements per hour from 6:00 am to 6:00 pm Monday to Friday and 6:00 am to 1:00 pm on Saturdays;
- prohibit the use of Deep Creek Road during construction and operation of the quarry, except during an emergency;
- restrict the use of Forest Glen Road to minimal use during construction only (i.e. no use during operations), except during an emergency; and
- require Ironstone to pay annual contributions to each council for ongoing maintenance of The Bucketts Way over the life of the quarry.

Summary

134. The Department acknowledges that traffic and transport impacts from road haulage activities are key community concerns for the Project.

135. The TIA indicates that the existing road network has spare capacity to cater for future traffic growth, including additional traffic generated by the Project. It is predicted that a satisfactory level of service (up to LoS C) would still be experienced by motorists on the road network during the construction and over the life of operation of the quarry.

136. While some deterioration in the performance of the Pacific Highway / The Bucketts Way intersection is predicted, this would result mostly from broader regional traffic growth and would be expected to occur with or without the Project.

137. Similarly, while some road safety risks were identified along the primary road haulage route, most of these would be resolved prior to the commencement of quarry haulage activities. Further, negligible concerns regarding road safety have been raised by the relevant road authorities.

138. Ironstone has proposed a quarry access road and intersection with The Bucketts Way and several mitigation and management measures to minimise the Project's traffic and transport impacts. The Department has recommended conditions requiring Ironstone to prepare a TMP prior to the commencement of construction under the recommended consent. The recommended conditions also require strict monitoring of road haulage rates. Subject to these conditions, the Department considers that the traffic and transport impacts of the Project are acceptable.

6.3 Water resources

Introduction

139. Impacts to water resources were raised as an issue in 24% of objecting submissions. The Department considers that the key issues related to water resources are:

- *Surface water:* discharge of water from sediment dams to downstream waters and potential impacts on the water quality and hydrology of Deep Creek; and
- *Groundwater*: groundwater inflows into the quarry pit, water licencing and groundwater drawdown potentially impacting groundwater dependent ecosystems (GDEs) and other water users.

Surface water

140. The EIS included a Surface Water Impact Assessment (SWIA) prepared by Engeny Water Management (Engeny). Both EPA and DPE Water raised issues regarding the proposed water management system described in the SWIA, and the potential impact of offsite water discharges on the downstream receiving environment. The proposed water management system was subsequently revised to incorporate an increase in the size of the onsite sediment dams to reduce the magnitude and frequency of discharges. The updated SWIA and site water balance were submitted as part of the Submissions Report.

141. Deep Creek Quarry is located within the catchment of Deep Creek, which is a tributary of the Karuah River. In the vicinity of the quarry, Deep Creek is a 3rd and 4th order watercourse with a catchment of about 1,500 ha. The creek is ephemeral, typically only flowing after significant rainfall events. It extends from its headwaters located about 2 km west of the Project site to its confluence with the Karuah River about 20 km to the east. Surface water use in this area is regulated under the *Water Sharing Plan for the Lower North Coast Unregulated and Alluvial Water Sources 2016*. The dominant water users in the surrounding area are associated with rural agricultural activities, however there are no licensed water users on Deep Creek downstream of the Project site.

142. Surface water quality monitoring from four sites in the vicinity of the Project site has been undertaken since 2014. Water quality monitoring indicates occasional high background concentrations of fluoride, phosphorous and nitrogen (when compared to guideline values[4]), with levels of metals substantially above guideline values. The monitoring results indicate that the pH and electrical conductivity (EC) of water within Deep Creek are at the lower end of the default trigger range for lowland rivers.

Proposed water management system

143. The proposed site water management system (refer to **Figure 6-2**) comprises:

- *Dirty water system:* including two sediment dams; an in-pit water storage dam; and catch drains to intercept sediment-laden runoff from disturbed areas and direct it to one of the two sediment dams; and
- *Clean water system:* including diversion drains to divert runoff from undisturbed up-slope catchment areas around the site; and culverts and bridges to provide access over existing watercourses.

144. Captured water from within the sediment basins is proposed to be discharged via two Licenced Discharge Points (LDPs) and into tributaries of Deep Creek. These LDPs would be regulated by the EPA under an Environment Protection Licence (EPL).

145. Wastewater (sewage) is proposed to be managed using a contained pump-out (or similar) system.

146. Ironstone indicated that both the dirty and clean water management systems may need to be periodically modified in line with the progression of quarrying activities. The company has committed to constructing and maintaining all water management infrastructure in accordance with the criteria set out in *Managing Urban Stormwater: Soils and Construction – Volume 2E Mines and Quarries* (the Blue Book Volume 2E) (DECC 2008).

Site water balance

147. A site water balance model was developed for the Project to estimate the water requirements and discharges; assess the adequacy of the proposed surface water management system; and

[4] As provided in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018).

determine the surface water licencing requirements. The modelled site water balance for the four stages of the Project under average climatic conditions is summarised in **Table 6-3**.

Table 6-3 | Site water balance summary (average ML/year)

Water Element	Stage 1 (Years 1-5)	Stage 2 (Years 5-11)	Stage 3 (Years 11-21)	Stage 4 (Years 21-30)
Inputs				
Rainfall-runoff	72	102	147	144
Groundwater inflows (quarry pit)	10	19	20	18
Water imports	5	2	2	2
Total inputs	*87*	*121*	*169*	*164*
Outputs				
Evaporation (dams surface area)	14	17	18	17
Dust suppression	23	26	26	25
Discharges (controlled releases)	35	70	115	111
Overflows (uncontrolled releases)	9	8	9	9
Total outputs	*81*	*121*	*168*	*162*
Deficit (-) / Surplus (+)	**+6**	**0**	**+1**	**+2**

148. The SWIA predicted that as quarrying progresses, surface water inflows into the quarry pit would increase. These water surpluses would be offset by either increasing water usage on site or treated and discharged off site. Under average climatic conditions, maximum controlled discharges from the sedimentation basins were modelled to be around 115 ML/year, requiring approximately 3-5 discharge events per year. The modelled controlled releases from the sediment dams, following rainfall events would be subject to EPL conditions specifying water quality limits.

149. The SWIA predicted that uncontrolled overflow from the sediment dams would occur during rainfall events in excess of their design capacity (i.e. a combined capacity of 10ML to manage a 5-day, 95th percentile rain event). These overflows were modelled to occur on average of 1-2 times per year. The frequency and magnitude of overflows was not predicted to increase over the life of the Project (i.e. remain at approximately 8-9 ML/year). The predicted frequency of uncontrolled overflows from the sediment dams is consistent with the expected frequency indicated in the Blue Book Volume 2E for sediment basins sized for a 95th percentile 5-day rainfall event (i.e. 1 to 2 spills per year). This is the recommended design criteria set out in the Blue Book Volume 2E for mitigating impacts on sensitive receiving environments.

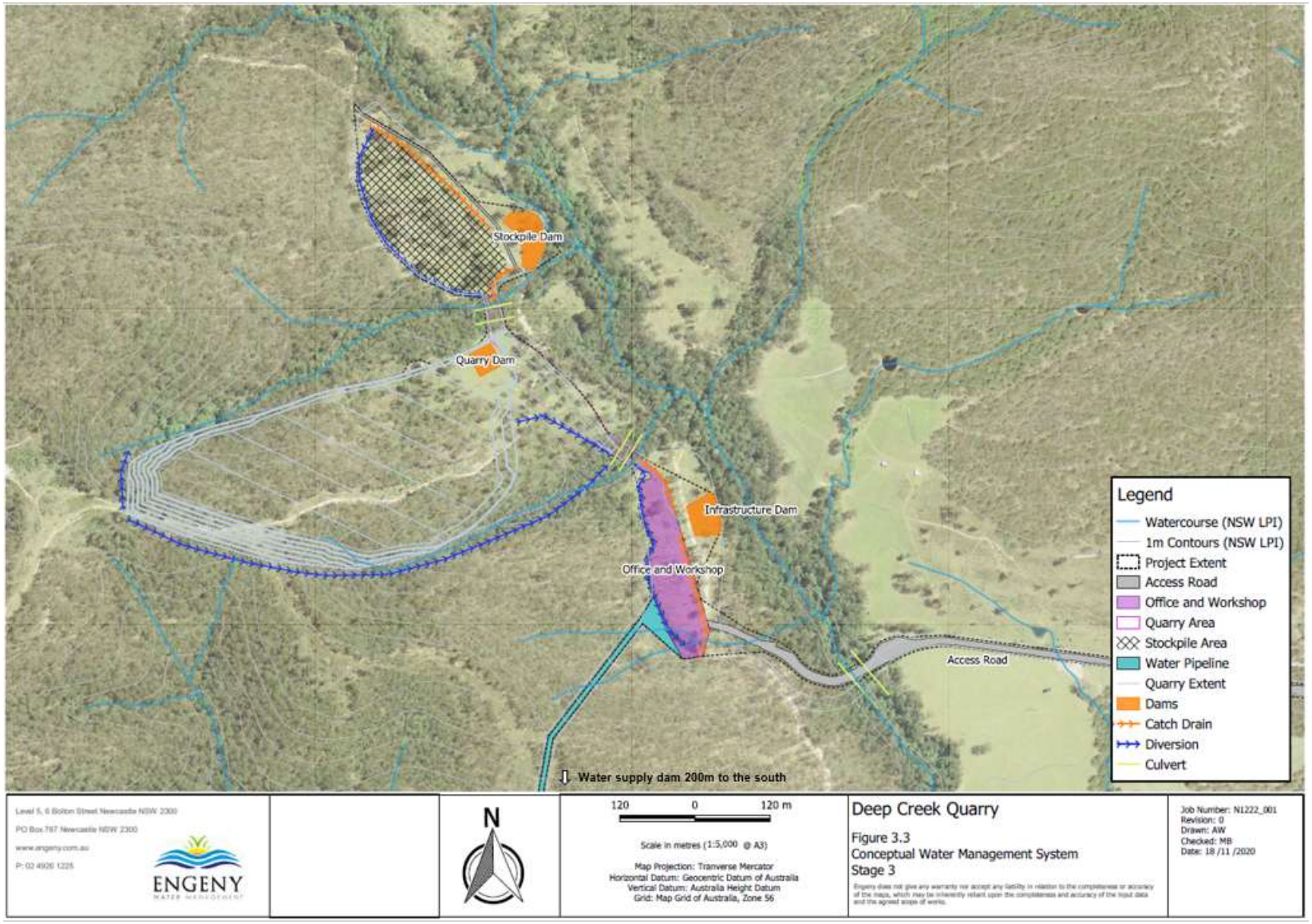


Figure 6-2 | Proposed water management system

150. The Department and EPA are satisfied that the proposed dirty water management system, including the sizing of dams, is consistent with the requirements set out in the Blue Book Volume 2E, and is therefore acceptable. EPA has confirmed that it would consider an application for an EPL based on the amended SWIA.

151. Modelling indicated that minor volumes of water (i.e. 1-11 ML/year) would be required to be imported, particularly during the early stages of the Project when groundwater inflows into the quarry pit would be negligible. The SWIA indicated that this water would be sourced from an external water supply dam (i.e. an existing farm dam) to the south of the quarry pit (refer to **Figure 6-2**) or imported from the nearest licenced reticulated supply.

152. The Department accepts that predicted water deficits are relatively minor and that there are measures available to manage any water supply shortfalls (i.e. chemical dust suppressants, scaling of operations, and/or third-party purchases). An inability to source additional water represents an operational risk to Ironstone. The Department has recommended a condition requiring the company to ensure that it has sufficient water for all stages of the Project, and if necessary, reducing operational activities to match available water supply.

153. DPE Water advised that the site water balance should be continually refined based on accurate metering of captured and pumped water within the Project's water management system, to inform surface and groundwater model updates and water licensing requirements. The Department agrees and has recommended that an updated Site Water Balance, incorporating DPE Water's recommendations, is prepared as part of the WMP.

Watercourse hydrology and stability

154. The Project has the potential to influence watercourse hydrology and stability in Deep Creek via:

- loss of local catchment areas to the quarry pit and operational areas;
- discharge flows from sediment dams;
- concentration of flows in clean water diversions; and
- flow interactions with proposed quarry access road culverts.

155. The SWIA predicted that the Project would have minor impacts on the flow volumes in Deep Creek due to the reduced catchment associated with the quarry operations. The greatest changes to the Deep Creek catchment are predicted during Stage 3 operations, when the maximum operational area of approximately 22 ha would report to the dirty water management system. This represents only about 1.5% of the overall Deep Creek catchment area (i.e. 1,500 ha), and is predicted to have negligible reduction in flow volumes in Deep Creek. The SWIA confirmed that, once the site is rehabilitated, the final quarry pit would be free draining (i.e. no pit lake/ water storage, aside from a small sump, refer to **Figure 6-3**), thereby returning this catchment area to Deep Creek.

156. Controlled and uncontrolled discharges from the proposed sediment basins would alter the natural flow regimes within Deep Creek and have the potential to result in adverse erosion and scouring impacts on downstream stability. Ironstone proposes to manage watercourse stability by designing sediment dams with stable spillways; implementing scour protection measures

along the creek line; and managing sediment basin pumping procedures to maximise capacity during wet weather events and minimise the volume of discharges.

157. The Department accepts that these measures are standard control measures required during construction and operation of quarry developments and has recommended they be detailed as part of a WMP for the Project.

158. The Department also notes that, following consideration of additional information provided by Ironstone, neither DPE Water nor any other agency had any residual concerns regarding stream flow impacts from the Project. On the basis of the assessment findings and agency conclusions, the Department considers that modified stream flow due to the Project is unlikely to result in a material impact to the flow regime of Deep Creek and these impacts are therefore acceptable.

Surface water quality

159. The Project has the potential to impact downstream receiving waters through increased sediment loads, salinity and other pollutants. Ironstone proposes to manage surface water by capturing dirty water runoff in sediment dams; treating the captured water to meet relevant water quality criteria; reusing captured water for quarry operations; and discharging water surpluses via two proposed LDPs in accordance with an EPL.

160. Several public submissions on the Project raised concerns about the adverse impacts of water discharges from the quarry on the downstream environment and water users, including risks to Karuah National Park, the Port Stephens Marine Park, and the oyster farmers and recreational users of the Karuah River.

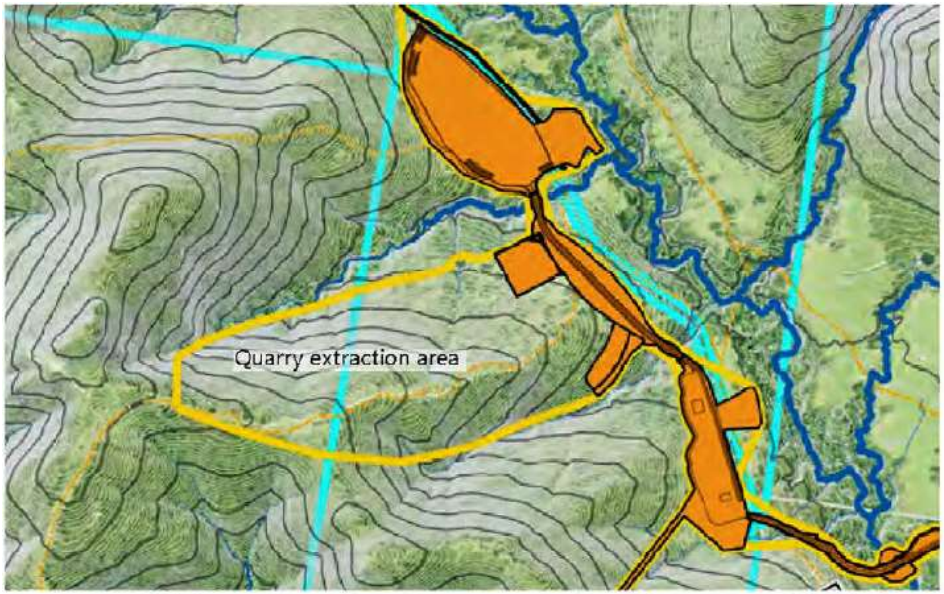
161. As noted above, EPA and DPE Water questioned the design of the original water management system, and the potential impact of offsite water discharges on the downstream receiving environment. DPE Water also recommended that the vegetated buffer distance between the proposed sediment basins and the high bank of Deep Creek is at least 40 m, in accordance with the *Guidelines for Controlled Activities on Waterfront Land* (NRAR, 2018).

162. In response to issues raised in public submissions and agency advice, the proposed sediment dams were increased by 50% in capacity and redesigned with two stages of capture; a primary pit closer to the source to capture course sediments and secondary dam below these for the remainder. The increase in sediment dam sizes halved the modelled number of discharges events per year to 3-7 times, with approximately 115 ML discharged per annum. The SWIA confirmed that the discharges would occur under controlled conditions at scour protected locations on tributaries of Deep Creek, consistent with EPL water quality criteria.

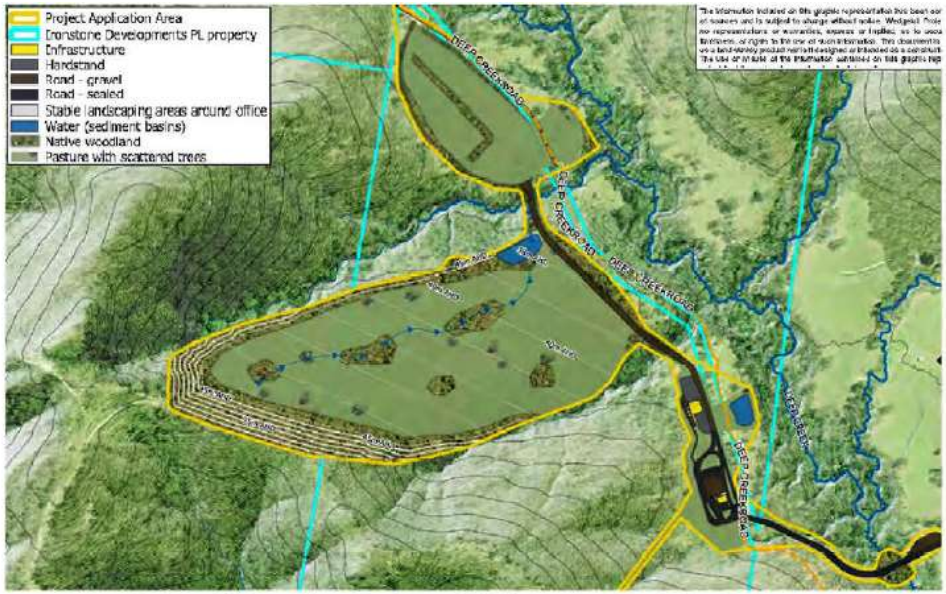
163. Ironstone also committed to undertaking additional monitoring of physico-chemical parameters and metals in site water and at upstream and downstream locations, in consultation with the EPA, to inform ongoing monitoring and management requirements.

164. The SWIA concluded that, with the implementation of these measures, the operation of the quarry is unlikely to adversely impact the downstream receiving environment, including Karuah National Park or the Port Stephens Marine Park.

165. EPA and DPE Water accepted the proposed approach to water quality management and monitoring.

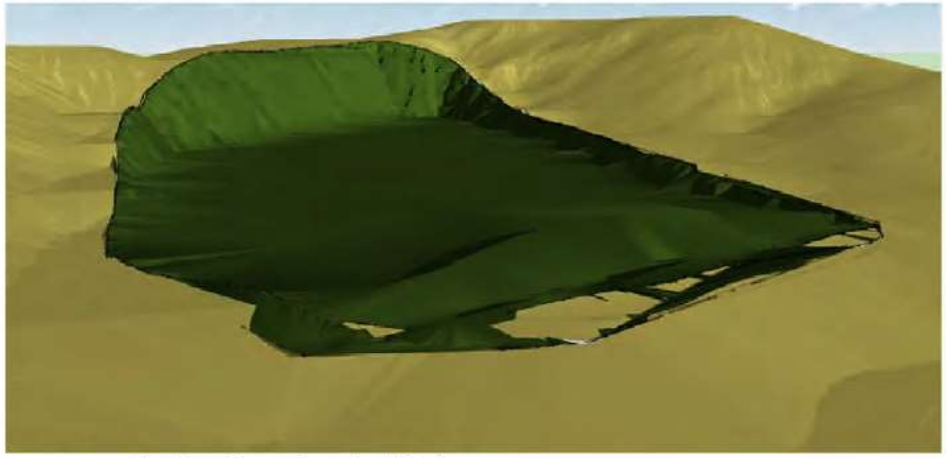


Initial phase of the project prior to any quarrying activity - 3d modelling below



Final condition of the site after rehabilitation - 3d modelling below

Existing landform void of vegetation - extraction area in green



Final landform after rehabilitation

Figure 6-3 | Conceptual final landform

166. A review of waterfront land was undertaken as part of the Submissions Report. With the increased size of sediment basins proposed to reduce the occurrence of discharge from sediment basins, it was determined that it was not possible to maintain both the basins outside the 40m riparian buffer due to area constraints. The proposed office and workshop area sediment dam is located outside the 40m riparian area, however the stockpile area sediment dam would intersect the 40m riparian buffer with a disturbance area of approximately 1,600 m^2 within the outer riparian zone (20-40 m from the Deep Creek bank) (refer to **Figure 6-2**). It was confirmed that the intersected area would be within a largely cleared paddock and remain above the bank of Deep Creek. Ironstone has also committed to providing compensatory planting to offset the works required within the riparian corridor, providing a like for like extension of the riparian corridor of at least 1600 m^2.

167. Upon review of the revised water management system, DPE Water did not raise any further objections regarding Ironstone's proposed approach to managing impacts on waterfront land and made recommendations for conditions of consent.

168. The Department recognises that Ironstone has designed the quarry to avoid and minimise impacts to downstream water quality, including by increasing the size of sediment basins; positioning the site to reduce direct impacts on drainage lines (with the pit located between two first order drainage lines); and ensuring a buffer from Deep Creek. However, the Department considers that there is some potential for impacts to water quality downstream through sedimentation and changes in water quality, particularly during construction. The Department considers that the potential and extent of these impacts would be reduced to acceptable levels with the implementation of a comprehensive WMP for construction and operational stages of the Project and has recommended that this be prepared in consultation with DPE Water prior to the commencement of works.

Surface water licencing

169. Under the WM Act, Ironstone is required to hold a surface water access licence (WAL) for the interception of surface water flows and any imported water not reused for environmental purposes (e.g. dust control). Both the site and the source of the imported water are located within the *Water Sharing Plan (WSP) for the Lower North Coast Unregulated and Alluvial Water Sources 2016*.

170. Under Section 53 of the WM Act, Ironstone is entitled to capture, store and use up to 10% of the average regional runoff for their property. Ironstone's landholding (including land under option for purchase should the Project be approved) that is within or adjacent to the Project site is about 449 ha. The company determined that the maximum harvestable right for the site based on this land area is about 49.4 ML.

171. The water balance modelling indicates that surface water take (rainfall and runoff capture, excluding controlled and uncontrolled discharges) is up to about 43.4 ML per year (for the median conditions). This is within the maximum harvestable right for the Project. WALs would be required to cover any water take in excess of the residual maximum harvestable right (i.e. 49.4 ML).

172. Ironstone has committed to obtaining the required licensed surface water entitlements for the Project. The Department and DPE Water are satisfied with Ironstone's surface water licensing requirement predictions for the Project. The Department has also recommended a condition

requiring Ironstone to ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of the development, within the limits of consent, to match its available water supply.

Flooding

173. Detailed flood modelling was undertaken as part of the SWIA to estimate the existing flood conditions within Deep Creek and predict potential changes due to the Project.

174. The Project has the potential to influence flooding in Deep Creek as a result of the concentration of flows within the culvert associated with the quarry access road. The modelling indicates that:

- for more frequent floods (i.e. the 50% and 10% Annual Exceedance Probability (AEP) events), the proposed crossing is predicted to locally increase flow velocities (by 0.1-0.2 m/s) and depths (by 0.2-1.0 m) due to the concentration of flows through the proposed culvert;
- for larger floods (i.e. the 1% AEP and Probable Maximum Flood) the proposed crossing is predicted to reduce flow velocities (by 0.2-0.7 m/s) but continue to increase flood depths (by 0.5-0.8 m);
- the quarry, stockpile area, and infrastructure area would all be located outside of the modelled 1% AEP flood extent; and
- flood extents are generally confined to the main channel of Deep Creek, with only a small out of bank floodplain about 100 m wide.

175. DPE Water questioned the design of the proposed culvert crossing of Deep Creek and recommended that box culverts or a bridge be installed due to the size of the watercourse and the need to maintain natural hydrologic and hydraulic functions. In response, Ironstone indicated that four large pipe culverts with a concrete liner are proposed to provide similar functionality to box culverts or a bridge.

176. DPE Water accepted this outcome, noting that the issue can be addressed at detailed design stage. DPE Water recommended that all watercourse crossings be designed and constructed in accordance with the *Guideline for Watercourse Crossings on Waterfront Land*. The Department has recommended a condition reflecting this requirement.

177. The Department accepts that the predicted increases in flow velocities during more frequent flood events (50% and 10% AEP / 1 in 2 years and 1 in 10 years on average) and depths within Deep Creek are localised and would not impact on the extent of flood prone land in the wider Deep Creek catchment. The Department has recommended that the WMP incorporate appropriate scour protection measures along Deep Creek and in the vicinity of the new culverts to minimise any localised flooding impacts.

Groundwater

178. The EIS included a Groundwater Assessment prepared by Hydrominex Geoscience Pty Ltd (HG), which included a conceptual groundwater flow model to predict impacts to groundwater behaviour as a result of the Project. In response to a request from DPE Water, the GA was subsequently revised to include a more complex numerical model which aligned with a Class 1 model in accordance with the *Australian Groundwater Modelling Guidelines* (AGMG) (Barnett

et al, 2012) and the requirements of the *NSW Aquifer Interference Policy* (AIP) (NOW, 2012). The revised GA was submitted as part of the Submissions Report.

179. At the request of DPE Water, the revised Groundwater Assessment was independently peer reviewed by Will Minchin of Watershed HydroGeo (Watershed). It was then updated to address several recommendations of that review (the final Groundwater Assessment, August 2023). Following a review of the final Groundwater Assessment, Watershed concluded that the revised modelling and analysis of groundwater effects was appropriate and the level of uncertainty in the groundwater model was adequate for assessing the groundwater impacts of the Project. Watershed and DPE Water also recommended that, if the Project were to be approved, the groundwater model should be updated five years after the commencement of quarrying operations to calibrate the model using additional groundwater monitoring data. The Department supports this recommendation.

Groundwater environment

180. Groundwater resources in the vicinity of the Project are regulated under the WSP for the *North Coast Fractured and Porous Rock Groundwater Sources (New England Fold Belt Coast Groundwater Source*). This groundwater source is classified as 'less productive' under the AIP. Groundwater at the quarry has an EC that is up to 10 times that of the water in Deep Creek. It is overall considered 'moderate' quality water, acceptable for agricultural use but not as potable water. There are no registered groundwater bores in the immediate vicinity of the quarry, with the nearest bore (a stock bore) located approximately 2 km east southeast and downgradient of the site.

181. The conceptual groundwater model for the quarry is presented in **Figure 6-4Figure 6-5** and **Figure 6-5**. The proposed quarry site is dominated by a west to east sloping ridge, with the high point to the west at 116 mAHD and the low point to the east at 37 mAHD. Deep Creek is located further to the east at an elevation of between 22 and 33 mAHD. Within the proposed extraction area, a shallow soil profile overlies a layer of weathered sandstone, siltstone and claystone, which occurs at a thickness of between 0 to 6.8m. These units are generally above the water table. Below this depth, the sedimentary rock known as rhyolite is present. Groundwater only occurs in discontinuous fractures within the rhyolite unit. A more fractured and porous shale unit underlies the base of the rhyolite. The proposed base of the quarry is designed to remain above this unit.

182. The fractures in the overlying sediments and rhyolite would allow the direct recharge from rainfall and some movement of groundwater within the quarry area towards the east and Deep Creek, with groundwater interpreted to occur at depths varying between 30 m to 10 m below the surface. However, these sediments are likely to be under semi-confined to confined conditions and are unlikely to have porosity of more than a few percent. The Groundwater Assessment indicated that quarrying operations in similar volcanic units in the same Water Sharing Plan area are recorded to be essentially dry, suggesting the proposed quarry development would be similar.

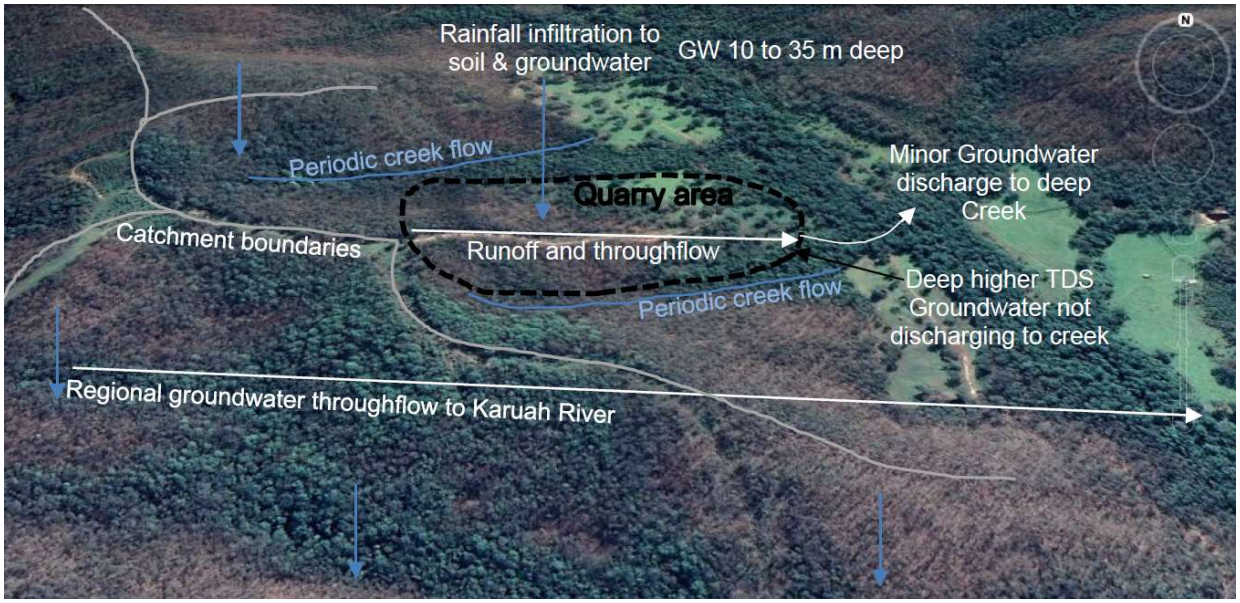


Figure 6-4 | Conceptual groundwater model

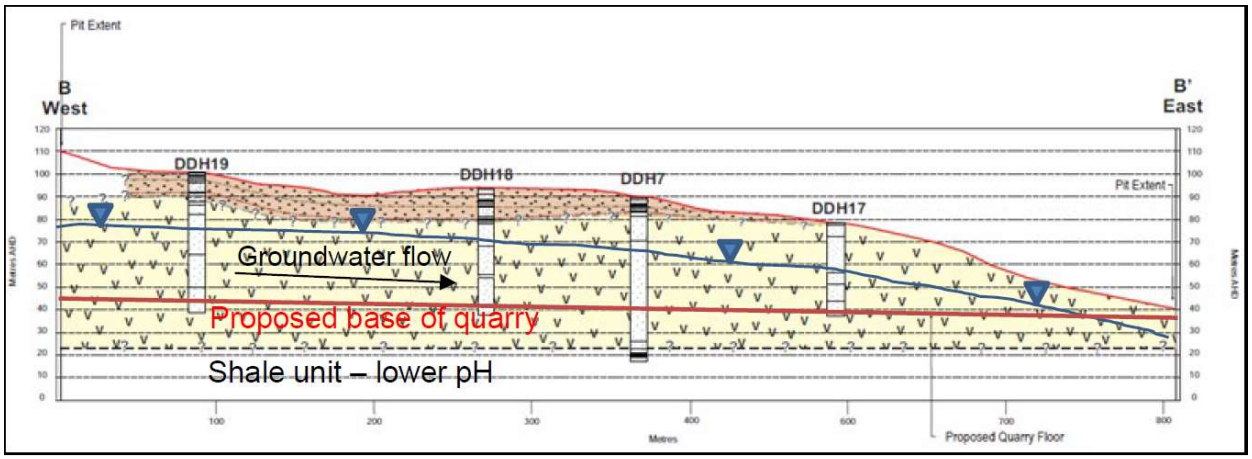


Figure 6-5 | Conceptual groundwater model in cross-section

Predicted groundwater impacts

183. Groundwater seepage inflows into the quarry were initially estimated using the conceptual groundwater model and results verified by the more complex numerical model. The initial model suggested inflows for the quarry would be in the range of 8 to 51 ML/year. The complex numerical model showed changes as stages of the quarry were developed, reaching a maximum of 25 ML/year in Year 8, with an average of 18.3 ML/year over the operation and ongoing inflows of 17.9 ML/year following closure of the quarry. The Groundwater Assessment indicated that these seepage inflow rates are very low, equating to an inflow of 0.3 mm/day over the area of the quarry, which is well below the average evaporation for the site. Any limited groundwater which accumulates in the base of the pit is proposed to be used for site activities, such as dust suppression, although captured dirty water runoff would be the primary source of site water.

184. Modelled groundwater drawdown at the completion of the Project is shown in **Figure 6-6**. A maximum of 38 m drawdown is predicted at the western end of the quarry pit, with 2 m

drawdown extending to a maximum distance of 300 m to the north and southwest of the excavation footprint. The 2 m drawdown contour remains approximately 100 m from Deep Creek.

185. The GA confirmed that the proposed quarry is predicted to have negligible impact on baseflow to local creeks. This is primarily due to limited impact on surficial soils and the influence of low hydraulic conductivities on the groundwater system.

186. No impacts on any registered groundwater bores are expected from the Project.

187. The assessment of the Project's predicted groundwater impacts against the Level 1 minimal impact considerations specified for 'less productive' aquifers under the AIP indicates that the predicted impacts are less than the Level 1 minimal impact considerations.

188. The Department accepts that predicted groundwater inflow rates and drawdown is relatively minor, however notes that this is based on the key assumption that the quarry pit depth would remain above the shaly more porous sandstone, siltstone and claystone unit. This unit lies below the rhyolite and is likely to contain a more extensive regional groundwater system, which if intercepted, would generate higher groundwater inflows. To ensure this is avoided by quarrying activities, the Department has recommended that extraction from the quarry pit remain at least 10 m above this shaly unit.

Groundwater Dependent Ecosystems (GDEs)

189. Ecological surveys identified one obligative (moderately to highly groundwater dependent) GDE (*PCT 1567 Tallowood Brush Box Sydney Bluegum*) covering approximately 1.8 ha within the quarry impact area (refer to **Figure 6-6**). Impacts to this GDE would be offset in accordance with the proposed biodiversity offset strategy for the Project (refer to **Section 6.1**).Weeping Lilly Pilly (PCT 1590) and Water Gum (PCT 1619) riparian warm temperate rain forest communities have been identified as being present along Deep Creek, however these potential GDEs are not within the area of impact of the quarry.

The GA indicated that there is potential for moderate to highly dependent GDEs to also occur in the areas surrounding the proposed quarry impact area. However, these are predominantly located outside the predicted drawdown areas. The Department acknowledges that the predicted drawdowns have the potential to have some effect on the terrestrial vegetation assemblages surrounding the quarry; however significant effects due to changing groundwater levels are considered unlikely.

190. The Department accepts that drawdown associated with the Project is unlikely to impact GDEs given the majority are located outside of the impact area and that there appears to be a limited shallow groundwater system in the vicinity of the site. However, the Department considers that a level of uncertainty exists in predictions due to limited baseline data on localised shallow groundwater levels and ecosystem dependence. Consequently, as part of the Biodiversity Management Plan, the Department has recommended that an adaptive management plan be implemented for GDEs which requires more detailed baseline data be collected prior to the commencement of quarrying, and monitoring of shallow groundwater levels and vegetation continues during quarrying operations to determine any impacts on GDEs. If a change (partial or full direct impacts) in GDE vegetation is detected and found to be caused by groundwater drawdown associated with the Project, then the Department has recommended that Ironstone

be required to offset the impacts in accordance with the Biodiversity Offsets Scheme of the BC Act.

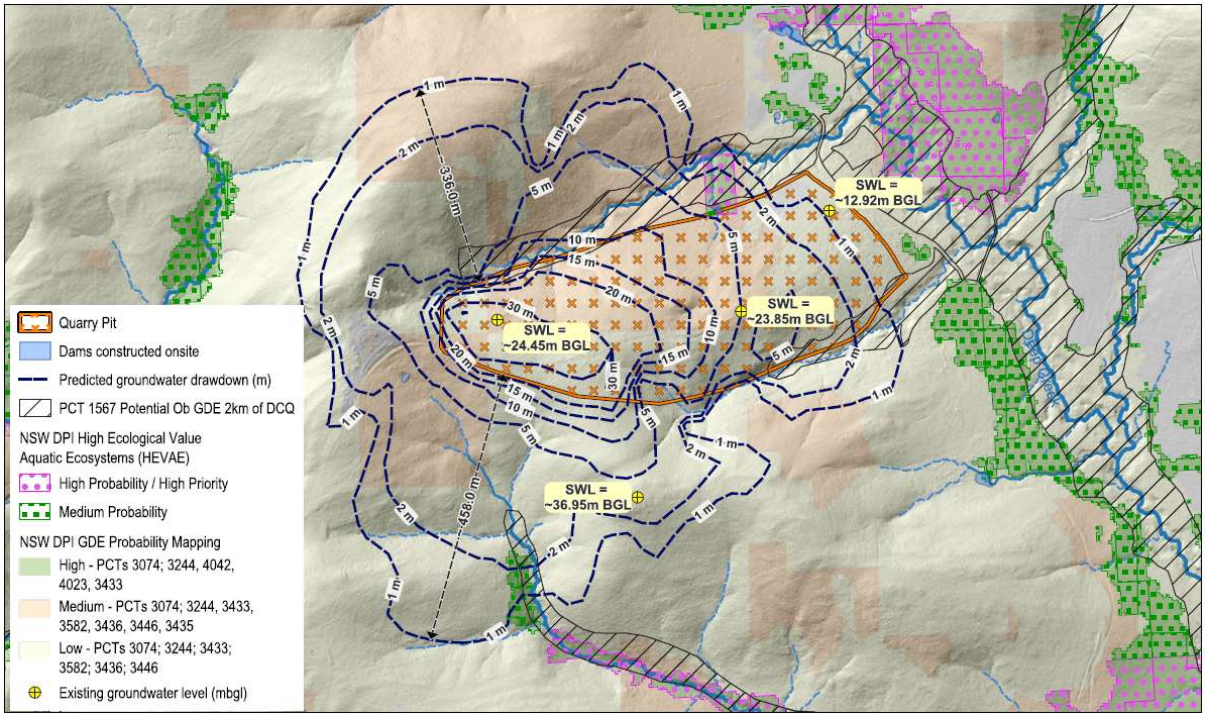


Figure 6-6 | Predicted groundwater drawdown and mapped GDEs

Groundwater licencing

191. Under the WM Act, Ironstone is required to hold a WAL for groundwater take in the WSP for the *North Coast Fractured and Porous Rock Groundwater Sources 2016 (New England Fold Belt Coast Groundwater Source*). As indicted above, a licence for up to 25 ML would be required for the estimated maximum groundwater take.

192. The Groundwater Assessment confirmed that in the most recent version of the WSP for the *New England Fold Belt Source* there was 24,532 ML/year of unassigned water. The Department is therefore satisfied that there are sufficient share entitlements within the groundwater source to allow Ironstone to purchase the required groundwater WAL to account for its predicted groundwater take.

193. The Department's recommended conditions require Ironstone to report on all water extracted from the Project each year (direct and indirect) and note the company's requirement to obtain all necessary water licences under the WM Act.

Monitoring and management

194. Ironstone has committed to continue utilising the existing surface and groundwater monitoring network which has been in place since 2014 and includes:

- *Surface water quality monitoring*: from three sites located along Deep Creek (one to the north and one to the south of the proposed quarry and one further downstream at Bucketts Way bridge) and one site along a tributary to the south of the quarry; and

- *Groundwater level and quality monitoring*: from four bores in the vicinity of the proposed quarry pit.

195. In addition, Ironstone committed to monitoring of discharges from the sediment dams and installing additional groundwater bores when the existing bores are destroyed by quarrying in the pit.

196. The Department has recommended that this monitoring network be expanded to also include:

- metering of captured water volumes in all water storages and measuring of volumes of water pumped between water storages and offsite from sediment dams;
- water quality monitoring of any surface water discharges from the quarry pit and sedimentation basins;
- monitoring of water quality, flows, stream stability, riparian condition and geomorphic processes in watercourses and/or waterbodies that could potentially be impacted by the Project, including Deep Creek, Karuah River, the Port Stephens Marine Park and the downstream oyster aquaculture (see below);
- installation of additional groundwater quality and level monitoring bores in the vicinity of the quarry once the existing bores are decommissioned, including but not limited to in the area between the quarry and Deep Creek and downgradient of the petroleum storage area; and
- monitoring of the overall effectiveness of the water management system.

197. The Department has also recommended that Ironstone be required to prepare and implement a WMP in consultation with DPE Water, which would include baseline data, performance criteria, triggers, monitoring requirements, and investigation, notification, reporting and review protocols for managing impacts to water resources. It would also include a riparian condition monitoring program to manage potential impacts to stream stability and riparian condition immediately downstream of the quarry.

198. Consistent with the recommendations of the independent peer review of the Groundwater Assessment and advice from DPE Water, the Department's recommended conditions would also include a requirement for Ironstone to develop and implement program to periodically validate the groundwater model for the Project in accordance with best practice methods. This would require an update of the groundwater model after the first 5 years of quarrying operations, and at least annual comparison of monitoring results with modelled predictions.

Summary

199. The Department acknowledges the community's concerns regarding potential water resources impacts from the Project. However, the Department considers that the proposed water management system has been suitably designed to manage risks to hydrology, water quality and flooding and that there are measures available to manage any water shortfalls or surpluses without adversely impacting the receiving environment.

200. Excavation of the quarry would result in some inflow of groundwater into the quarry pit, although this is expected to be relatively minor, considering the low porosity and permeability of the sediments and rhyolite. The quarry has been designed so the base of the extraction area

remains in the rhyolite, limiting interaction and possible future discharge of groundwater from the underlying, more porous, shale units.

201. The Department notes that the predicted impacts would be very localised and limited to a 'less productive' aquifer. The predicted impacts are less than the Level 1 minimal impact considerations set out in the AIP. Accordingly, the Department considers these impacts acceptable.

202. With the measures proposed by Ironstone and the performance measures and conditions recommended by the Department, the Department considers that the risks of impact to surface water and groundwater resources are low and that the Project could be suitably managed to avoid any unacceptable impacts.

6.4 Noise

Introduction

203. Noise was a key issue raised in 52% of objecting public submissions, with submitters expressing concerns that increased noise levels associated with the Project would affect the sleep and amenity of surrounding residents. Several submitters also questioned the adequacy of the noise assessment regarding the appropriateness of the adopted background noise levels and predicted impacts.

204. The Department considers that the aspects of the Project that have the greatest potential for adverse noise impacts are those associated with noise from:

- operation of plant and equipment during extraction, processing, and truck loading; and
- road haulage activities along the quarry access road.

205. The EIS included a Noise and Vibration Impact Assessment (NVIA) prepared by Spectrum Acoustics Pty Ltd (Spectrum) which assessed the construction, operational and traffic noise impacts associated with the Project, with reference to the *Interim Construction Noise Guideline* (ICNG) (DECC, 2009), *Noise Policy for Industry* (NPfI) (EPA, 2017), *Voluntary Land Acquisition and Mitigation Policy* (VLAMP) (NSW Government, 2018) and *NSW Road Noise Policy* (RNP) (EPA, 2011).

206. EPA did not raise any concern in relation to the NVIA or noise related aspects of the Project. However, it recommended noise conditions, including noise criteria; compliance monitoring; and limits for truck movements and hours of construction.

207. MidCoast Council raised concerns with respect to the adequacy of the NIVA, including the background noise levels; the methodology used to assess noise from trucks along the haul road; potential for night-time operational impacts; and whether noise modelling was representative of a worst-case scenario. The Department held similar concerns and requested that Ironstone provide additional information to address these issues, as well as other noise assessment issues identified by the Department in relation to sound power levels and the nature of the proposed noise bunding/shields.

208. Additional noise assessment information and clarification was subsequently provided by Ironstone, including revised modelling to predict noise impacts associated with worst-case operating scenarios (i.e. with key plant and equipment operating above the quarry pit on the top bench area). The additional information also included a range of commitments to implement best practice noise mitigation measures during quarrying operations. The additional noise information is included at **Appendix C.**

209. The Department considers that the NVIA and the additional noise assessment information provided is adequate to assess the noise impacts associated with the Project. The updated worse case modelling has been used by the Department in its assessment of noise impacts.

Existing noise environment

210. The existing noise environment in the vicinity of the proposed quarry is typical of a rural and rural-residential land use setting. The key contributors to the acoustic environment are vehicles travelling along The Bucketts Way. Topographic ridgelines surrounding the proposed quarry site provide natural noise attenuation shields to the west and southwest of the site.

211. The location of noise sensitive rural residential receivers is shown in **Figure 6-7**. The closest receiver to the proposed quarry access road is located approximately 280 m to the north of the road (Receiver 30) and the closest receiver to the quarry pit located approximately 1,020 m to the south (Receiver 19). Higher densities of rural residential receivers are located further to the south and south-east of the proposed quarry on either side of Forest Glen Road.

212. Spectrum undertook background noise monitoring in the vicinity of Receiver 33, which is located off Deep Creek Road, approximately 150 m from The Bucketts Way. As this noise receiver was impacted by road traffic noise from The Bucketts Way to a greater extent than receivers located further from the road, Spectrum took a conservative approach and adopted a noise level reduction to meet the default minimum daytime background noise level of 35 dB(A). In accordance with the '*Intrusiveness Criterion'* noise limits specified in the NPfI, the project noise trigger level (PNTL) for all receivers was therefore determined to be 40 dB(A) $L_{Ae1(15\ minute)}$ (i.e. background +5 dB(A)). The Department accepts this PNTL is appropriately conservative and correctly generated in accordance with the provisions of the NPfI.

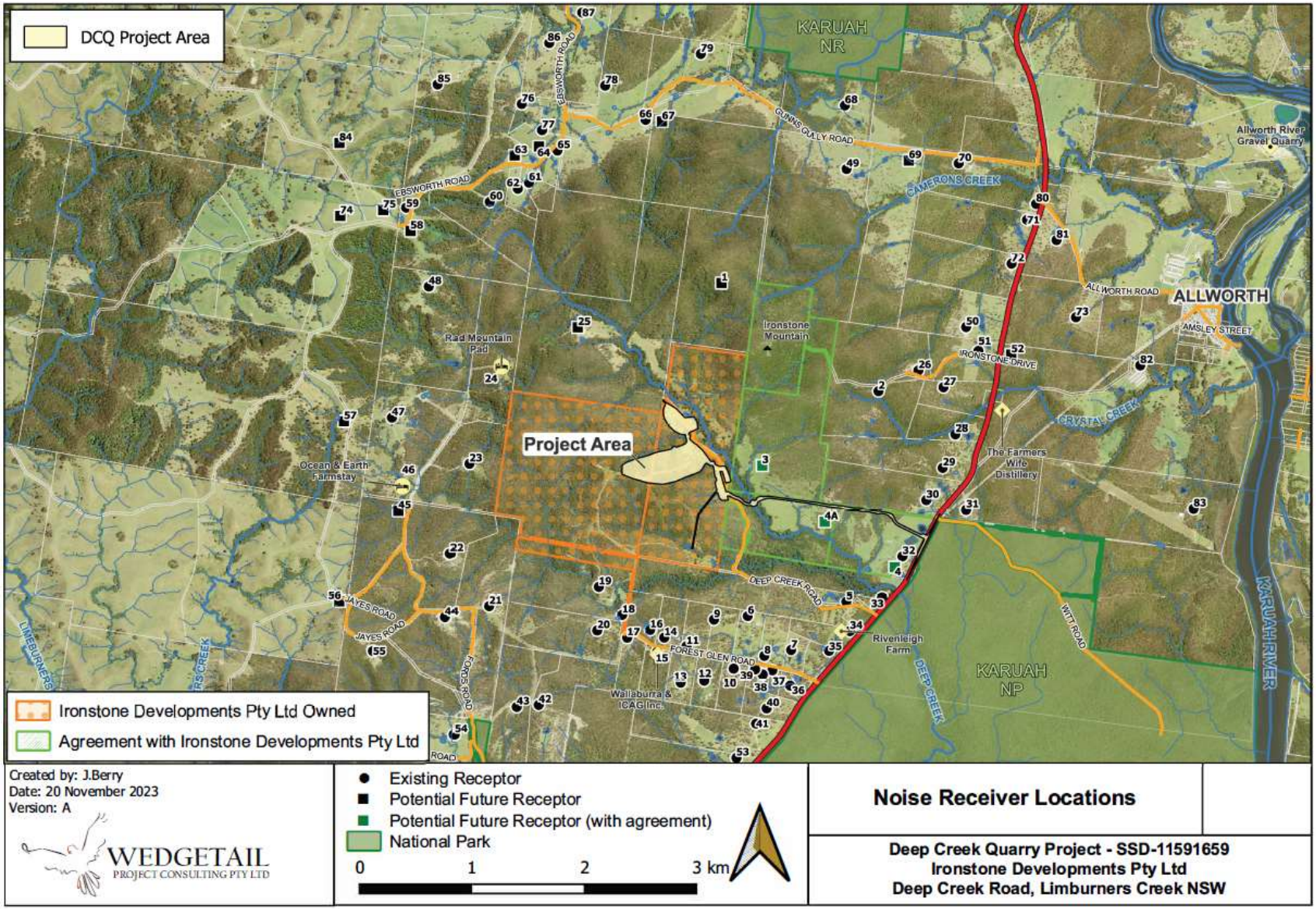


Figure 6-7 | Noise receiver locations

Noise mitigation measures

213. Ironstone indicated that the proposed quarry design incorporated specific measures to minimise, control and/or manage noise impacts associated with the Project, including:

- quarrying progression from east to west to provide a natural topographic noise screen at the advancing quarry face for the life of the Project;
- positioning of processing plant to maximise noise screening;
- relocating the quarry access road further to the south than its original location to maximise its distance to Receiver 30; and
- retaining the eastern extent of the Project area to maintain a nominal 4-5 m high barrier above the quarry floor.

214. The Department supports these design measures and considers that they represent acceptable reasonable and feasible noise mitigation measures.

Predicted noise impacts

Operational noise

215. Spectrum modelled three operational scenarios, including Stage 1 (Years 1-5), Stage 2 (Years 11-21) and Stage 3 (Years 21-30). The scenarios were considered to represent worst-case potential for noise impacts at the surrounding residential receivers, with plant and equipment operating simultaneously at maximum sound power levels; and an excavator, drill and truck operating on the top bench or natural ground level of the quarry.

216. Modelling predicted that under worst-case meteorological conditions noise levels would be below the PNTL of 40 dB(A) at all receivers with the exception of:

- Receiver 25 which would experience a worst-case noise level of 42 dB(A) (i.e. +2 dB(A) above the PNTL) during all three operational stages in east south east winds; and
- Receiver 32 which, would experience a worst-case noise level of 40 dB(A) (i.e. at the PNTL) during Stage 3 operations in west north west winds.

217. The worst-case noise level predictions for all sensitive receivers are presented in **Table 6-4**.

Table 6-4 | Predicted noise levels

Receiver	PNTL	Worst-case noise level dB(A), $L_{Aeq(15\ min)}$
Operational – Stage 1		
R1*, R5-R6, R30-R31, R33-R35	40	≤35
R2, R7-R20, R28-R29, R36-R43	40	≤30
R25*	40	**42**
R32	40	38
All other receivers	40	≤20
Operational – Stage 2		
R1*-R2, R6-R7, R9, R14, R16, R18, R21-R24, R28-R29, R31, R34-R36, R51-R52	40	≤35
R5, R30	40	36
R8, R10-R13, R15, R17, R19-R20, R26-R27, R37-R42, R44-R48, R50, R58, R60, R71-R72	40	≤30
R25*	40	**42**
R32	40	39
R33	40	37
All other receivers	40	≤20
Operational – Stage 3		
R1*, R6-R7, R9, R29, R31, R35-R36	40	≤35
R2, R8, R10-R21, R23-24, R26-R28, R37-R44, R48-R49, R50-R52, R58-R60, R71-72, R80	40	≤30
R5, R33	40	39
R25*	40	**42**
R30	40	36
R32	40	**40**
R34	40	37
All other receivers	40	≤20

* No approved dwelling or permanent residence. Nominal location selected based on structures present.
Note: Receivers that have negotiated noise agreements with Ironstone have been excluded from the table.

218. According to the NPfI and the VLAMP, a 1 to 2 dB exceedance represents a 'negligible' residual noise impact which is indiscernible by the average listener. Predicted noise levels indicate that no residence or privately-owned land (not under an existing noise negotiated agreement) would be subject to voluntary mitigation or land acquisition rights in accordance with the VLAMP.

While no more than 'negligible' exceedances are predicted, the Department has adopted a conservative approach to setting daytime noise limits for the Project. For noise sensitive receivers (where a dwelling/permanent residence exists), the recommended noise limit has been set based on the 40 dB(A) PNTL, which aligns with the EPA's recommendations.

Construction noise

219. Spectrum modelled the construction noise monitoring scenario in accordance with the ICNG and predicted that the worst-case noise levels at all residential receivers would be below the 'noise affected' management criterion of 45 dB(A) (i.e. RBL + 10 dB(A)). The worst-case noise predicted during construction works is between 39-41 dB(A) at Receivers 30 and 32. Ironstone has committed to implement reasonable and feasible work practices during construction to ensure these noise levels are maintained below the criterion, including aiming to complete the works within 12 weeks and consulting with affected properties about scheduling of the works.

Sleep disturbance and night-time noise

220. Ironstone proposes to undertake product dispatch activities between 6 am to 7 am Mondays to Saturdays, which is classified as part of the 'night-time' noise period in accordance with the NPfI. Product dispatch during this period would involve loading of empty trucks and movement of the trucks to and from The Bucketts Way.

221. The applicable sleep disturbance criterion is L_{Amax} >52 dB(A) at any sensitive receptor. Spectrum noted that the total L_{Aeq} sound power level of daytime extraction and processing equipment does not exceed the L_{Amax} level of night-time product transport activities. As indicated in **Table 6-4**, the predicted worst-case noise level at any privately-owned property is L_{Aeq} level 42 dB(A) at Receptor 25. Night-time L_{Amax} levels therefore cannot exceed the worst-case daytime L_{Aeq} levels which were at least 10 dB below the default minimum 52 dB(A) L_{Amax} sleep disturbance noise trigger level.

222. The default minimum night-time PNTL as defined by the NPfI is 35 dB(A). Spectrum confirmed that during the operational stages at maximum production rate, the predicted transport noise levels at the potentially most impacted receiver (i.e. R30) near the quarry access road intersection with The Bucketts Way would range from 28 – 36 dB(A) $L_{Aeq(15min)}$ under the various meteorological conditions. This represents a 1 dB(A) exceedance of the night-time criterion, which is defined by the VLAMP as a 'negligible' impact.

223. As recommended by Spectrum, to ensure night-time dispatch activities do not result in sleep disturbance at the nearest receiver (i.e. R30), the Department has recommended that regular noise monitoring be conducted at this premises during operations.

Traffic noise

224. As discussed in **Section 6.2**, the Project would result in a maximum of 50 truck movements per hour along the quarry access road, The Bucketts Way and the Pacific Highway. Spectrum has confirmed that there are 8 dwellings where the façade is less than 50 m from The Bucketts Way, between the quarry access road and the Pacific Highway (where most trucks would travel). The closest dwelling is located 18 m from the road.

225. The RNP recommended criterion for arterial roads such as The Bucketts Way is 55 dB(A) $L_{Aeq\ (1\text{-}hour)}$[5]. Spectrum conducted point calculation modelling which predicted that the additional trucks associated with the Project would result in a road traffic noise level of 43 dB(A) $L_{Aeq\ (1\text{-}hour)}$ at the nearest dwelling along The Bucketts Way, which is significantly below the criterion of 55 dB(A). If the additional traffic generated by the proposed Hillview Quarry is also added to the noise modelling, Spectrum predicted that a cumulative traffic noise level of 50 dB(A) would be experienced at the nearest dwelling, which remains below the applicable criterion.

Noise monitoring and management

226. The Department has recommended conditions requiring Ironstone to employ best practice noise management and to take all reasonable steps to manage construction, operational and road noise generated by the Project. The recommended conditions also require Ironstone to:

- undertake noise monitoring on commencement of construction and at least on a quarterly basis during operations to determine compliance with the applicable noise criteria and to inform any further noise mitigation works, if needed. Monitoring is required to be undertaken at Receptors R4, R25, R30 and R32 and any other receiver required by the EPA;
- regularly assess the noise monitoring data, and modify or stop operations on the site to ensure noise compliance;
- establish suitable protocols for receiving and handling community complaints and investigating any potential exceedances; and
- develop and implement a Noise Management Plan to the satisfaction of the Secretary.

227. The Department considers that with implementation of Ironstone's design mitigation measures and its recommended noise management and monitoring conditions, noise impacts on affected sensitive receivers can be appropriately mitigated and managed during both construction and operation of the Project.

Summary

228. The Department and EPA consider that the NVIA and revised noise modelling have been prepared in accordance with the relevant government guidelines and policy, including the NPfI, VLAMP, ICNG and RNP.

229. The Department is aware that increased noise levels associated with the Project was a key issue raised in public submissions. Notwithstanding these concerns, the Department accepts that the Project is unlikely to result in greater than 'negligible' noise impacts on affected sensitive receivers during construction and operation of the Project.

230. The Department supports the design mitigation, monitoring and management measures proposed by Ironstone to reduce predicted noise levels to acceptable levels during both construction and operation of the Project in accordance with the NPfI. The Department has recommended that Ironstone be required to prepare and implement a comprehensive Noise Management Plan to ensure this is the case.

[5] Night-time criterion given dispatch operations are proposed to commence from 6am.

6.5 Other issues

231. Other issues associated with the Project include air quality, human health (as a subset of air quality), greenhouse gas emissions, blasting, social, economic, Aboriginal cultural heritage, historic heritage, hazards and waste, visual amenity, and rehabilitation and final landform impacts. The Department's assessment of these issues is summarised in **Table 6-5**.

Table 6-5 | Other issues considered

Issue	Recommended conditions
Air quality	
• The EIS included an Air Quality Impact Assessment (AQIA) prepared by Todoroski Air Sciences which assessed the operational incremental and cumulative air quality impacts of the Project. • The AQIA was completed in accordance EPA's *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (2016). • Air quality issues were raised in approximately 52% of objecting public submissions, with key concerns related to the adequacy of the assessment; the adopted background data; risks of degraded air quality from quarrying and truck haulage activities; including risks of silica dust at surrounding properties. • MidCoast Council raised several issues in relation to the AQIA, including in relation to the location of the climatic data used, the scenarios assessed and the lack of management measures proposed. MidCoast Council also provided recommendations in relation to operational air quality monitoring. • EPA did not raise any issues in relation to the AQIA or any air quality aspects of the Project. EPA recommended conditions to minimise dust emissions from the site, including covering of truck loads. • The Department considers that the AQIA has been prepared in accordance with the relevant guidelines and is adequate to assess the air quality impacts of the Project. • Key emission sources from the Project would include: ○ dust from drilling and blasting, loading/unloading of material, vehicles travelling on-site and off-site, crushing and screening processes, and windblown dust from exposed areas and stockpiles; and ○ fuel combustion-based emissions on and off site from quarry plant, equipment and product haulage trucks. • In addition to emission sources from the proposed quarry, the AQIA identified potential cumulative emissions from the proposed Hillview Hardrock Quarry located approximately 6.9 km north of the Project. • The AQIA dispersion model and assessment indicated that the: ○ incremental and cumulative (total) emissions would comply with applicable NSW EPA particulate matter impact assessment criteria for Total Suspended Particulates (TSP), Particulate Matter <10 µm (PM10), Particulate Matter <2.5 µm (PM2.5) and deposited dust at all assessment locations; ○ the Project is not predicted to increase the number of days above the 24-hour average PM10 or PM2.5 criterion at any assessment locations; ○ incremental predictions for 24-hour PM10 and PM2.5 would not exceed the applicable criteria across more than 25% of privately-owned land in accordance with the VLAMP; and ○ incremental and cumulative predictions for Nitrogen Dioxide (NO_2) are well below the relevant criteria. • Health related aspects (i.e. silica and diesel emissions) of air quality impacts are discussed below. • The Department has recommended conditions requiring Ironstone to:	• The Department's recommended conditions require Ironstone to: ○ comply with contemporary air quality criteria; ○ implement all reasonable and feasible 'source-based' measures to minimise dust emissions on site; and ○ operate meteorological and air quality monitoring systems to identify and manage potential exceedances.

Issue	Recommended conditions
○ comply with contemporary air quality criteria; ○ implement all reasonable and feasible 'source-based' measures to minimise dust emissions on site; and • operate meteorological and air quality monitoring systems to identify and manage potential exceedances. • Subject to the recommended conditions, the Department considers that the air quality impacts of the Project are acceptable.	
Human health	
• Several submissions raised health concerns associated with air emissions generated by the Project. Specific concerns included: ○ risk of silica dust impacting surrounding residents; and ○ exposure to diesel combustion emissions for residence R30, where an occupant is reported to be hypersensitive to diesel particulates. • The Submissions Report included an additional consideration of the risks of silica from the Project. The rock product proposed to be extracted from the quarry contains crystalline silica. • No criteria for residential receptors exist within NSW for respirable silica. The Victorian EPA define an annual average criterion of 3 $\mu g/m^3$ for respirable crystalline silica (as PM2.5) within the *Protocol for Environmental Management (PEM) for Mining and Extractive Industries* (2007) that is an incorporated document of the *Victorian State Environment Protection Policy (Air Quality Management) 2001*. • Ironstone indicated that, if it was assumed that 80% of all PM2.5 created by the quarry was respirable silica (which is likely overstated), the highest annual average concentration at a neighbouring residence not associated with the quarry would be <0.08 $\mu g/m^3$. For the closest receptor R3 (at 500 m from the quarry), the concentration is predicted to be 0.32 $\mu g/m^3$. Based on these predictions, the risks to surrounding residents from respirable silica from the quarrying operations is very low. • The Department accepts that these findings are highly conservative and that the risks of impact to surrounding residents from silica dust is very low. • In response to the concerns raised by the resident at R30, the Department engaged Environmental Risks Sciences Pty Ltd (ERS) to provide independent air quality health advice in relation to diesel particulate emissions associated with the Project. ERS confirmed that the available evidence indicates that there are human health hazards associated with exposure to diesel particulate matter. • ERS indicated that the effects most relevant to hypersensitive reactions are the acute or chronic effects, where the most health protective guidelines are: ○ acute guideline (which typically relates to exposures of an hour) = 10 µg/m3; and ○ chronic guideline (which relates to long-term exposures or annual average) = 5 µg/m3. • ERS assessed the potential health risks associated with diesel emissions from on and off site vehicles and plant equipment, including existing and proposed vehicles travelling along The Bucketts Way, the quarry access road and the additional vehicles associated with the proposed Hillview Hard Rock Quarry (6.9 km north of the Project). • ERS predicted that the Project would result in maximum concentrations of PM2.5 as diesel particulate matter at R30 of: ○ incremental and cumulative maximum 1 hour average concentrations of 0.175 µg/m3 and 1.9 µg/m3, respectively, which are well below the short-term guideline of 10 µg/m3; and ○ incremental and cumulative annual average concentrations of 0.02 µg/m3 and 0.6 µg/m3, respectively, which are well below the long-term guideline of 5 µg/m3.	• No conditions additional to those set out above for the management of air quality impacts are considered necessary.

Issue	Recommended conditions
• ERS concluded that exposure to diesel particulate matter at R30 derived from the Project would be low and below guidelines protective of adverse health effects, including consideration of hypersensitive individuals. • On this basis, the Department accepts that the risk of adverse health impact to the resident at R30 is very low.	
Greenhouse gas emissions	

• Todoroski Air Sciences prepared an assessment of greenhouse gas emissions (GHG) for the Project. The assessment estimated the following emissions:
  ○ 1,766 tonnes of Scope 1, CO2 equivalent emissions would be generated on an annual basis through the consumption of diesel by onsite equipment;
  ○ 0 tonnes of Scope 2 emissions would be generated each year, on account of no mains electricity being connected to the Project; and
  ○ 4,146 tonnes of Scope 3, CO2 equivalent emissions generated through the transport of diesel to site, the transport of quarry products and employee travel to site;
• The contribution of GHG emissions is estimated to make up 0.00035% of the annual emissions for Australia (based on 2020 estimates).
• Ironstone has committed to implementing the following mitigation measures to minimise GHG emissions from the Project:
  ○ investigating ways to reduce energy consumption throughout the life of the Project and reviewing energy efficient alternatives;
  ○ undertaking regular maintenance of equipment and plant;
  ○ ensuring plant and equipment are switched off when not in use;
  ○ monitoring the consumption of fuel and regularly maintaining diesel powered equipment to ensure operational efficiency;
  ○ sourcing consumable materials from environmentally sustainable sources where feasible.
• The Department considers that the Project would provide a negligible contribution to Australia's GHG emissions. The Department has also recommended conditions requiring Ironstone maximise the energy efficiency and minimise the GHG emissions from the Project.
	• The Department has recommended conditions requiring Ironstone maximise the energy efficiency and minimise the GHG emissions from the Project.

Blasting	

• The NVIA included a blasting and vibration assessment which predicted the airblast overpressure and ground vibration levels at nearest residential receivers from the quarry.
• Blast and vibration issues were raised in 32% of public submissions, with issues related to reduced amenity, potential damage to surrounding properties and disturbance to local fauna.
• EPA did not raise any issues in relation to the blasting and vibration assessment, however provided recommended conditions for blasting limits, time restrictions, monitoring and the preparation of a Blast Management Plan.
• Blasting is proposed to be undertaken at a frequency of up to 25 blasts per year. Ironstone has committed to restricting blasts to between 9 am to 4 pm Monday to Friday, with no blasts on weekends or public holidays. These time restrictions are in line with those proposed by EPA.
• Spectrum found that the quarry blasting would meet relevant ground vibration and airblast overpressure objectives at all sensitive receivers throughout the life of the Project.
• Spectrum concluded, and the Department agrees, that the proposed blasting associated with the Project presents negligible risk of any damage to private property or disturbance to fauna or associated habitat structures.
	• The Department's recommended conditions:
	  ○ require Ironstone to ensure that blasting does not cause exceedances of blasting criteria at private residences;
	  ○ limit the frequency of blasts to 25 blasts per calendar year;
	  ○ require Ironstone to notify the community of scheduled blasts and monitoring each blast to evaluate compliance with the relevant blasting criteria.
	  ○ Ensure the safety of people and livestock from blasting impacts;

Issue	Recommended conditions
• As well as committing to restricting blasting times, Ironstone committed to preparing and implementing a Blast Management Plan which includes vibration monitoring protocols for each blast and response protocols in the event of any exceedance of blast vibration criteria. • The Department supports these commitments. In addition, the Department has recommended conditions for blast criteria; blast timing and frequency restrictions; property inspections and investigations at the request of property owners; and blast operating conditions. • Overall, the Department considers the blasting impacts of the Project to be acceptable, subject to the implementation of Ironstone's commitments and the recommended conditions of consent.	○ Protect public and private infrastructure from blasting impacts; ○ Minimise blast-related dust and fume emissions; and ○ allow nearby landowners to request an independent review of impacts at their property, should they consider the Project to be exceeding the relevant blasting, noise, or air quality criteria.
Social	
• Social issues were raised in approximately 52% of objecting public submissions, with key concerns related to the irreversible changes to the existing lifestyle and environment, and adverse amenity for residents living in the area. • The EIS included a Social Impact Assessment (SIA) for the Project which was prepared by Mara Consulting Pty Ltd (Mara) in accordance with the *Social Impact Assessment Guideline for State Significant Projects* (DPIE, 2021). • Following review of the SIA, the Department requested that Ironstone provide further integration of the results of the community engagement program into the assessment of social impacts and proposed mitigation measures. This request included: ○ further analysis and assessment of how people expect to be impacted by the Project, focusing on those most impacted; ○ further consideration of the cumulative/combined effect of the identified impacts; and ○ further consideration of tangible, deliverable and enduring impact mitigation measures that respond directly to the identified social impacts. • In response, Ironstone provided an SIA Addendum which responded to the issues raised in the Department's review. • The SIA (inclusive of the SIA Addendum) was informed by an engagement program which involved an online and printed survey, interviews with government agencies and nearby residents, and two online community information sessions. • The Department recognises that many of the social impacts from the Project are related to traffic, air quality, noise, and other environmental impacts that have been assessed separately in accordance with relevant legislation and government policy. • Key social impact concerns identified by the SIA included: ○ negative impacts on the amenity and health of residents, primarily from noise, dust and vibration during the construction and operation of the Project; ○ change to the peaceful way of life, community character and cohesion in a rural residential and bushland area; ○ increase in local traffic and impacts on access; ○ changes to the aesthetic and environmental values of the area. • Key social benefits identified in the SIA included positive economic outcomes associated with the Project through the provision of long-term business and job opportunities for the community during construction and operation. • Ironstone has proposed a range of mitigation and management strategies to address the identified social impacts of the Project. These measures are additional to those proposed to mitigate the	• The Department's recommended conditions, developed in accordance with the SIA Guideline would require the preparation and implementation of a Social Impact Management Plan, which must include: ○ measures to avoid, minimise and mitigate the negative social impacts associated with the Project, including specific measures to minimise stress-related impacts; ○ measures to enhance the Project's positive impacts, by detailing opportunities to support community services and facilities; and ○ a stakeholder engagement strategy to evaluate and implement social management and mitigation measures over the life of the Project. • Additionally, the Department has recommended the establishment of a CCC in accordance with the Department's *Community Consultative Committee Guidelines: State Significant Projects* (2023), as well as a requirement to regularly publish relevant documentation on Ironstone's website, and a community hotline and complaints register.

Issue	Recommended conditions
traffic, air quality, noise and blast impacts, and include commitments to: ○ establish a community development fund through a levy on each tonne of product sold from the quarry to a maximum annual commitment of $50,000; ○ proactively and regularly communicate and engage with neighbours, the community and MidCoast Council; ○ develop a construction management plan that includes notifications on construction scheduling, blast times and high impact activities to potentially impacted residents; ○ develop an effective inquiries and complaints process; ○ hold meetings and presentations with neighbouring properties and community groups to build positive relationships; ○ investigate opportunities to use local contractors, suppliers, and service providers; ○ establish a Community Consultative Committee (CCC) or reference group; and ○ create a project website with regular updates on construction and operational activities and site contact details. • Mara concluded that, while the quarry would present a change to the community, social impacts associated with the Project can be managed. However, it also found that there is a risk of alienating community stakeholders if ongoing community engagement is ineffective. • The Department accepts this conclusion and supports Ironstone's social mitigation and management commitments. In recognition of the need to maintain effective community engagement and implement measures to mitigate negative social impacts, the Department has recommended conditions requiring Ironstone to: ○ establish and operate a CCC; ○ regularly publish relevant environment and community information on their website; ○ establish and operate a community hotline and complaints register; and ○ develop and implement a Social Impact Management Plan. • The Department considers that with the implementation of the mitigation measures proposed by Ironstone and the application of the Department's recommended conditions (coupled with the management measures proposed in respect of traffic and transport impacts, noise impacts, blasting impacts and air quality impacts), the extent of social impacts can be appropriately managed and mitigated.	
Economic	
• The EIS included an Economic Impact Assessment (EIA) for the Project which was prepared by AEC Group Pty Ltd (AEC) and incorporated a Cost Benefit Analysis (CBA) and a Local Effects Analysis (LEA) to estimate the incremental net benefits of the Project to the State and the region. • Economic issues were raised in approximately 48% of objecting public submissions, with several submissions indicating that the EIA overstated benefits to the community and that the Project would result in a greater impact on the community for the economic benefit of relatively few. Several submissions also raised concerns relating to potential adverse impacts on existing businesses and the potential reduction in property prices as a result of the quarry. • The Department notes that property values are not a consideration for assessment under the EP&A Act and accordingly have not been a consideration in the Department's assessment of the Project. • The LEA estimated that the Project would contribute to economic growth during construction, operation, and decommissioning / rehabilitation from both direct and flow-on activity including:	• No conditions are considered necessary

Issue	Recommended conditions
○ increasing gross state product (GSP) by an average of $7.5 million per annum; ○ generating approximately 20 full-time equivalent (FTE) jobs during construction and up to 30 FTE jobs during operations (10 direct jobs and 20 indirect jobs), with the majority (88%) to be sourced from within the region; and ○ supporting approximately $15.7 million per annum in business revenues in the region and a further $1.3 million in revenues for businesses in the rest of NSW. • The EIA also indicated that the Project would contribute to government taxation revenues, including: ○ $23.8 million in tax revenues to the Australian Government; ○ $1.5 million in tax revenues to the NSW Government; and ○ $11.1 million in road levy revenue to local government. • Overall, the CBA estimated that the Project would result in a net production benefit to the NSW economy of $22.7 million (present value at 7% discount rate). This includes the costs of environmental offsetting, mitigation and rehabilitation. • The Department accepts that the Project would generate up to 30 FTE jobs during operation, and that a significant percentage of the workers would likely reside in the local and regional area. The Department also recognises that a key economic benefit of the Project would be improving the security of supply of road base, crusher dust, aggregates and rock to the domestic market to meet the significant number of planned infrastructure and other construction projects. • The Department considers that the Project would result in positive economic benefits to the local and regional areas and to the State of NSW and is therefore considered desirable and justified from an economic efficiency perspective.	
Aboriginal cultural heritage	
• The EIS included an Aboriginal Cultural Heritage Impact Assessment (ACHA) prepared by Insite Heritage Pty Ltd (Insite Heritage), which involved surface survey and subsurface testing of the proposed quarry site with representatives of two Registered Aboriginal Parties (RAPs). • Heritage NSW raised no issues in relation to the ACHA or Aboriginal cultural heritage aspects of the Project. • Insite Heritage confirmed that four Aboriginal artefacts (i.e. flakes or broken flakes) were identified during subsurface testing. Three of the artefacts were found within the areas proposed for the sedimentation basins and one in the area of the proposed Deep Creek crossing. • Overall, Insite Heritage considered the scientific significance of the study area to be low, due to low density and the absence of complex sites resulting from peripheral occupation. • Ironstone has committed to implementing a range of heritage mitigation and management measures during construction and operation of the Project, including: ○ preparation and implementation of an Aboriginal Cultural Heritage Management Plan; ○ relocation and reburying of artefacts uncovered during subsurface testing and any other artefacts uncovered during construction, in consultation with the RAPs; ○ completion of NSW Government Aboriginal Heritage Information System recording for all artefacts retrieved and reburied; ○ following appropriate procedures in the event of discovery of a previously unknown object and/ or any potential human skeletal remains in the course of construction works; and ○ requiring contractors to complete an Aboriginal Cultural Heritage Awareness Induction prior to working on site.	• The Department has recommended standard conditions requiring Ironstone to protect, monitor, record and manage identified Aboriginal heritage items and ensure that the Project does not impact on any identified Aboriginal objects located outside proposed disturbance areas.

Issue	Recommended conditions
• Heritage NSW supported these heritage management commitments. The Department accepts that any impacts to Aboriginal cultural heritage sites as a result of the Project would be minor and manageable.	
Historic heritage	
• The EIS included an Historic Heritage Impact Assessment prepared by Insite Heritage. • Insite Heritage confirmed that the historic record and previous heritage studies have not identified any historic heritage items in or around the quarry. Further, Insite Heritage confirmed that no heritage items or structures or potential deposits were located during field inspections. • Overall, Insite Heritage assessed the proposed quarry site as being of no heritage significance. • Heritage NSW confirmed that the quarry site is not listed in the State Heritage Register, nor is it in the immediate vicinity of any items listed on the Register. Further, Heritage NSW indicated that, as the site does not contain any known historical archaeological relics, no heritage comments are required. • On this basis, the Department considers there is low potential for adverse impacts to historic heritage from the Project. The Department has recommended a condition requiring appropriate procedures to be implemented if unexpected historic relics are discovered during construction of the Project.	• The Department's recommended standard conditions would require Ironstone to implement appropriate procedures if unexpected historic relics are discovered.
Hazards and waste	
• The EIS included assessment of hazards and risks associated with the Project, including dangerous good storage, bushfires and waste. • The assessments indicated that these and other hazards would not present significant risk, subject to implementation of standard best practice risk and waste management measures. • The Project would generate small quantities of waste during construction and operation, including scrap building materials, organic material from vegetation clearing, general office wastes, sewage from on-site amenities and waste greases and oil. • Ironstone has committed to reuse or recycle waste streams where possible or disposed of them in accordance with the requirements *Waste Avoidance and Resource Recovery Act 2001* and the POEO Act. The company indicated that most wastes generated at the site would be managed by way of Council collection services or via appropriately licensed waste contractors. Organic materials from vegetation clearing would be reused on site. Sewage would be managed using a contained pump-out (or similar) system. MidCoast Council has not objected to the proposed waste management strategy for the Project. • Ironstone has also committed to prepare and implement a Bushfire Management Plan prior to the commencement of construction. • The Department supports these commitments and considers that hazards and waste can be appropriately managed during construction and operation of the quarry. The Department has recommended specific conditions to ensure appropriate waste management measures are implemented.	• The Department has recommended standard conditions requiring Ironstone to: ○ appropriately store, handle and dispose of any waste generated or received on site; ○ store, handle and transport dangerous goods in accordance with *Australian Standards and the Australian Dangerous Goods Code*; and ○ ensure the Project is suitably equipped to respond to fires and assist the NSW RFS and emergency services if there is a fire in the vicinity of the site.
Visual amenity	
• The EIS included a Visual Impact Assessment (VIA) prepared by Mara. • The VIA concluded that the visual impacts from the Project would be limited to views of the proposed quarry access road and intersection on The Bucketts Way. The assessment found that the quarry site	• The Department has recommended standard conditions requiring Ironstone to:

Issue	Recommended conditions
would not be visible from any residences or public roads, owing to the shielding provided by the natural topography and surrounding vegetation. • The Department accepts these conclusions and considers that the visual amenity impacts from the Project would be negligible and are therefore acceptable.	○ minimise the visual impacts of the development; ○ detail the proposed visual mitigation measures in the Rehabilitation Management Plan and ○ integrate the final landform with surrounding natural landforms as far as is reasonable and feasible.
Rehabilitation and final landform	
• The EIS included a Land Use, Soils and Rehabilitation Strategy (LUSRS) prepared by Kleinfelder Australia Pty Ltd. • Several public submissions commented on rehabilitation issues, including expressing concerns about rehabilitation standards at other quarries and mine sites and requesting that a substantial rehabilitation bond is paid for the Project. • The LUSRS states that the key rehabilitation objective of the final landform is to return the land to its current attributes, including to a stable, safe, non-polluting landform able to support self-sustaining native vegetation and agriculture in the form of pasture for grazing. • Ironstone has committed to progressive rehabilitation of the area, and returning disturbed land to the pasture and native vegetation that is currently present on site. On completion of extraction, benches would be revegetated with native trees consistent with surrounding vegetation with a free draining quarry floor consisting of open grassland and scattered woodland. • The Department has recommended that these commitments be further refined and included into the Rehabilitation Management Plan, which would be required to include a conceptual closure plan and detail of specific rehabilitation performance and completion criteria, measures to meet these criteria and a program to monitor, review and report on the effectiveness of these measures. This plan would have to be prepared and submitted to the Department for approval within 12 months of the commencement of the development. • In addition, the Department has recommended conditions requiring Ironstone to lodge a rehabilitation bond to ensure accumulated and anticipated costs of rehabilitation are available until rehabilitation (including achievement of all completion criteria) has been completed to the satisfaction of the Secretary.	• The Department's recommended conditions include a requirement for Ironstone to: ○ prepare and implement a Rehabilitation Management Plan that includes a conceptual closure plan and detail of specific rehabilitation performance and completion criteria, measures to meet these criteria and a program to monitor, review and report on the effectiveness of these measures; and ○ calculate the cost of rehabilitating all existing and immediately proposed disturbance areas of the site, and lodge a rehabilitation bond to ensure accumulated and anticipated costs of rehabilitation are available until rehabilitation (including achievement of all completion criteria) has been completed to the satisfaction of the Secretary

7 Evaluation

232. The Department has carried out a detailed assessment of the merits of the Project, having regard to Ironstone's Project documentation, advice from NSW government agencies and independent experts, and all public submissions. The Department has also considered the objects of the EP&A Act and relevant considerations under Section 4.15(1) of the EP&A Act.

233. The Department acknowledges the considerable public interest in the Project. The information provided in the EIS, community submissions, and agency advice highlighted that the potential biodiversity, traffic, water resources, and noise impacts were the key issues associated with the Project.

234. The Department acknowledges and accepts that habitat loss is a key contributor to the decline of biodiversity within NSW. It also recognises that the Project has the potential to adversely impact several threatened flora and fauna species, including Black-eyed Susan, Netted Bottlebrush, Koala, Southern Myotis and Squirrel Glider, through the proposed clearing or remnant vegetation.

235. Given these threats, and the community concern regarding biodiversity impacts more broadly, a key aspect of the Department's assessment was to ensure that Ironstone adopted the 'avoid', 'minimise', 'offset' hierarchy of controls into the design of the Project as far as practicable. The Department also recognises that the Project's ability to avoid impacts to species habitat is restricted by the location of the resource and that complete avoidance is impractical. The Department acknowledges that Ironstone has revised the Project design to reduce the direct clearing of 72 ha of native vegetation, which has reduced impacts to Black-eyed Susan, Koala and other species. However, implementation of the final Project design would require the clearing of 29.15 ha of native vegetation and impact threatened flora and fauna species listed under both the BC Act and EPBC Act.

236. Despite these impacts, the Department considers that the Project has been designed to avoid and minimise biodiversity impacts where practicable and offset any residual impacts. The Department considers that the biodiversity impacts of the Project would be suitability mitigated, managed and/or offset in accordance with the BC Act and EPBC Act. Additionally, the Department's recommended conditions of consent would provide for sound management of retained biodiversity values and impacts to threatened flora and fauna and their habitats. Overall, the Department considers the impacts of the Project on biodiversity are acceptable, subject to the recommended conditions.

237. Traffic and transport impacts from road haulage activities were another key community concern for the Project. This is particularly understandable given the rural setting of the Project and the potential impacts that heavy vehicles may have on the safety and performance of the local road network.

238. Notwithstanding these concerns, the TIA has concluded, and the Department agrees, that the existing road network generally has adequate capacity to cater for future traffic growth, including additional Project-related traffic. The Department acknowledges that some deterioration in the performance of the Pacific Highway / The Bucketts Way intersection would occur over the life of the Project, however this would be caused mostly from broader regional

traffic growth and would be expected to occur with or without the Project. Similarly, whilst some road safety risks were identified along the primary road haulage route, negligible concerns regarding road safety have been raised by the relevant road authorities. Further, many of the road safety risks identified as part of the initial road safety audit prepared for the EIS have now been addressed by road upgrades completed by MidCoast Council and TfNSW as part of their planned works programs.

239. Ironstone is proposing to construct a quarry access road and intersection with The Bucketts Way and implement several mitigation and management measures to minimise road safety risks and traffic impacts from the Project. The Department has also recommended conditions requiring Ironstone to prepare and implement a TMP, undertake strict monitoring of road haulage rates, and pay road maintenance contributions to the relevant roads authority to fund maintenance of the haulage route. Subject to these conditions, the Department considers that the traffic and transport impacts of the Project are acceptable.

240. Given its location adjacent to Deep Creek within the Karuah River catchment and the fact that it would involve extensive surface disturbance, including the establishment of a large void in the landscape, the Department considers that the Project's potential impacts on surface water and groundwater resources requires careful and detailed consideration. The Department also recognises that concerns regarding potential impacts to water resources were raised consistently in public submissions.

241. However, the Department considers that the proposed water management system has been suitably designed to manage risks to hydrology, water quality and flooding and that there are measures available to manage any water shortfalls or surpluses without adversely impacting the receiving environment.

242. The proposed dirty water management system, including sediment basins and licensed discharge points, has been designed with consideration of the need to manage the Project's impacts on Deep Creek and the important oyster aquaculture industry further downstream on the Karuah River. The Department understands that the system has been designed in accordance with the most stringent criteria recommended in the Blue Book Volume 2E for managing impacts to sensitive receiving environments. It has also been subject to further refinement in response to feedback from community members, the Department and other agencies in recognition of the need to protect the riparian zone and aquatic habitats along Deep Creek.

243. In terms of groundwater impacts, the Department notes that the predicted impacts would be very localised and limited to a 'less productive' aquifer. They are also less than the Level 1 minimal impact considerations set out in the AIP.

244. With the measures proposed by Ironstone and the performance measures and conditions recommended by the Department, the Department considers that the risks of impact to water resources are low and that the Project could be suitably managed to avoid any unacceptable impacts.

245. The Department acknowledges that potential noise impacts were a key concern for the community. Notwithstanding the community's concern, the Department accepts that the Project is unlikely to result in greater than 'negligible' noise impacts on affected sensitive receivers. The

Department supports the design mitigation, monitoring and management measures proposed by Ironstone to reduce predicted noise from the Project to acceptable levels.

246. The Department has also taken a precautionary approach in recommending strict noise limits and operating conditions for the Project, consistent with EPA's recommendations. The Department considers that the recommended conditions strike a fair balance between protecting the amenity of the local community and providing for the operation of the Project. Subject to these conditions, the Department considers the noise impacts of the Project are acceptable.

247. The Department has assessed the impacts of the Project on other values including air quality, greenhouse gas emissions, human health, rehabilitation and final landform, social, economic, visual amenity, Aboriginal cultural heritage, historic heritage and hazards and waste impacts. The Department considers that the residual impacts of the Project can be suitably mitigated and managed.

248. Importantly, the Department has examined the risk of localised social impacts, which is particularly apparent given the negative sentiment towards the Project expressed by nearby neighbours. Despite the EIS concluding that the project would not impact the amenity of surrounding neighbours, the Department acknowledges that perceived impacts can affect an individual's wellbeing. This is particularly relevant to the Project, which proposes to establish a new quarry in what is a relatively undeveloped rural setting. The social impact assessment found that there was a risk of alienating community stakeholders if ongoing community engagement is ineffective. In the Department's view, this risk has been addressed by the recommended conditions, which would require Ironstone to continue to monitor community sentiment, keep the community informed of its activities, and implement measures to mitigate negative social impacts with consideration of feedback from individuals and the broader community.

249. The Department has recommended a comprehensive and precautionary suite of conditions to ensure that the Project complies with contemporary criteria and standards, and that residual impacts are effectively minimised, managed, offset and/or compensated for. The recommended conditions were provided to key NSW Government agencies and their comments taken into account in finalising the conditions. Ironstone has also reviewed the recommended conditions. The Department considers that the conditions reflect current best practice for the regulation of hard rock quarrying projects in NSW and would lead to acceptable environmental outcomes. A copy of the recommended consent is provided at **Appendix F**.

250. The Department recognises that the proposed quarry would contribute a range of high-quality construction materials to local and regional markets. It would contribute significantly to the supply of materials for the construction of housing and major regional infrastructure projects. The Department also recognises that the proximity of the Project's hard rock resources to the Pacific Highway via The Bucketts Way facilitates safe and efficient distribution of products to the market. The Department accepts there is a strategic need for hard rock quarry materials in the Hunter, Central Coast and Sydney regions and considers the site to be well-suited for the Project.

251. The Department also considers that the Project would result in significant economic benefits to the region and to the State of NSW through the supply of materials critical to the construction industry and is therefore justified from an economic efficiency perspective.

252. The Department has carefully weighed the environmental impacts of the Project against the significance of the Project's identified hard rock resource and the wider socio-economic benefits associated with operating the quarry for 30 years under a contemporary development consent. On balance, the Department considers that the benefits of the Project outweigh its residual costs, the site is suitable for the proposed development, and that the Project is in the public interest and is approvable, subject to the recommended strict conditions of consent.

Prepared by:

21/11/2023

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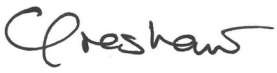

21/11/2023

Clay Preshaw
Executive Director
Energy, Resources and Industry

Appendices

Appendix A – Environmental Impact Statement

Refer to the 'EIS' folder under the 'Assessment' tab on the Department's website at:
https://www.planningportal.nsw.gov.au/major-projects/projects/deep-creek-quarry

Appendix B – Submissions and community engagement

Refer to the 'Submissions' tab on the Department's website at:
https://www.planningportal.nsw.gov.au/major-projects/projects/deep-creek-quarry

Appendix C – Submissions Report and additional information

Submissions Report: Refer to the 'Response to Submissions' folder under the 'Assessment' tab on the Department's website at: **https://www.planningportal.nsw.gov.au/major-projects/projects/deep-creek-quarry**

Additional information: Refer to the 'Additional Information' folder under the 'Assessment' tab on the Department's website at: **https://www.planningportal.nsw.gov.au/major-projects/projects/deep-creek-quarry**

Appendix D – Agency advice

Refer to the 'Agency advice' folder under the 'Assessment' tab on the Department's website at:
https://www.planningportal.nsw.gov.au/major-projects/projects/deep-creek-quarry

Appendix E – Statutory considerations

Objects of the EP&A Act

The objects of the EP&A Act are the underpinning principles for all decision-making under the Act. They must be considered by the consent authority when determining a development application under the Act. **Table E1** summarises how the relevant objects of the EP&A Act have been considered in the Department's assessment of the Project.

Table E1 | Consideration of objects of the EP&A Act

Objects of the EP&A Act (section 1.3)	Consideration
(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources;	• The Project would provide ongoing socio-economic benefits to the people of NSW and ongoing employment opportunities for members of the regional community. • While the Project has the potential to result in both positive and negative social impacts, overall, the Department considers that any negative social impacts can be appropriately managed under recommended conditions. • The Project would facilitate efficient recovery of an important hard rock resource.
(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment;	• The Department's assessment has sought to integrate all significant environmental, social and economic considerations. • The Department considers that the Project can be carried out in a manner that is consistent with the principles of ESD.
(c) to promote the orderly and economic use and development of land;	• The Project involves a permissible land use on the subject site and would facilitate efficient recovery of an important and regionally significant hard rock resource.
(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats;	• The Department has assessed the biodiversity impacts of the Project in accordance with relevant State and Commonwealth legislation, policies and guidelines. • The Department considers that the Project avoids and minimises, to the greatest extent practicable, impacts on threatened species and communities and key habitats. • The Department has recommended conditions to ensure that the residual biodiversity impacts of the Project would be appropriately managed and offset (see **Section 6.1**).
(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage);	• The Department has assessed the likely impacts of the Project on Aboriginal cultural heritage and historic heritage and considers any potential impacts would be negligible.
(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State;	• The Department has led a whole-of-government assessment of the Project in consultation with other NSW Government agencies. This consultation process is discussed in **Section 5**
(j) to provide increased opportunity for community participation in environmental planning and assessment.	• The Department publicly exhibited the proposal and made the development application and accompanying documents publicly available on its website (see **Section 5**). • The Department held a community meeting and visited a local landowner. • The Department has carefully considered issues raised by the community during the public exhibition period in its assessment of the Project.

E2 Environmental Planning Instruments (EPIs)

Under section 4.15 of the EP&A Act, the consent authority is required to consider, amongst other things, the provisions of the relevant EPIs, including any exhibited draft EPIs and development control plans. The Department notes Ironstone's consideration of these instruments in its EIS and has undertaken its own consideration of the Project against the applicable provisions of relevant EPIs, including applicable State Environmental Planning Policies (SEPPs).

E2.1 SEPP (Resources and Energy) 2021 (Resources and Energy SEPP)

Part 2.3 of the Resources and Energy SEPP lists a number of matters that a consent authority must consider before determining an application for consent for development for the purposes of an extractive industry. The Department has considered these matters in its assessment of the Project and has included a summary of these considerations in **Table E2**.

Table E2 | Mandatory matters for consideration under Part 2.3 of the Resources and Energy SEPP

Clause	Matters for Consideration	Consideration
2.16	Non-discretionary development standards for mining	• The Project is predicted to comply and has been assessed as complying with non-discretionary standards with respect to water, air quality and blasting. • The Project is predicted to exceed the noise non-discretionary standards with respect to exceedance of noise criteria at two sensitive receiver locations. However, these exceedances are considered 'negligible' under the Department's VLAMP. The Department's recommended conditions include a requirement for Ironstone to: ○ undertake noise monitoring on commencement of construction and at least on a quarterly basis during operations to determine compliance with the applicable noise criteria and to inform any further noise mitigation works, if needed; ○ regularly assess the noise monitoring data, and modify or stop operations on the site to ensure noise compliance; ○ establish suitable protocols for receiving and handling community complaints and investigating any potential exceedances; and ○ develop and implement a Noise Management Plan to the satisfaction of the Secretary.
2.17	Compatibility of proposed mine, petroleum production or extractive industry with other land uses	• The Department has carefully considered the merits of the Project, having regard to existing and approved land uses in the vicinity of the site. The Department has also considered what it understands to be the preferred uses of land in the area, having regard to relevant EPIs and strategic plans. • The Department is of the view that, subject to the recommended conditions of consent, the Project can be carried out in a manner that is compatible with surrounding conservation, rural-residential and rural land uses.
2.18	Consideration of *Voluntary Land Acquisition and Mitigation Policy* (VLAMP)	• The Department has considered the VLAMP in its assessment of noise and air quality impacts. Mitigation and acquisition rights do not apply in respect of the Project.

Clause	Matters for Consideration	Consideration
2.19	Compatibility of proposed development with mining, petroleum production or extractive industry	• The Project would not conflict with existing extractive industry in the locality.
2.20	Natural resource management and environmental management	• The Department has recommended a robust suite of conditions to ensure that the Project is undertaken in an environmentally responsible manner. These include conditions relating to the appropriate management of biodiversity, air quality and water resources.
2.2 1	Resource recovery	• The Department has considered resource recovery in respect of the Project's identified hard rock resource and is satisfied that the Project can be carried out in an efficient manner that optimises resource recovery subject to environmental constraints. • The Department has recommended conditions requiring Ironstone to implement reasonable and feasible measures to minimise waste and maximise the salvage and re-use of resources within the disturbance area (including water, soil and vegetative resources).
2.22	Transport	• The Department consulted with MidCoast Council and TfNSW during its assessment of the Project. • The Project would not significantly impact the safety and efficiency of the local road network. • The Department has recommended conditions requiring the payment of contributions for ongoing maintenance for Project-related use of local roads, and the preparation of a Traffic Management Plan for the Project.
2.23	Rehabilitation	• The Department has recommended strict conditions to ensure that the site is rehabilitated in a timely and integrated manner and that the final landform is safe, stable and non-polluting.

E2.2 SEPP (Biodiversity and Conservation) 2021

SEPP (Biodiversity and Conservation) 2021 aims to conserve and manage Koala habitat to reverse the current trend of Koala population decline.

The Project is located within Mid-Coast LGA, which is listed within Schedule 2 of the SEPP (Biodiversity and Conservation) 2021 and is zoned rural land. SEPP (Biodiversity and Conservation) 2021 is therefore applicable to the Project.

In this respect, the Department undertook a detailed consideration of potential impacts of the Project on the local Koala population (see **Section 6.1**).

The BDAR indicated that the vegetation to be cleared within the Project site is Core Koala Habitat under SEPP (Biodiversity and Conservation) 2021. Accordingly, a Koala Plan of Management was prepared for the Project and appended to the BDAR. The Department's recommended conditions also require Ironstone to prepare and implement a Koala Plan of Management to manage impacts to the local Koala population.

Overall, the Department is satisfied that the Project is generally consistent with the aims, objectives, and requirements of SEPP (Biodiversity and Conservation) 2021.

E2.3 SEPP (Resilience and Hazards) 2021

Chapter 3 of this SEPP regulates the development of 'hazardous and offensive' industry. The EIS indicates that all hazardous substances used in the carrying out of the Project fall below the relevant screening thresholds under SEPP 33. The EIS also indicates that the Project is unlikely to constitute an offensive industry.

The Department considers that the hazards and risks associated with the Project have been assessed in a manner consistent with the requirements of Chapter 3 of this SEPP and can be appropriately managed under the recommended conditions.

Chapter 4 of this SEPP regulates the remediation of contaminated land. The Department considers that the Project area does not have a significant risk of contamination given its historical and current land uses, and that the development has been assessed in a manner consistent with the requirements of Chapter 4 of this SEPP.

E2.4 SEPP (Transport and Infrastructure) 2021

This SEPP requires the consent authority to notify relevant public authorities about development that may affect public infrastructure or land. The Department notified TfNSW, MidCoast Council and Port Stephens Council. The Department carefully considered the advice from these authorities, particularly in relation to the Project's proposed traffic generation on the road network, in its assessment of this application.

E2.5 Great Lakes LEP

The Department considers that the Project is generally consistent with the aims, objectives and provisions of the Great Lakes LEP. The Project area is zoned RU2 (Rural Landscape) under the Great Lakes LEP. Extractive industry development is permissible with consent in the RU2 zone. Accordingly, the Department is satisfied that the development is permissible with consent.

Appendix F – Recommended Conditions of Consent

https://www.planningportal.nsw.gov.au/major-projects/projects/deep-creek-quarry \

Appendix G – Matters of National Environmental Significance (MNES)

The Project was declared to be a 'controlled action' under the Commonwealth EPBC Act due to its potential impacts on listed threatened species and communities. In its determination, the DCCEEW agreed that the proposal may be assessed by the NSW Government, in accordance with the Bilateral Agreement between the NSW and Commonwealth Governments.

The Department provides the following additional information for the Commonwealth Minister to take into account when deciding whether or not to approve the Project under the EPBC Act.

The Department's assessment has been prepared based on the information contained in:

- the EIS, particularly the BDAR (see **Appendix A**);
- the Submissions Report, particularly the Amended BDAR (see **Appendix C**);
- environmental assessment requirements issued by DCCEEW;

- advice provided by BCD, in particular its assessment of impacts on MNES (see **Appendix D**); and
- additional information provided by Wedgetail on behalf of Ironstone during the assessment process, in particular the Final BDAR and supplementary response regarding MNES (received 28 August and 26 September 2023), included in **Appendix C**.

This Appendix is supplementary to, and should be read in conjunction with, **Section 6.1** of the Department's Assessment Report.

G1 – Potential impacts to EPBC Act listed threatened species and communities

In its referral decision, the Commonwealth determined that the Project is a controlled action in that the proposed action:

- is likely to have a significant impact on two EPBC Act-listed threatened fauna species (Koala (*Phascolarctos cinereus)* and Grey-headed Flying-fox(*Pteropus poliocephalus*)), and one listed threatened flora species (Black-eyed Susan (*Teratheca juncea*)); and
- has the potential to have a significant impact on two other EBPC Act-listed threatened fauna species (Large-eared Pied Bat (*Chalinolobus dwyeri*) and New Holland Mouse (*Pseudomys novaehollindae*).

The Commonwealth also considered that the following MNES species are possibly at risk of being impacted:

- Green and Golden Bell Frog (*Litoria aurea*);
- Swift Parrot (*Lathamus discolor*); and
- Regent Honeyeater (*Anthochaera phrygia*).

The Commonwealth also required that evidence be provided to demonstrate why other EPBC Act-listed threatened species and communities likely to be located in the Project area or in the vicinity would not be significantly impacted by the Project.

The Final BDAR and supplementary information provided by Ironstone considered the impacts of the Project on these species, including completion of significant impact tests in accordance with the Significant Impact Guidelines 1.1 – Matters of National Environmental Significance (DoE, 2013). BCD has confirmed that it is satisfied with the information contained in the Final BDAR and supplementary information. Further consideration by the Department is provided below.

Threatened fauna

Koala

The project would involve the removal of 29.15 ha of Koala (*Phascolarctos cinereus*). The Commonwealth's 'Koala Habitat Assessment Tool' rates this as 'habitat critical to the survival of the species' based on the presence and abundance of key feed species.

Surveys for the species detected Koalas in four locations, although no evidence of Koala breeding was found. The Koalas in the Project area are not at the edge of the range for the species and the local population is not considered to be necessary for maintaining the genetic diversity of the species.

The Commonwealth's Approved Conservation Advice for the Koala identifies loss and fragmentation of habitat, vehicle strike and environmental stressors as key threats to the species. Relevant conservation and recovery actions include increased habitat protection, strategic habitat restoration and integration of Koala conservation in policy and statutory land use planning. The BDAR's assessment of significance, undertaken in accordance with the EPBC Act Significant Impact Guidelines, considered that the Project is unlikely to significantly impact on the Koala. This finding was based on the following:

- the local Koala population is not considered an 'important population'[6];
- approximately 235 hectares of suitable habitat for the Koala would be retained within the property boundary, outside the proposed disturbance footprint;
- the Project would not fragment an existing important population into two or more populations;
- given the extent of suitable habitat to be retained, it is unlikely that the breeding cycle of the population would be significantly disrupted in the locality;
- the loss of habitat is unlikely to decrease the availability or quality of habitat to the extent that the species is likely to decline; and
- the existing feral animal threat levels are unlikely to change significantly due to the Project.

The BDAR also considered that indirect impacts to Koala, such as a decline in quality and extent in adjacent habitat to the Project area due to weeds and pest species, are unlikely due to the proposed mitigation measures (see below).

BCD advised that the revised BDAR adequately addressed impacts on MNES. The Department agrees with this assessment and considers that indirect impacts to Koala populations can be controlled by the proposed mitigation measures. As discussed below, the residual impacts to Koalas would be adequately offset through the retirement of species credits (see below). On this basis, the Department considers the Project's impacts on Koalas are acceptable.

New Holland Mouse

New Holland Mouse (*Pseudomys novaehollandiae*) was recorded at 13 locations within the study area, three of which occur within the Project site. Based on the number of local records of the species, the local population appears to be a 'key source population either for breeding or dispersal' and may also be a 'population that is necessary for maintaining genetic diversity. As such, it is considered an 'important population.' The extent of occurrence of the local population is estimated to be about 77 ha and contain approximately 1,156 individuals, of which the Project would clear 10.6 hectares, impacting about 160 individuals. Given approximately 14% of the habitat for the local population would be impacted by the Project, impacts to this species are considered 'significant'. However, it is unlikely that the loss of this habitat would decrease the availability or quality of habitat to the extent that the species is likely to decline. To mitigate the impacts of the Project on this species, Ironstone has committed to develop and implement a New Holland Mouse Relocation Plan prior to disturbance of the identified habitat.

[6] a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are key source populations either for breeding or dispersal, populations that are necessary for maintaining genetic diversity, and/or populations that are near the limit of the species range.

BCD and the Department consider that indirect impacts to this local population can be controlled by the proposed mitigation measures. Residual impacts would be adequately offset through the retirement of ecosystem credits (see below). The proposed 235 ha Biodiversity Stewardship Site located adjacent to the Project site would also provide local offsets for the species. On this basis, the Department considers the Project's impacts on New Holland Mouse are acceptable.

Grey-headed Flying-fox

The Project site contains 29.02 ha of suitable foraging habitat for Grey-headed Flying-fox (*Pteropus poliocephalus*). The assessment of significance, undertaken in accordance with the EPBC Act Significant Impact Guidelines (DEWHA 2013), concluded that this species is not likely to be significantly impacted by the Project. BCD advised that the revised BDAR adequately addressed impacts on MNES. The Department agrees with this assessment and considers that, subject to implementation of the impact mitigation measures set out below, the Project is unlikely to significantly impact this species. Residual impacts to the foraging habitat for this species would be adequately offset through the retirement of ecosystem credits (see below).

Large-eared Pied Bat

The Project site is unlikely to contain suitable roosting sites for the Large-eared Pied Bat (*Chalinolobus dwyeri*). In the absence of suitable roosting sites on the Project site it is not considered to support an 'important population' of this species. The Project would involve the removal of 29.02 ha of foraging habitat for this species.

The assessment of significance, undertaken in accordance with the EPBC Act Significant Impact Guidelines (DEWHA 2013), concluded that this species is not likely to be significantly impacted by the Project. BCD advised that the revised BDAR adequately addressed impacts on MNES. The Department agrees with this assessment and considers that, subject to implementation of the impact mitigation measures set out below, the Project is unlikely to significantly impact this species. Residual impacts to the foraging habitat for this species would be adequately offset through the retirement of ecosystem credits (see below).

Swift Parrot

Swift parrot (*Lathamus discolor*) has not been recorded in the study area. The Project would clear 29.02 ha of suitable foraging habitat for this species. The assessment of significance, undertaken in accordance with the EPBC Act Significant Impact Guidelines (DEWHA 2013), concluded that this species is not likely to be significantly impacted by the Project. BCD advised that the revised BDAR adequately addressed impacts on MNES. The Department agrees with this assessment and considers that, subject to implementation of the impact mitigation measures set out below, the Project is unlikely to significantly impact this species. Residual impacts to the foraging habitat for this species would be adequately offset through the retirement of ecosystem credits (see below).

Regent Honeyeater

Regent honeyeater (*Anthochaera phrygia*) has not been recorded in the study area. The Project would clear 29.02 ha of suitable foraging habitat for this species. The assessment of significance, undertaken in accordance with the EPBC Act Significant Impact Guidelines (DEWHA 2013), concluded that this species is not likely to be significantly impacted by the Project. BCD advised that the revised BDAR adequately addressed impacts on MNES. The Department agrees with this assessment and considers that, subject to implementation of the impact mitigation measures set out below, the Project is unlikely

to significantly impact this species. Residual impacts to the foraging habitat for this species would be adequately offset through the retirement of ecosystem credits (see below).

Green and Golden Bell Frog

Targeted searches were conducted for Green and golden bell frog (*Litoria aurea*) in the study area and the species was not found. The study area was assessed as having low habitat suitability for the species. The Department and BCD are satisfied that an appropriate assessment for this species was conducted and that it does not occur in the study area. The Project would not impact this species and offsets are not required.

Threatened Flora

Black-eyed Susan

The Project would clear 584 clumps of Black-eyed Susan (*Tetratheca juncea*) out of about 1,828 clumps. This represents a loss of about 32% of the subpopulation. Populations with more than 1000 plants are considered to be an 'important population' for the species according to the referral guidelines for this species (DSEWPC, 2011).

The Commonwealth's Conservation Advice for Black-eyed Susan identifies the main threats to this species as clearing and fragmentation of habitat for development, inappropriate fire regimes, weed invasion, stormwater runoff, and dieback associated with the pathogen *Phytophthora cinnamon*. The regional and local priority recovery and threat abatement actions for this species include increasing protection through the establishment of formal conservation agreements, undertaking weed control activities, implementing suitable fire management strategies, protecting known populations from dieback by implementing suitable hygiene protocols, enabling recovery of additional sites through seed collection and translocation where feasible, and raising awareness of the species in the local community.

The BDAR's assessment of significance, undertaken in accordance with the EPBC Act Significant Impact Guidelines, considered that the Project has the potential to significantly impact on the species. This finding was based on the following:

- A total of 586 individuals would be removed by the Project, including 584 individuals (32%) from a subpopulation of 1,828 plants. A total of 1,225 individuals (67%) would be retained in good quality habitat; and
- The Project would remove 19.05 ha of the 44.21 area of occupancy of the important population.

However, the BDAR also concluded that given the large number of individuals to be retained and the high quality of the habitat, it is unlikely that the breeding cycle of the population would be significantly disrupted in the locality. Further, the loss of habitat from the Project is unlikely to decrease the availability or quality of habitat to the extent that the species is likely to decline.

BCD advised that the revised BDAR adequately addressed impacts on this species. The Department agrees and considers that indirect impacts to Black-eyed Susan populations can be controlled by the proposed mitigation measures. As discussed below, the direct impacts this species would be adequately offset through the retirement of species credits. On this basis, the Department considers the Project's impacts on Black-eyed Susan are acceptable.

Migratory Species

The BDAR considered potential impacts from the Project on five migratory species, namely Fork-tailed Swift (*Apus pacificus*), White-throated Needletail (*Hirundapus caudatus*), Black-faced Monarch (*Monarcha melanopsis*), Satin Flycatcher (*Myiagra cynoleuca*) and the Rufous Fantail (*Rhipidura rutifrons*). Assessments of significance concluded that the Project is not likely to significantly impact any of these species. BCD and the Department agree with these conclusions and consider that appropriate assessments for these species were conducted.

G2 – Demonstration of 'Avoid, Mitigate, Offset' for MNES

Avoidance and mitigation measures

The Department considers that Ironstone has made adequate efforts to avoid impacts to biodiversity through modifications to infrastructure layout and design during the development of the Project. In particular, these include:

- removal of Deep Creek Road as an access route;
- generation of electricity on site rather than constructing an electricity line to The Bucketts Way;
- design of infrastructure to minimise works in along the site access/haulage road route reserve; and
- modifications to the location of the tarping bay to avoid preferred Koala feed trees.

Through refinement of project design, Ironstone indicated that the Project would avoid impacting over 72 ha of native vegetation (and the associated habitat for a broad range of threatened fauna), around 1,225 Black-eyed Susan (*Tetratheca juncea*), and numerous hollow bearing trees. The Project has also been designed to limit direct impacts to 1st order drainage lines from the quarry pit.

Ironstone has also committed to mitigating impacts on biodiversity by:

- delineating clearing boundaries and work areas with fencing and signage to avoid accidental disturbance of vegetation;
- implementing a clearing protocol including pre-clearance surveys and relocation of displaced fauna;
- limiting the removal of hollow bearing trees and replacing removed hollows with nest boxes in retained vegetation;
- enforcing vehicle speed restrictions and limiting haulage operations to 6 am to 6 pm (i.e. essentially daylight hours) to avoid impacts to nocturnal species;
- update and implementation of a New Holland Mouse Relocation Plan to further detail management of the species during construction and operation of the quarry. This would include relocation / translocation of individuals from the Project site, and habitat assessments to identify optimum habitat for relocation / translocation sites;
- implementing a monitoring and (where necessary) baiting program for feral dogs, cats and foxes;
- implementing relevant management plans for noise, dust and water quality;

- training staff and conducting site briefings to communicate environmental features to be protected and measures to be implemented;
- implementing controls along the quarry access road including mapping of Koala feed trees, speed reduction, exclusion fencing incorporating Koala grids and fauna underpasses; and
- preparing and implementing an updated Koala Plan of Management.

The Department has recommended a condition requiring Ironstone to prepare and implement a Biodiversity Management Plan that incorporates the mitigation measures outlined above, as well as other contemporary biodiversity management practices. These include a requirement to update and implement the New Holland Mouse Relocation Plan and Koala Plan of Management for managing impacts on the local populations of these species.

The Department and BCD are satisfied with the avoidance and mitigation measures proposed by Ironstone to minimise impacts on MNES. The Department understands that, to some extent, the location of disturbance areas is dictated by the availability of the hard rock resource and the boundaries of Ironstone-controlled land. The Department considers that the Project has been designed to avoid, minimise and mitigate impacts on EPBC Act-listed threatened species and communities to the greatest extent practicable.

Offsetting significant residual adverse impacts

The Department's recommended conditions would require Ironstone to develop a Biodiversity Offset Strategy to account for the residual impacts of the Project which cannot be addressed through the proposed avoidance and mitigation measures. The offset liabilities for impacts to MNES are shown in **Table G1**.

Table G1 | Summary of biodiversity credit requirements for MNES

Ecological Feature	Impact	Impact Credits Generated
Plant Community Type (PCT)		
PCT 1590: Spotted Gum - Broad-leaved Mahogany - Red Ironbark shrubby open forest	18.42 ha	321
PCT 1619: Smooth-barked Apple - Red Bloodwood - Brown Stringybark – Hairpin Banksia heathy open forest of coastal lowlands	8.74 ha	166
PCT 1567: Tallowwood - Brush Box - Sydney Blue Gum moist shrubby tall open forest on foothills of the lower North Coast	1.83 ha	52
PCT 1556 Tallowwood - Smooth-barked Apple - Blackbutt grass tall open forest of the Central and lower North Coast	0.17 ha	5
Total Ecosystem Credits		*544*
Threatened Credit Species		

Ecological Feature	Impact	Impact Credits Generated
Tetratheca juncea (Black-eyed Susan)	Removal of 586 plants	572
Phascolarctos cinereus (Koala)	29.15 ha of potential habitat	728
Total Species Credits		*1300*

To offset the impacts to EPBC-listed species, Ironstone has identified options for the establishment of Biodiversity Stewardship Sites over the residual lands surrounding and/or in close proximity to the quarry, which contain known habitat for Koala, New Holland Mouse and Black-eyed Susan. The credits generated from such Biodiversity Stewardship Site(s) would be retired to meet biodiversity credit requirements for the Project. Alternatively, species credit requirements could be met through purchase of credits from the Biodiversity Conservation Trust (BCT) or directly from the market. Ironstone has also committed to planting a total of 450 preferred Koala feed tree species within the proposed offset sites, representing a 2:1 offset ratio (225 trees impacted) to offset impacts associated with the loss of preferred Koala feed trees within the Project site.

The Department considers that all offsetting requirements for the EPBC Act-listed species can be met through these 'like-for-like' offsetting measures. The Department considers the proposed offsetting approach to be acceptable and has recommended a condition requiring all credits to be retired prior to impacts to the corresponding MNES occurring.

G3 - Requirements for Decisions About Threatened Species and Endangered Ecological Communities

In accordance with Section 139 of the EPBC Act, in deciding whether or not to approve, for the purposes of either Section 18 or Section 18A of the EPBC Act, the taking of an action and what conditions to attach to such an approval, the Commonwealth Minister must not act inconsistently with certain international environmental obligations, or Commonwealth Recovery Plans or Threat Abatement Plans. The Commonwealth Minister must also have regard to relevant approved Conservation Advice.

G3.1 Australia's international obligations

Australia's obligations under the Convention on Biological Diversity (Biodiversity Convention) include the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.

The recommendations of this report are not inconsistent with the Biodiversity Convention, which promotes environmental impact assessment (as has been undertaken for this proposal) to avoid and minimise adverse impacts on biological diversity. The Department's recommended conditions require avoidance, mitigation and management measures for listed threatened species and communities and

all information related to the proposed action is required to be publicly available to ensure equitable sharing of information and improved knowledge relating to biodiversity.

Australia's obligations under the Convention on Conservation of Nature in the South Pacific (the Apia Convention) include encouraging the creation of protected areas which together with existing protected areas will safeguard representative samples of the natural ecosystems occurring therein (particular attention being given to endangered species), as well as superlative scenery, striking geological formations and regions. Additional obligations include using best endeavours to protect fauna and flora (special attention being given to migratory species) so as to safeguard them from unwise exploitation and other threats that may lead to their extinction. The Apia Convention was suspended on 13 September 2006. Nonetheless, Australia's obligations under the Convention have been taken into consideration. The recommended approval is not inconsistent with the Convention which generally aims to promote the conservation of biodiversity.

The Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) is an international agreement between governments which seeks to ensure that international trade in specimens of wild animals and plants does not threaten their survival. The recommended approval is not inconsistent with CITES as the proposed action does not involve international trade in specimens of wild animals and plants.

G3.2 Recovery Plans and Approved Conservation Advices

The Department has undertaken a detailed and comprehensive assessment of the potential impacts of the Project on listed threatened species and communities under the BC Act and the EPBC Act. The Department has taken into consideration approved Commonwealth Conservation Advices and Recovery Plans for the species and communities which may be impacted by the Project, including:

- National Recovery Plan for the Koala *Phascolarctos cinereus* (combined populations of Queensland, New South Wales and the Australian Capital Territory);
- National Recovery Plan for the Grey-headed Flying-fox (*Pteropus poliocephalus*)
- National Recovery Plan for the Large-eared Pied Bat (*Chalinolobus dwyeri*);
- National Recovery Plan for the Regent Honeyeater (*Anthochaera Phrygia*);
- National Recovery Plan for the Swift Parrot (*Lathamas discolor*);
- Approved Conservation Advice for Phascolarctos cinereus (Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory;
- Approved Conservation Advice *Anthochaera phrygia* (Regent Honeyeater);
- Approved Conservation Advice *Lathamas discolor* (Swift Parrot);and
- Approved Conservation Advice for *Tetratheca Juncea*.

As discussed above, the Project is not predicted to significantly impact any of these threatened species and communities, with the exception of the New Holland Mouse and Black-eyed Susan. The Department has recommended that mitigation and recovery measures are implemented via a Biodiversity Management Plan, which includes a New Holland Mouse Relocation Plan and Koala Plan of Management. Many of the management actions in the Biodiversity Management Plan would align with those set out in relevant conservation advice for the EPBC-listed species impacted by the Project.

Additionally, Ironstone would be required to retire species credits to offset the loss of habitat for MNES, which would result in conservation of this habitat in perpetuity. On this basis, the Department considers the Project would not be inconsistent with the Approved Conservation Advice for the relevant MNES.

G3.3 Threat Abatement Plans

One of the main threats to the Black-eyed Susan identified in the Commonwealth's Conservation Advice for the species is dieback associated with the pathogen *Phytophthora cinnamoni*. Accordingly, the Threat Abatement Plan for disease in natural ecosystems caused by *Phytophthora cinnamomi* (DoEE, 2018) is of relevance to mitigating impacts to this species from the Project. Actions for mitigating impacts to this species, including any requirements for managing risks associated with the spread of *Phytophthora cinnamoni* would be documented in the Biodiversity Management Plan for the Project. There are also opportunities to implement management actions in accordance with several other Threat Abatement Plans at the Project site and the candidate biodiversity offset sites. These actions include monitoring and management of feral animals which have potential to degrade habitat for the affected species. These actions would also be documented within the Biodiversity Management Pla for the Project.

G4 - Additional EPBC Act considerations

Table G2 contains a range of further mandatory considerations to be taken into account and factors to have regard to under the provisions of the EPBC Act.

Table G2 | Additional Consideration for the Commonwealth Minister under the EPBC Act

EPBC Act Section	Matters for Consideration	Conclusion
Mandatory considerations		
136(1)(b)	Social and economic matters are discussed in the EIS and in **Section 6.5** and **Section 7**.	The Department considers that the proposed development would result in a range of benefits for the regional economy and would allow for the continued supply of hard rock material for construction of housing and infrastructure within nearby regions.
Factors to be taken into account		
136(2)(a)	Principles of ecologically sustainable development (ESD), including the precautionary principle, have been taken into account, in particular in: • long and short-term economic, environmental, social and equity considerations relevant to this decision; • conditions that restrict environmental impacts, impose monitoring and adaptive management requirements and reduce uncertainty concerning the potential impacts of the Project; • conditions requiring the Project to be operated in a sustainable way that protects the environment for future generations and conserves MNES; • advice provided within this report which reflects the importance of conserving biological diversity	The Department considers that, subject to the recommended conditions of consent, the Project could be undertaken in a manner that is consistent with the principles of ESD.

EPBC Act Section	Matters for Consideration	Conclusion
	and ecological integrity in relation to the controlling provisions for this Project; and • mitigation measures to be implemented which reflect improved valuation, pricing and incentive mechanisms that promote a financial cost to the applicant to mitigate the environmental impacts of the Project.	
136(2)€	Other information on the relevant impacts of the action.	The Department considers that all information relevant to the impacts of the Project has been taken into account.
Factors to have regard to		
176(5)	Bioregional plans	The Project is located in the NSW North Coast IBRA Bioregion and within the Karuah Manning IBRA Subregion. The Project would result in the clearing of some vegetation in these bioregions; however it would involve an offset that would contribute to in-perpetuity managed conservation areas in the bioregions. The Project is unlikely to significantly impact the water resources in these bioregions
Consideration on deciding conditions		
134(4)	Must consider: • information provided by the person proposing to undertake the action or by the designated applicant of the action; and • desirability of ensuring as far as practicable that the condition is a cost- effective means for the Commonwealth and the person taking the action to achieve the object of the condition.	Documents provided by Ironstone are provided at **Appendices A** and **C**. The Department considers that the recommended conditions of consent in **Appendix F** are a practicable and cost-effective means to achieve their purposes. These conditions have been prepared following careful considerations of all material provided by Ironstone and following consultation with relevant government agencies.

G5 - Conclusions on controlling provisions

G5.1 Threatened species and communities (sections 18 and 18A of the EPBC Act)

The Department considers that the impacts of the proposed action on these MNES would be acceptable, subject to the avoidance, mitigation, offsetting and management measures described in Ironstone's environmental assessment documents and the requirements of the Department's recommended conditions of consent (see **Appendix F**).

G6 - Other protected matters

DCCEEW has determined that other matters regulated under the EPBC Act are not controlling provisions with respect to the proposed action. These include listed World Heritage places, National Heritage places, migratory species, the Commonwealth marine environment, Commonwealth land, Commonwealth actions, nuclear actions, the Great Barrier Reef Marine Park and Commonwealth Heritage places located overseas.

G7 - Conclusions

The Department considers that the recommended conditions would provide suitable protection for all MNES listed under the EPBC Act that may be significantly impacted by the Project. The Department notes that, if approved by the Commission, the Project would be referred by the Department to the Commonwealth Minister for the Environment and Water for determination under the EPBC Act.